Somalia Livelihood Profiles June 2016

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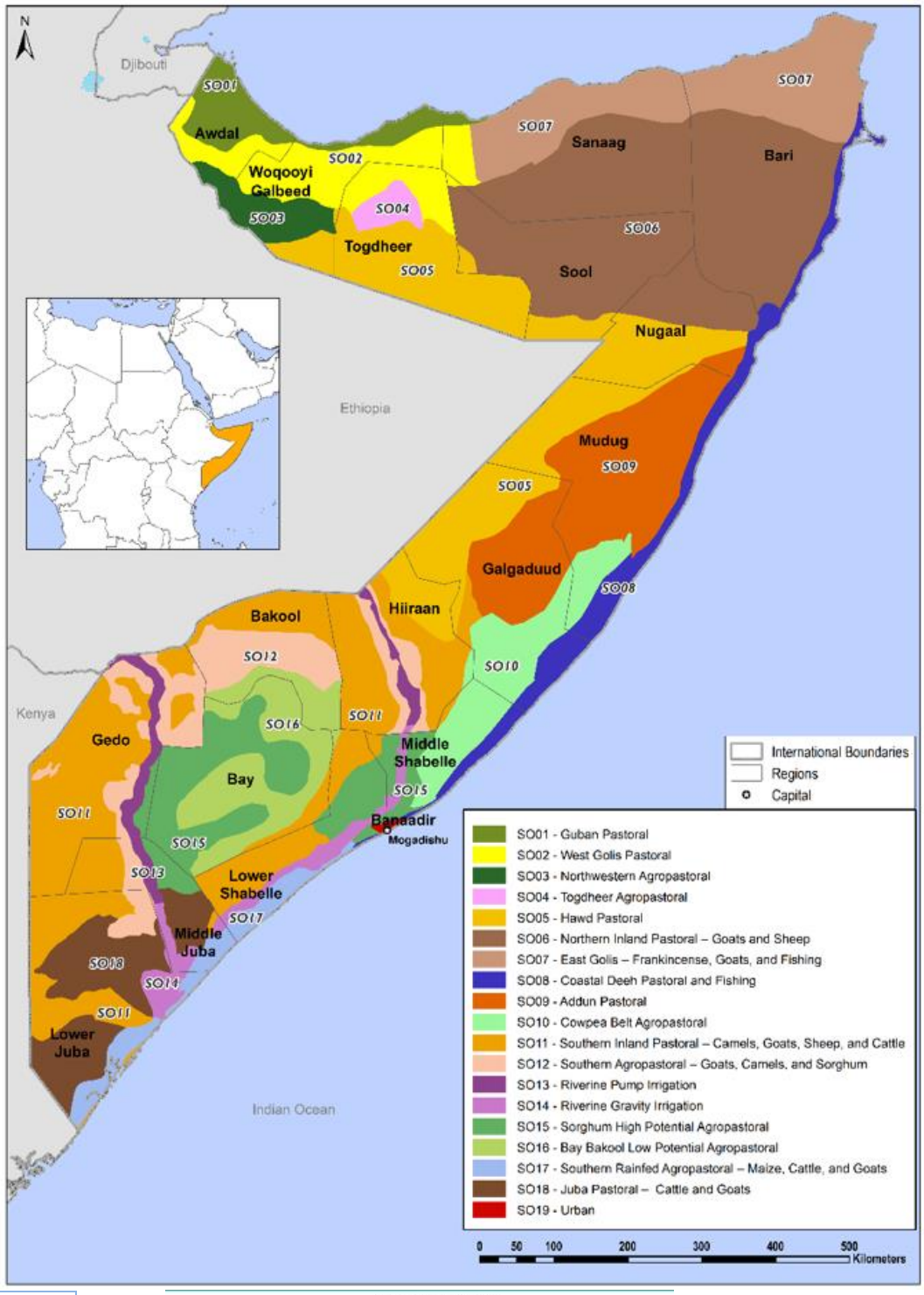

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INTRODUCTION

In Somalia, Food Security and Nutrition Analysis Unit (FSNAU) - a multi-donor project managed by the Food and Agriculture Organization of the United Nations) and FEWS NET are working together to ensure that livelihood products, tools, and skills meet FSNAU's and FEWS NET's decision support needs. As a first step, FSNAU and FEWS NET with support from the Food Economy Group (FEG) finalized a revision of the livelihood zone map of Somalia in December 2014/January 2015 (*Ref. the Revision of the Livelihood Zones of Somalia: The Final Consolidation – February 2015*). After careful deliberations over two years, the final number of rural livelihood zones of Somalia has been reduced from 33 to 18 through a process of merging some zones and/or identifying most representative datasets and taking into consideration of overall decision support needs. Subsequently the zonal baseline spreadsheets, the Livelihood Impact Analysis Spreadsheets (LIAS) and the narrative baseline profiles were revised in the light of the new zonal map. This report offers an overview of the Household Economy Analysis methodology and a brief account of its history in the FSNAU, and then a summary analysis of the essential information from the baseline profiles taken together. This is followed by a series of livelihood profiles for each of the eighteen livelihood zones identified in Somalia.

The livelihood profiles offer an analysis of livelihoods and food security on a geographical basis. The profiles 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. In addition, 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.

The profiles are divided into a number of sections:

The **General Livelihood Zone Description** offers a general description of the climate, topography, natural resources and local livelihood patterns (livestock rearing, crop production, off-farm income generation etc.). The Markets section contains basic information on the marketing of local production and on any importation of staple food into the zone. There is a section on Conflict, which highlights the important effects that insecurity have had on livelihoods in Somalia. This is followed by a brief description of recent trends in food security over the past four years. The 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 two 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 income and expenditures** section 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. Cash income is presented in either absolute or relative terms, depending on when the baseline information was collected and stored. 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.

Next is a section on the Calendar of major sources of food and income for poor households, highlighting when the main types of food and cash are acquired during the year and how these relate to seasonal expenditure requirements.
The section on **Hazards, response and monitoring variables** provides information on the different types of hazard that affect the zone, differentiated by wealth group where this is appropriate; coping strategies available to different types of household in the zone, together with a judgement of the likely effectiveness of the strategies; and finally the table showing **Key Parameters for Monitoring** suggests the key indicators to monitor in each livelihood zone, based upon an understanding of local livelihood patterns. There is also a population table at the end of each profile that provides an estimate of that livelihood zone's population broken down by district.

INTRODUCTION TO THE HOUSEHOLD ECONOMY APPROACH

Household Economy Analysis (HEA) is a method for assessing the impact of hazards (or positive changes) on household livelihoods. It allows for an understanding and appreciation of elements which are crucial for a properly rounded view of food security, but which are often invisible in official statistics. In summary, HEA quantifies and qualitatively describes the total food and cash economy of households, covering all food sources, cash income sources, and expenditure patterns across all seasons in a full one-year period. All findings are disaggregated by wealth category ranging from the poorest to better off wealth groups. The HEA analytical framework has two main components:

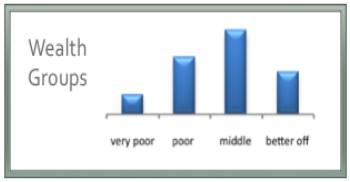
Baseline analysis – the analysis of how people get by year to year and the connections with other people and places that enable them to do so, and

Outcome analysis - the investigation of how that baseline access to food and income might change as a result of a specific hazard such as drought or as the result of a positive change, such as a program input or beneficial price policy.

The **baseline analysis** relates to a specific *reference year* (e.g. 2014-15). For agricultural livelihood zones the reference year usually starts with one harvest and ends 12 months later. For example, if crops are harvested in April, then the reference year might run from Apr'14-Mar'15. For pastoral livelihood zones the reference year usually starts with the main rainy season, when milk production is at its peak. Generally, but not always, the reference year will be a year that was neither especially good nor especially bad, but somewhere in the middle. The most important point about the reference year is not that it should be an average year, but that it should provide a good starting point for understanding how livelihoods will vary from one year to the next in relation to changes in factors such as crop production and market prices.

The **baseline** consists of three components, described below:

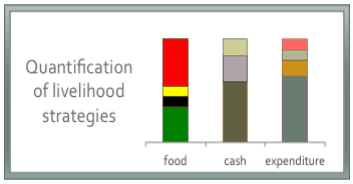
Livelihood Zone: A livelihood zone is an area within which people share broadly the same patterns of access to food (i.e. they grow the same crops, keep the same types of livestock, etc.). They also share broadly the same access to markets. Patterns of livelihood clearly vary from one area to another. 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. Livelihood zone information is gathered through regional or national workshops with a range of qualified key informants, alongside consultation with secondary literature and a library of maps.



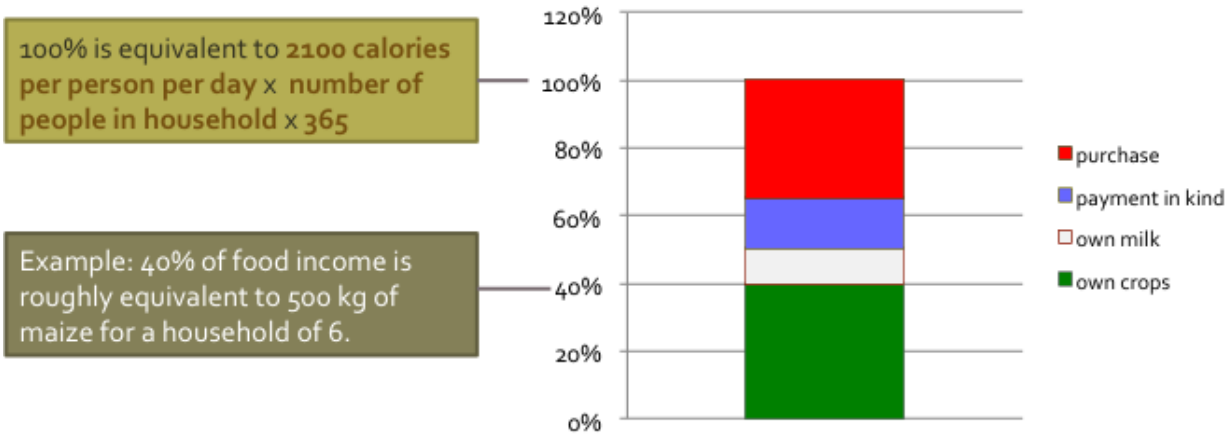
Wealth Breakdown: Where a household lives is one factor determining its options for obtaining food and generating income. Another factor is wealth, since this is the major influence on that household's ability to exploit the available options within a given zone. It is obvious, for example, that better off households owning larger farms will in general produce more crops and be more food secure than their poorer neighbors. 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, labor 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[1]. In HEA a household is defined as people eating from the same pot and also sharing the same resources. Wealth breakdown information is gathered through a systematic set of key informant interviews with village leaders, elders

[1] 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 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.

and community representatives. The wealth breakdown information can be found in each of the individual profiles as well as the Baseline Storage Spreadsheet (BSS).



Quantification of Food, Cash and Expenditure[2]: 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. A central aspect to HEA is that quantification takes place by converting all food and cash sources to a standard measure, represented in relation to minimum calorie requirements for a household for the year. The graph below illustrates this point. By converting to a common currency, we are able to compare food access across wealth groups, livelihood zones, and even countries. This information on household food, cash and expenditure is gathered through intensive semi-structured interviews with household representatives from each wealth group.



Outcome Analysis: The objective of Outcome Analysis 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 household response or coping strategies (i.e. the sources of food and income that people turn to when exposed to a hazard). Thus, **Outcome Analysis** consists of three steps designed to produce a rational and defensible statement about the predicted effects of a hazard or positive change on household livelihood strategies (i.e. their ability to obtain food and cash income, and to acquire the non-food items they need to live). These steps are:

1. Problem specification: the translation of a shock such as drought into economic consequences at household level (such as a percentage fall in crop production or increase in food prices compared with the baseline),

2. Coping analysis: the assessment of the capacity of households in different wealth groups to cope themselves with the hazard, and

3. Projected outcome: access to food and income at household level is predicted for a defined future period and compared to two critical thresholds – the *survival and livelihood protection thresholds* - to determine whether there is a gap or deficit.

[2] The wealth breakdown and quantification interviews are undertaken in at least eight villages per livelihood zone.

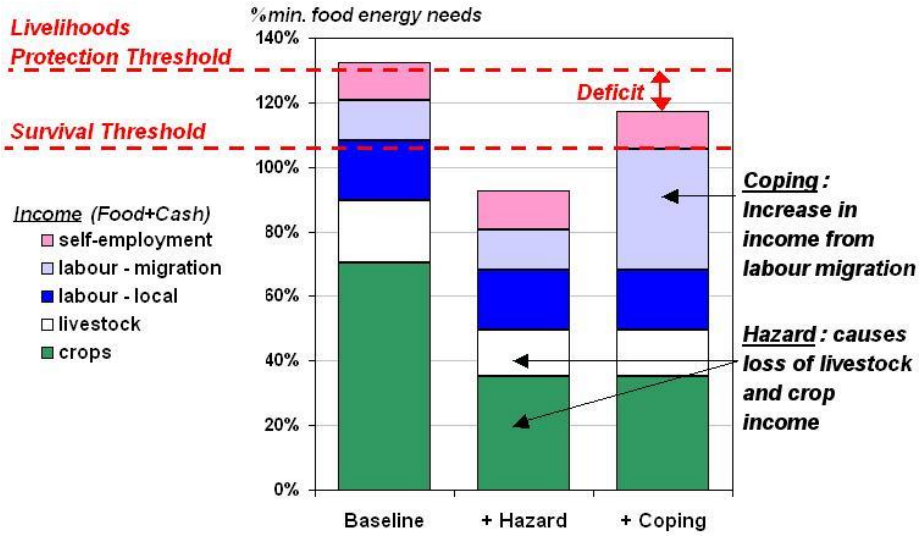
The process is illustrated in the box below[3].

An Example of the Outcome Analysis Process

First, the effects of the hazard on baseline sources of food and cash income are calculated[4] (middle bar in the chart).

Then the effect of any coping strategies is added (right-hand bar).

Finally, the result is compared against the two thresholds to determine the size of any deficit.



Note: *This graphic shows changes in total income, i.e. food and cash income added together and, in this case, expressed in food terms.*

In order to determine whether the total income after coping is sufficient to meet needs, it is necessary to define what those needs are. In HEA there are two thresholds that are used for this purpose. The first is the *Survival Threshold*. This represents the costs to cover minimum survival requirements, including minimum food (2100 calories per person per day), water (if purchased in the zone) and the means to prepare food. If people cannot meet the *Survival Threshold*, their lives are at risk. This threshold is fairly standard across livelihood zones with the exception of water, which is often not purchased but collected. The second threshold is the *Livelihoods Protection Threshold*, which includes the cost of both survival (as just discussed) as well as basic education, health, productive inputs and minimum household items purchased in an average year. This threshold will vary across livelihood zones and wealth groups because of differences in production costs (e.g. a wealthy pastoralist with 100 cattle will have very different input requirements than a poor household living in a cropping area.) The *Livelihoods Protection Threshold* is the standard threshold used to determine whether humanitarian assistance is required. If households cannot cover these costs an intervention to protect livelihoods (which is crucial for next year's survival) should be launched.

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 HEA 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 changes in *hazard*, not changes 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.

[3] A key feature of HEA Outcome Analysis is that it is not an analysis of behavior. Rather, it provides an estimate of what the deficit might be given certain conditions. This is especially important in relation to coping, and which coping strategies are included in the analysis. The most damaging negative strategies are always excluded from the analysis (e.g. excessive sale of livestock, mortgaging or sale of land). Including such strategies would have the effect of reducing the calculated deficit, effectively delaying any intervention until after that strategy has been fully utilized. Since we want to intervene before that stage is reached, we need to know what the deficit will be if these strategies are not used, i.e. if they are excluded from the analysis.

[4] Note that in the box *total income* has been expressed in food terms (i.e. cash income has been converted into the amount of staple food that can be purchased with the corresponding cash). It is also possible to express total income in cash terms, in which case food that is directly consumed (e.g. crop production, livestock production, food aid, etc.) has to be converted into its cash value.

A BRIEF HISTORY OF THE HOUSEHOLD ECONOMY APPROACH IN SOMALIA

FEWS NET - the Famine Early Warning Systems Network - was created in 1985 by the United States Agency for International Development (USAID) and the US Department of State after devastating famines in East and West Africa, and is a leading provider of information and analysis on food insecurity. The Food Security and Nutrition Analysis Unit for Somalia (FSNAU), a multi-donor project managed by the Food and Agriculture Organization of the United Nations (FAO), was initiated by the World Food Programme of the United nations (WFP) in 1994 as the Somalia Food Security Analysis Unit (FSAU), with USAID/OFDA funding and subsequently also funding from the European Commission and the Italian Government. The FSAU had a battery of elements right from its beginning in 1994, with technical officers responsible for sectors including: Livestock, Agriculture, Markets, Nutrition – and HEA. At the time HEA was 'the new kid on the block', notably being tried out by another program with a base in Nairobi: the Operation Lifeline Sudan (OLS) for southern Sudan under the auspices of WFP and UNICEF. Save The Children UK, who had developed the HEA methodology (then called Food Economy Analysis) seconded a technical officer to WFP to establish a seasonal assessment system based on the HEA approach. It was Save the Children who similarly seconded an HEA officer to the FSAU as it started up.

Up to the late 1990s the first map of livelihood zones was developed, but it was far from covering the whole country. Subsequently, into the 2000s, the first full national map was developed, and then successively revised. At one stage it showed over 60 livelihood zones and sub-zones, a testament to enthusiasm for the process but not a practical proposition for achieving and updating full baseline data for each area and for seasonal monitoring of each area separately. Subsequent revisions of the map both corrected anomalies and consolidated zones to reduce their number. By the mid-2000s there were 33 rural livelihood zones, still an unwieldy number. The latest revision, undertaken over 18 months from early 2013 onwards and validated at the end of 2014, established the current 18 rural livelihood zones. This was achieved by a careful process of considering which, usually contiguous, zones could be merged without significant loss of capacity to analyze the effects of shocks on the rural population: in particular, the baseline data were compared for similarities and variations. Even the limited riverine areas show a marked difference between the up-river areas where irrigation is by means of pumps, and the lower river areas where irrigation if largely gravity-fed.

The first handful of baseline surveys were undertaken in the mid-1990s, according to the areas zoned. Then from the end of the 1990s a major push was made to develop further baselines as the new, national map became available. The reference years for this data are therefore mainly from the 1990s. Further into the 2000s, especially from 2009 onwards, came the new zonal surveys with the full HEA format. Security problems have affected the achievement of these baselines from the start, but more during the last decade than in the 1990s. In addition, HEA baseline data preferably refers to a more or less 'normal' economic situation, so that the predicted result of deviations from the normal – i.e. shocks – can be seen more accurately against the baseline. But 'Normal' is not a condition easily found in parts of Somalia in recent decades in terms of the twin threats of insecurity and recurrent drought without sufficient intervening normal periods for recovery. In regard to the latter, some of the surveys were done with drought reference years because there had been four or more consecutive seasons of drought and it was not possible to go back to a 'normal' reference year and still obtain accurate, detailed recall by the informants in the field. As regards the security problems, the initial training of the field monitors by experienced expatriates, essential for the quality of the information, could be done in Hargeisa, and supervised fieldwork could be carried out in Somaliland and Puntland, and the skills learned by the teams could then be taken to southern Somalia, particularly in Hiran, Bay, Bakool and parts of Lower Shabelle.

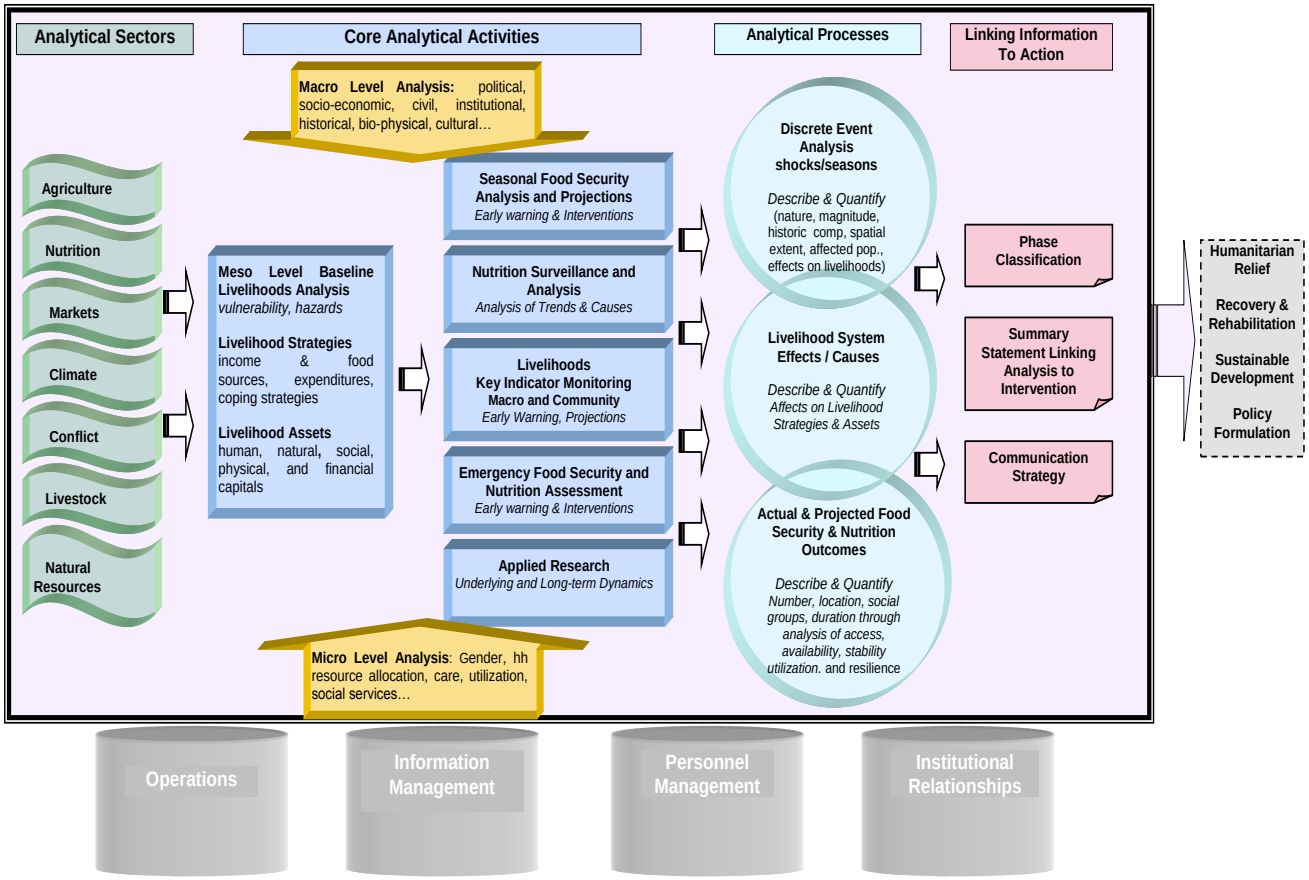
From the beginning, the FSAU looked to develop an integrated analytical framework to include all sectors, and its output of periodical bulletins etc. reflected that inclusiveness. However, integration of sectoral information is a great challenge for early warning systems, as it is for other purposes. By the end of the 1990s, HEA, with its transparent analytical framework, had established a position in the overall vulnerability analysis, summed up in a review of the then FSAU's overall approach to food security assessment:

> "The FSAU uses household economy approach (HEA) to identify how rural households make ends meet both under normal and stress conditions. It thus analyses the effects of external shocks, such as drought, crop failure or the livestock ban and to predict how households will respond by wealth group and season. As a result of this process, a contextual and dynamic picture is created adding significant value to

other food security indicators. The advantage of HEA is that it brings into sharp focus on food access rather than merely food availability, and underscores how risks and shocks have different potential impacts, depending on the socio-economic status of households and their ability to expand or extend existing food and income sources to meet food shortfalls."[5]

As a very practical and functional approach, HEA was designed to give useful answers to a limited number of questions; and however crucial these answers were, HEA could not embrace all aspects of the subject. The mid-term evaluation conducted in May 2002 included the recommendation to broaden food security analysis beyond HEA, especially in terms of links between the household and the macro economy, incorporating more quantitative data from other sources, and with more emphasis on pastoral/livestock analysis. In short, a further integration of all livelihoods aspects was looked for that would enhance the utility of HEA alongside the other elements. This, in turn, reflected the shift in the FSAU's approach when FAO took over the project from WFP in 2000, whereby medium- and longer-term economic and human development factors would become more central, while the early warning functions continued. In this context, it was, however, recognized that the 'story' of livelihoods – of how households operate – is of intrinsic value, potentially contributing to the understanding of the chronic issues that interest FSAU.

FSAU Food Security Analysis System



It is probably fair to say that the seal was put on the overall integration aspects during the six-week strategic development retreat held by the FSAU in June 2003, when the Food Security Analysis System (FSAS) was agreed upon as the operational basis.

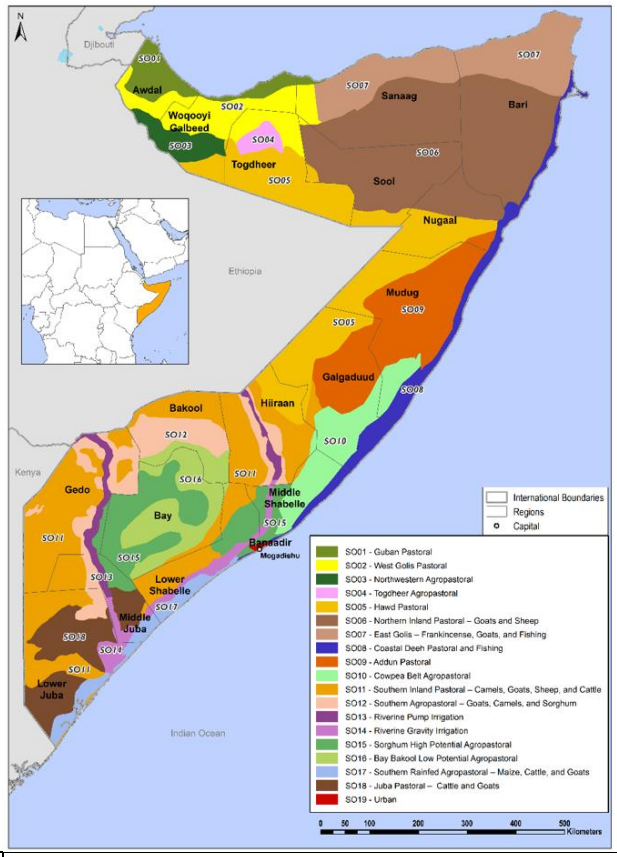
[5] *Final Report OSRO/SOM/306/EC Support to the Food Security Analysis Unit (FSAU) Phase IV*, FAO Emergency Operations and Rehabilitation Division (TCE) Somalia, 2006.

The flow-chart of this system is reproduced in the box above[6]. It will be seen that on the livelihoods side two baseline livelihood assessment approaches sit underneath the 'Meso Level Baseline Livelihoods Analysis' that presumably encapsulated the way in which vulnerability and hazard (perhaps more precisely current vulnerability *to* hazard) would be analyzed. 'Livelihood Assets' refers to the Sustainable Livelihoods Approach (SLA), which offers a comprehensive description of natural, financial etc. 'assets', but does not directly offer an analytical method, at least not to answer specific operational questions. That function is what HEA was developed for, here identified as 'Livelihood Strategies', offering a dynamic, quantified analytical framework modelled, as we have seen, on how households operate as economic units within a specified livelihood geography. The HEA system then follows through the monitored Key Livelihood Indicators to establish a quantified prediction of the near-term effects of shocks. This 'Outcome Analysis' process has been taken on as one tool by the FSNAU in recent years. In addition, most recently there has been an initial trial of an HEA-linked herd dynamics analysis process where rainfall evidence and monitoring information are looked at in a multi-season context, since failure of births in one season has repercussions on the herding economy in subsequent seasons. This is a work in progress.

[6] ibid

A NATIONAL ANALYSIS OF RURAL LIVELIHOODS IN SOMALIA

In Somalia there are four broad categories of rural livelihood: *Pastoralism*, where the rainfall and ecology can support only livestock herding; *Agropastoralism* in semi-arid areas where the rainfall does support cereals cultivation but where livestock herding is also a substantial, if not dominant, part of the livelihood; *Riverine Agriculture*, meaning the irrigated zones along the Shabelle and Juba rivers devoted to cereals agriculture and market gardening and fruit; and *Coastal*, where the fishing may combine with pastoralism, although today this is a limited activity with the potential to grow greatly. But within the vast pastoral area as well as within the extensive overall agropastoral area, there are many variations in ecology and trade that make a significant difference between livelihoods: after all, it would be surprising if we could consider as one and the same the area of the Guban Pastoral livelihood zone bordering with Djibouti and with its own rainfall pattern, and the area of Southern Inland Pastoral livelihood zone bordering with Kenya. Therefore, the general modes of livelihood have to be geographically divided into homogenous areas where the household economies have important enough differences in production and income to determine separate livelihood zones.



The current 18 rural livelihood zones are, roughly from north to south within each general mode:

Pastoral	**Agro-pastoral**
SO01: Guban Pastoral SO02: West Golis Pastoral SO07: East Golis Frankincense, Goats & Fishing SO06: Northern Inland Pastoral – Goats & Sheep SO05: Hawd Pastoral SO09: Addun Pastoral SO11: Southern Inland Pastoral – Camels, Goats, Sheep & Cattle SO18: Juba Pastoral – Cattle & Goats	SO03: Northwest Agropastoral SO04: Togdheer Agropastoral SO10: Cowpea Belt Agropastoral SO12: Southern Agropastoral – Goats, Camels, Sorghum SO16: Bay-Bakool Low Potential Agropastoral SO15: Sorghum High Potential Agropastoral SO17: Southern Rainfed – Maize, Cattle and Goats
Riverine Agricultural	**Coastal**
SO13: Riverine Pump Irrigation SO14: Riverine Gravity Irrigation	SO08: Coastal Deeh Pastoral and Fishing

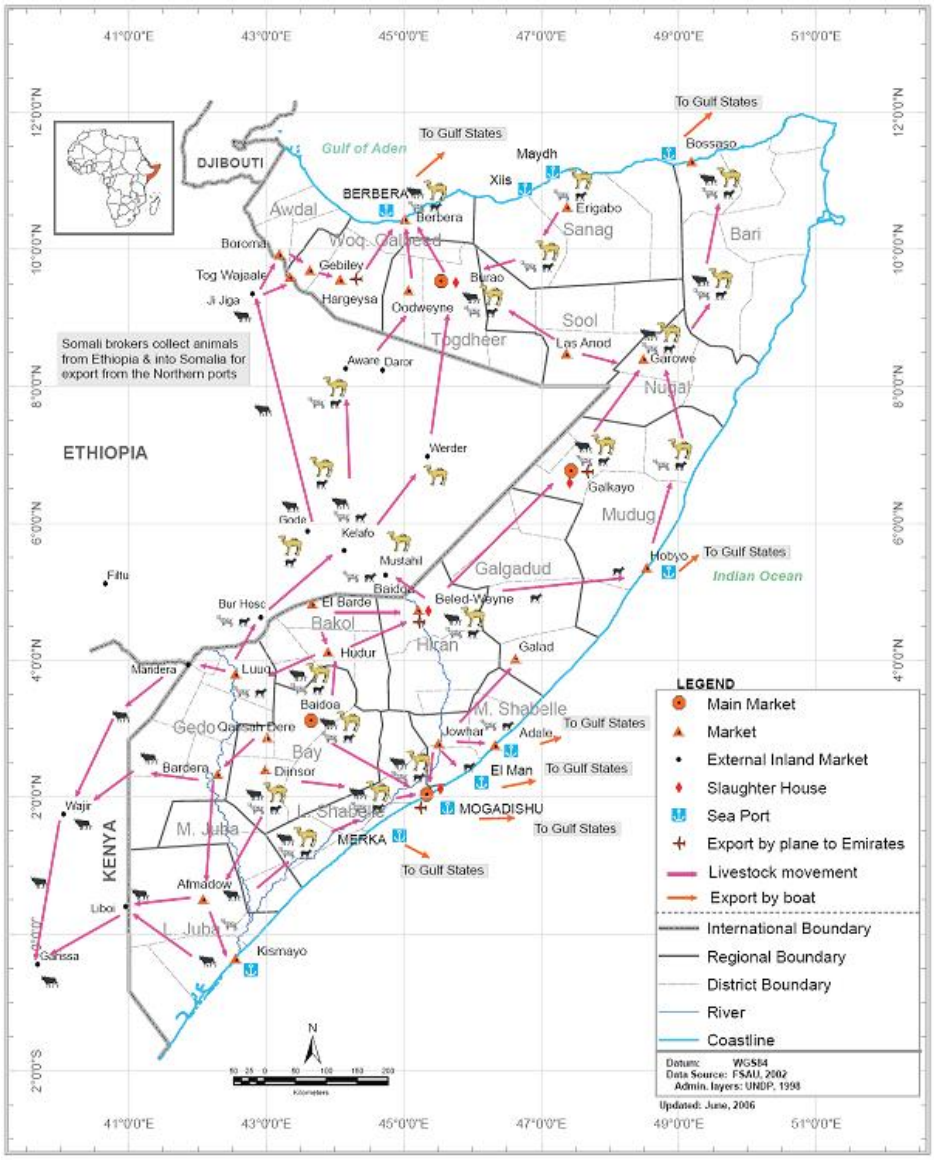
Markets

Livestock are by far Somalia's biggest product, and they are also by far the country's biggest visible export. Indeed, as **Figure 1** shows, the function of the internal livestock market is very much geared towards this export, and the direction is overwhelmingly to the Gulf States, especially Saudi Arabia, where animals are exported in their millions from the general Horn region – reputedly the largest live export in the world. The northern Somali part of this trade is reportedly worth about US$200 million annually.[7] There is also cross-border trade with Kenya, where it was estimated in the early 2000s that some 16% of beef consumed in Nairobi was of Somalian origin. The biggest livestock market in the country is at Burao in the

[7] *Livestock Trade in the Djibouti, Somali and Ethiopian Borderlands.* Nisar Majid, Chatham House Briefing Paper, September 2010 (UK)

north. This is the collection market for most of the pastoral livelihood zones of Somaliland as well as great numbers of livestock from across the border in Ethiopia's Somali Region. From Burao the highway leads straight to Berbera, Somaliland's main port, from where animals are shipped to Gulf State ports; Berbera is closest to the Yemeni ports across the Gulf of Aden from where many animals also transit into Saudi Arabia through the 'back door'. Bossasso is the second most important port for exporting animals from the north-eastern and north-central Somalia, while the other ports down the coast as far as Merka serve a more limited hinterland, and from these the ships or dhows have a far longer passage in the Indian Ocean before reaching the Gulf of Aden.

Figure 1: Somalia's main livestock markets and livestock trade flows



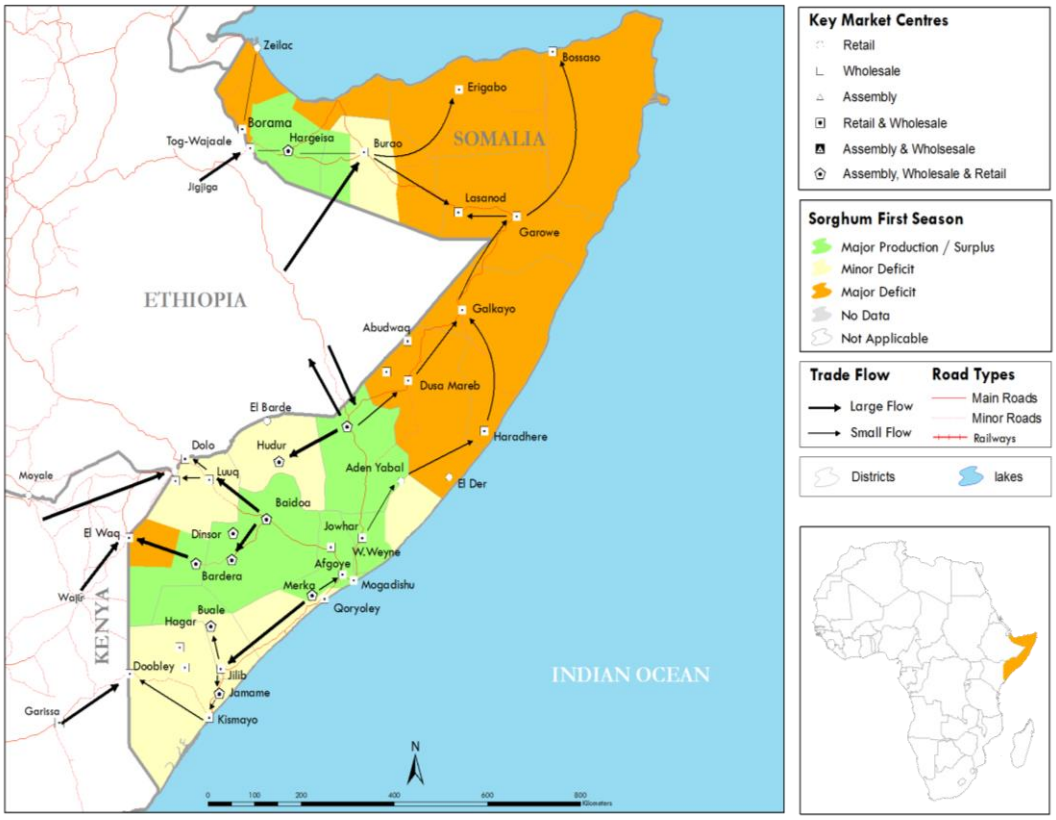
The shipping of livestock across the Gulf takes place for roughly six months of the year up to the monsoon season whose winds and storms make the shipping too dangerous. An intermittent but great barrier to the trade has been the periodic export bans imposed on livestock from the Horn region by Gulf States due to worries about the vaccination status of the livestock, the spread Rift Valley Fever being a particular fear. The ban imposed by Saudi Arabia in 2000 on Berbera exports meant that Bossasso took over much of the trade; after the lifting of the ban in 2009 Berbera regained its premier status.

There is also an important internal market for milk and ghee, and this gives agropastoralists in particular substantial income – indeed in four out of the seven agropastoral zones, in the reference years both the Middle and the Poor groups of households typically obtained more cash from dairy sales than from animal sales. They have the advantage over pastoral people of being in somewhat more limited geographical areas and nearer to towns whose populations are regular customers for dairy.

Nevertheless, the great majority of Somalis, whether rural or urban, have a diet composed more of cereals, sugar and oil than of animal products, however important these latter are for the quality and enjoyment of the diet. While six of the country's 18 Regions (Gedo, Hiran, Bay, Lower Shabelle, Middle Shabelle, Middle Juba), as well as possibly Waqooyi Galbeed in the north, may be self-sufficient in sorghum or maize in years of satisfactory rainfall and river-levels for irrigated production by the wealthier households, it is likely that Somalia usually needs to import more than half of its basic food,

especially rice, wheat flour and sugar from the world market and sorghum and maize from Kenya and Ethiopia. The import requirement changes from year to year: a rare bumper production year in southern Somalia may provide half the country's requirement of cereals, but in the all-too-frequent years of rain failure the coverage may go down to perhaps around one-fifth. For most of the zones, therefore, the chief role of the market in non-animal foods is to distribute it around the country from the main production areas and even more from the seaports and from the immediate collection points at which imports by road from Ethiopia first arrive.

Figure 2: General picture of cereal production areas and cereal market flows: first season sorghum in 2008



Source: FEWS NET, USAID

A rural population so dependent on basic food coming into their various zones is very vulnerable to market disruption caused by conflict, and also to severe global price hikes in commodities coming in from the world market, a phenomenon seen in the second half of the last decade and affecting particularly the northern regions. Civil insecurity has been more acute in the south than in the north of the country, and an idea of how it has affected markets may be got from the following passage from the new profile for the *Juba Riverine Pump Irrigation Zone*:

> This livelihood zone has relatively high number of major urban centers which serve as market hubs for farm produce and labor. However, market access has been highly disrupted over the years by conflict affecting cities, roads and country-side. For example, from 2011-2012, there was a major offensive by the Transitional Federal Government and AMISOM troops to force Al-Shabaab militants from key bases in south-central Somalia, including from Mogadishu, Baidoa, and Baardheere. To some extent, this offensive was successful but regular incidents of Al-Shabaab activity still occur in the zone. Since 1991, and due to the drawn-out civil war, trade routes for farm produce from the Juba Valley shifted towards to Kenya. Today, with more political stability, trade is flowing again from rural areas to major southern coastal ports (namely Mogadishu and Kismayo). Moreover, regional cities and district centers – such as Baidoa (Bay Region); Belet Weyne and Buloburte (Hiraan Region); Baardheere, Dolow and Luuq (Gedo Region); and Buale and Saakow (Middle Juba Region) – are also important destination markets for the zone's products. The cross-border trade with Ethiopia and Kenya is a further dynamic in this zone. Belet Weyne is a good example of a city that saw much conflict (and hence restricted trade) for a couple of decades. However, since the 2012 mayoral elections, Belet Weyne has become an important market center due in part to its

location on transport routes from Ethiopia to Mogadishu, as well as to Baidoa (in the south-central Bay region) and also to cities in northern Somalia/Puntland.

Reference years and data validity

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 lean season[8]. In pastoral zones, the reference year starts when milk production starts to peak, typically at the start of the main rainy season. In areas where a crop harvest was important, it is the main harvest that defines the start of the reference year. The reference year in most pastoral and agropastoral zones started in the month of April, therefore ending in the month of March (12 months later). The reference year in agricultural zones started in July and ended in June.

Table 1. Reference years for baseline data by livelihood zone

Code	Livelihood zone	1996/97	1997/98	1998/99	1999/00	00	01	02	03	04	05	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
SO01	Guban Pastoral																		Jan-Dec	
SO02	West Golis Pastoral zone																		Apr-Mar	
SO05	Hawd Pastoral														Apr-Mar					
SO06	Norther Inland Pastoral - Goats & Sheep/Camel														Oct-Sep					
SO07	East Golis Frankincese, Goats/Fisheries																Oct-Sep			
SO08	Coastal Deeh Pastoral & Fishing																			Apr-Mar
SO09	Addun Pastoral														Oct-Sep					
SO11	Southern Inland Pastoral - Camels, Goat & Sheep, Cattle											Apr-Mar								
SO18	Jubba Pastoral			Apr-Mar																
SO03	Northwest Agropastoral															Apr-Mar				
SO04	Togdher Agropastoral														Apr-Mar					
SO10	Cowpea Agropastoral - Cowpea Belt	Apr-Mar																		
SO12	Souther Agropastoral - Goat, Camel & Sorghum											Apr-Mar								
SO15	Sorghum High Potential Agropastoral											Apr-Mar								
SO16	Bay Bakool Low Potential Agropastoral											Apr-Mar								
SO17	Southern Rainfed - Maize, Cattle & Goats			Jul-Jun																
SO13	Riverine Pump Irrigation	Jul-Jun																		
SO14	Riverine Gravity Irrigation				Jul-Jun															

Source: FEWS NET/FSNAU

A number of the baseline profiles for Somalia included in this report are very old, dating from as early as 1996. Obvious access problems have blocked opportunities to update the profiles, especially in the areas of the country that are controlled by Al Shabaab. As a general rule of thumb, baseline profiles and data storage spreadsheets have a validity of five years, if no important political or economic changes have taken place in the livelihood zone, which would have had a significant impact on household economy. Many of the Somali livelihood zone profiles are in need of an update, when the situation on the ground makes it possible, and especially those performed before 2010 (see **Table 1**).

Population by livelihood zone

The table below summarizes the population numbers in each livelihood zone. The information has been calculated using the latest available population figures from UNFPA and including rural population only.

Table 2. Estimated population per livelihood zone

Livelihood Zone	Livelihood system	UNFPA non-urban population
SO01 Guban Pastoral	Pastoral	205,202
SO02 West Golis Pastoral	Pastoral	335,989
SO03 Northwest Agropastoral	Agropastoral	191,784
SO04 Togdheer Agropastoral	Agropastoral	17,052
SO05 Hawd Pastoral	Pastoral	584,279
SO06 Northern Inland Pastoral	Pastoral	580,583
SO07 East Golis Frankincense/Fishing	Pastoral	255,750
SO08 Coastal Deeh Pastoral/Fishing	Pastoral/Fishing	169,785
SO09 Addun Pastoral	Pastoral	250,509
SO10 Cowpea Agropastoral	Agropastoral	141,129
SO11 Southern Inland Pastoral	Pastoral	546,340
SO12 Southern Agropastoral	Agropastoral	389,061
SO13 Riverine Gravity Irrigation	Riverine/agricultural	755,499
SO14 Riverine Pump Irrigation	Riverine/agricultural	114,997
SO15 Sorghum High Potential Agropastoral	Agropastoral	811,759
SO16 Bay/Bakool Low Potential Agropastoral	Agropastoral	343, 541
SO17 Southern Rainfed Maize	Agropastoral	200,290
SO18 Jubba Pastoral	Pastoral	100,211
Total population (2014)		**5,993,750**

Source: UNFPA, FSNAU

Seasonality

Four main seasons characterize the seasonal weather patterns in Somalia: two rainy seasons and two dry seasons. The seasons are largely determined by shifts in wind patterns from the Indian Ocean (a southerly air stream) and from Asia and Arabia (north-easterly winds). The heaviest rains fall during the *gu* season (April to June) with lighter and more sporadic rains falling during the *deyr* season (October to December). Rainfall levels during these two seasons determine water and pasture availability for livestock and, as a result, animal body condition (and value), reproductive rates and milk availability. They also determine crop development and harvest levels. The *gu* rains are characterized by the southwest monsoons, which rejuvenate the pasturelands, especially the central plateau, and briefly transform the desert into a green mantle. The dry seasons are characterized by one shorter, cooler season, called the *hagaa* (July to September) and a long, hot dry season, called the *jilaal* (January to March), which is the harshest season of the year. During the dry seasons, livestock migrate to areas where better water and pasture are still available. Off-season agricultural harvests continue during the dry season in areas with irrigation infrastructure. In these areas, grasses are grown for fodder – an additional source of off-season income for better-off households, especially in the southern regions.

In addition to these four main seasons, particular weather systems occur in certain parts of the country. The northwest receives *karan* rains between July and August, which allow agropastoralists to pursue a *karan* harvest. The Guban coastal strip receives *xays* rains (i.e. sea mist and dew) during the colder months of December and January, attracting pastoralists from the northern areas to the coast as pastures improve. Along the north coast, sea breezes can pick up during June to August causing strong southwesterly winds, locally known as *kharif*. Throughout the country, on average, most regions receive less than 500 mm of rain annually. Much of northern Somalia receives as little as 50-150 mm, although certain mountainous areas and coastal sites receive more. Generally, rainfall takes the form of showers or localized torrential rains (which can lead to flooding) and is extremely variable.

Due to Somalia's proximity to the Equator, there is not much seasonal variation in temperatures. Hot conditions prevail year-round. The greatest range in temperatures occurs in the northern regions where temperatures can reach 45^0C along the Guban coastal strip during the month of July (the *hagaa* season is the hottest season in this region), but can drop below freezing point in December up in the Golis Mountains.

Pastoral and agricultural life revolves around the seasons; these determine the livelihood calendars for most of the livelihood zones. Pastoral communities migrate in and out of their home pasturelands with the seasons and enjoy better livestock health and milk availability during the rainy seasons. Agropastoral households also migrate out of their zones in search for pasture during the dry seasons but must return at the sight of the first rains to prepare the land and sow rain fed crops. Purely agricultural zones (fewer in number) follow the timing of the rainy seasons in the rain fed cropping areas. The irrigated areas, by comparison, are influenced by three factors: the outcome of the local rainy season, the river water levels and the extent of the irrigation infrastructure. Irrigated crops can be severely affected by high river water levels and canals that get blocked by silt. By and large, in both rain fed and irrigated areas, land preparation takes place in the months prior to the rains. The off-season *gu* harvest is in September and the off-season *deyr* harvest falls in March.

There are a small number of alternative economic activities, outside of agriculture and livestock rearing, which follow slightly different calendars. In the northeastern Golis Mountains, Frankincense tapping and harvest takes place almost year around (10 months on average), with demand peaking in August. In the fishing livelihood zone there are two seasonal peaks during the year as local fish stocks rise and fall with seasonal fish migration patterns and seasonal tides. November-December (the end of the southwest monsoon) is a period of high fish stocks. The second seasonal peak is April-May. During the dry seasons fishing declines to very low levels and can even stop all together.

The lean seasons[9] are periods when household economy is at its lowest, food stocks are dwindling and the opportunities to increase cash revenues are few. In pastoral zones the lean season falls at the end of the long *jilaal* season (February-March), as animals and household alike await the start of the *gu* rains. Animal condition is poor, camel milk availability is low and goat milk is no longer available. In agropastoral and agricultural zones the main lean season falls during the second half of the *gu* season (May-June) as households await the start of the rain-fed cereal harvests. It is also during these months that staple food prices increase at the same time as household income is low, resulting in a higher dependence on loans. There can be a secondary lean season at the end of the *deyr* season (December), before the start of the *deyr* harvest.

Wealth breakdown and asset information

HEA baseline information is gathered and stored according to **wealth group**. Wealth is a critical factor in determining how households obtain their food and cash income. It is also one of the two most important ways that HEA data is disaggregated (the other being by livelihood zone). For ease of presentation and interpretation, the zones have been grouped into three clusters: the pastoral zones, the agropastoral and the agricultural (riverine) zones. This allows for comparison of like-to-like and points up differences in patterns within each of these clusters.

In the pastoral zones, wealth is determined by the type and number of livestock owned - although livestock are also an important part of the household economy in other types of livelihood zones. Camels are particularly valuable assets in the pastoral and agropastoral livelihood zones. They provide milk throughout the year and fetch a much higher sale price than other livestock, even if they are not the most traded species. They can also be used as pack animals. Camels are reared in all pastoral livelihood zones, except *SO18 Southern Cattle Pastoral* zone. Poor households always own the smallest camel herds and in some zones poor households do not own any camels at all. On average, better-off households own between 2 and 3 times more camels than middle households. This is true for both pastoral and agropastoral zones.

Cattle rearing is less popular in pastoral zones (only two zones typically include cattle among the livestock reared), but they are common in all agropastoral zones and even some parts of agricultural zones. All wealth groups typically own cattle, but herd sizes increase considerably with wealth. Cows provide more milk than goats and also hold value better when it is not

[9] The *lean season* is the time of year when a household's access to food and/or cash income is typically most constrained. During this period, households tend to be at greater risk of food insecurity, and reliance on coping strategies is typically higher than at other times of year. The *lean season* may begin earlier or later than normal if access constraints are abnormal.

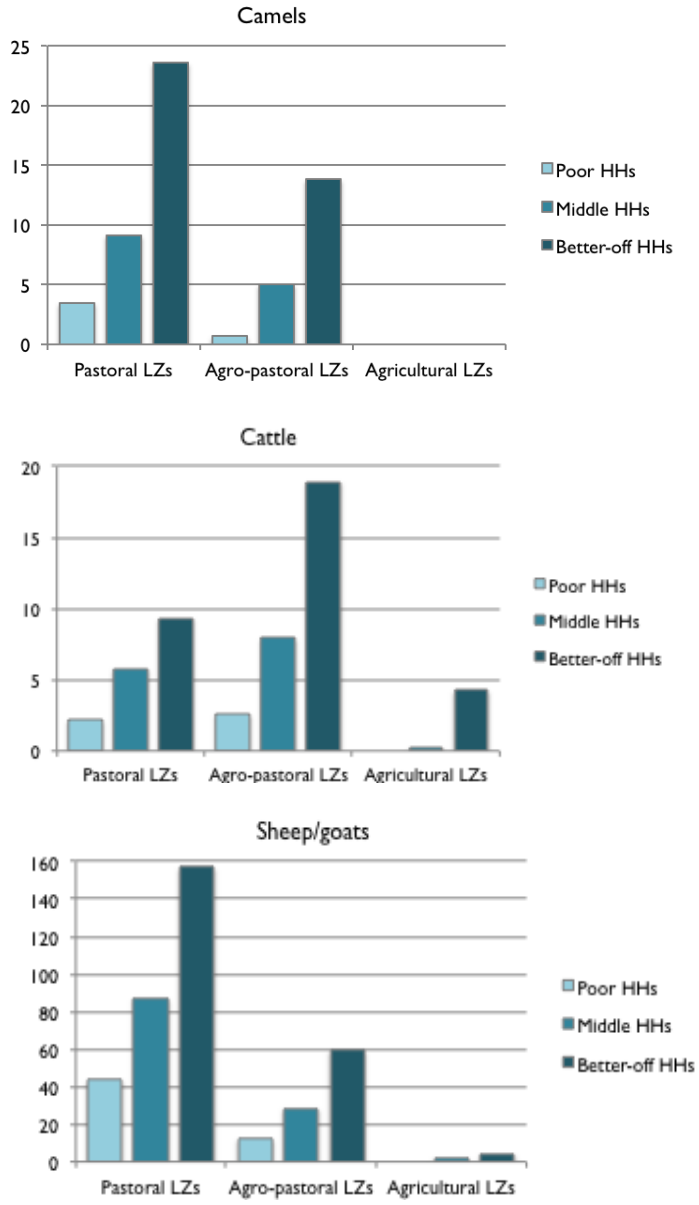
possible to own a camel. Cattle are less resilient to the harsher conditions of pastoral zones, but they can be fed with crop residues as well as pasture in agropastoral and agricultural livelihood zones, making them more suited to these zones.

Goats and sheep combined make up the largest herd sizes, averaging just over 150 animals per herd for better-off households in pastoral areas and around 60 animals per herd for households in the same wealth group in agropastoral livelihood zones. On average, small stock herd sizes are three times larger in pastoral zones than in agropastoral ones. Normally goats are the dominant species as they are hardier animals. They are the main type of livestock kept in pastoral zones and the most traded species, especially with regards to export trade. In agricultural zones, sheep and goats are kept for meat (especially for the annual Islamic celebrations) and as an extra source of income in times of need. In certain areas, small livestock are also milked.

In the agropastoral and agricultural zones, wealth is determined both by the amount of land cultivated, the types of crops cultivated and the type and number of livestock owned. Overall, most agropastoral zones are more dependent on agriculture than on livestock. The average area of land cultivated per household by wealth group and livelihood zone cluster is shown in , over-leaf.

All wealth groups cultivate some land. The smallest land sizes are 0.6 hectares - among the poor households in the *SO17 Southern Rainfed - Maize, Cattle and Goats* livelihood zone. Poor households in agropastoral zones cultivate between 1.5 and 2 hectares, but their counterparts in agricultural zones cultivate much smaller areas. Middle households can double the land size cultivated by the poor, but it is better-off households who maximize agricultural production best, especially in purely agricultural zones. Better-off households are able to cultivate larger areas thanks to the use of hired labor, larger quantities of inputs and animal and/or mechanized traction.

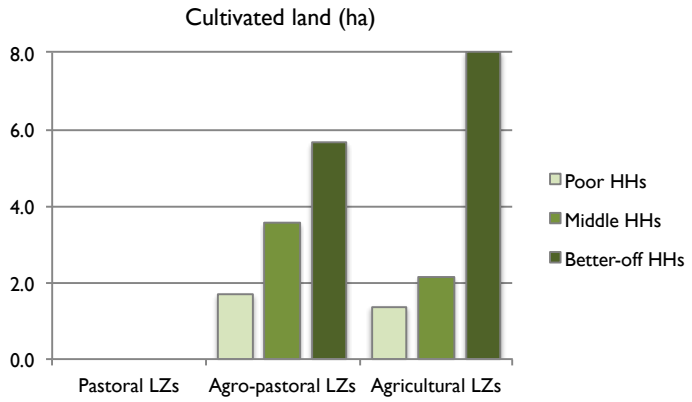
Figure 3: Average livestock holdings per household



Source: FSNAU/FEWS NET

Overall, the size of cultivated land does not vary greatly between agropastoral and agricultural areas. However, there is a distinct difference: in agricultural (riverine) livelihood zones, arable land is concentrated in the hands of the better-off and both poor and middle-income households, on average, own less land than their agropastoral counterparts. Households in agricultural zones cultivate more intensely with the use of irrigation systems, while agropastoralists cultivate more extensively. Both rain fed and irrigated crops are grown in both types of zones in different quantities. Agropastoral populations tend to concentrate on growing staple cereals (sorghum and/or maize and cowpea). In these livelihood zones, the balance between the importance of herding and of crop cultivation to livelihoods shifts one way or the other depending on how a season's rainfall affects grazing and crop conditions respectively. The riverine agricultural zones cultivate larger amounts of cash crops, as well as cereals, such as sesame and tobacco, and fruit and vegetable cash crops, such as onions, pumpkins, mangoes, tomatoes, watermelons, bananas or coconuts. In certain years, when pastoralists are facing significant pasture shortages, farmers in agricultural areas sell fodder crops (at high prices) in response to a predicted high demand for

Figure 4: Average size for cultivated land per household



Source: FSNAU/FEWS NET

fodder. Better-off farmers who own large farms allocate part of their land to irrigated fodder production. Poor rainfall years also lead farmers to sell grain stalks for fodder before the grains have ripened if they predict poor harvest outcomes.

Other important household productive assets include fields of frankincense trees (owned and/or rented by households) which are a critical determinant of wealth in the *SO07 East Golis Frankincense and Fishing zone*, and fishing equipment (lobster nets and traps, fishing lines and fishing vessels) in the *SO08 Coastal Deeh Pastoral and Fishing zone*. Additionally, oxen and oxen carts and donkeys are part of household asset holdings in some zones. These assets normally complement the productive assets described above, land and livestock, which are the primary determinants of wealth.

Household size is both an indicator of wealth group, with better off households having more members on average; and a contributing factor to wealth since it is necessary to have a bigger labor pool to help manage larger herds. On average, poor households have around 6 members; middle households have around 8; and better off households have around 9 members. Better off and some middle households also have more than one wife and a higher number of dependents from close relatives.

The percentage of households and the percentage of the population falling into each wealth group (average by livelihood zone cluster) are shown in **Table 3**. Since better off households have multiple wives and somewhat larger household sizes, the percent of the *population* (as opposed to the percent of *households*) falling into the upper wealth groups is larger than the percent of households in these wealth groups (in rows 2 and 3). The information in this table has been calculated based on the data collected in the field, which attributes a percentage of households to each wealth group. The second set of information, the percent of population in each wealth group, is calculated using the average household size for each wealth group to determine the weight of each wealth group in terms of people not households.

Figure 5: Average household size per household

Source: FSNAU/FEWS NET

Table 3: Household and population distribution by zone

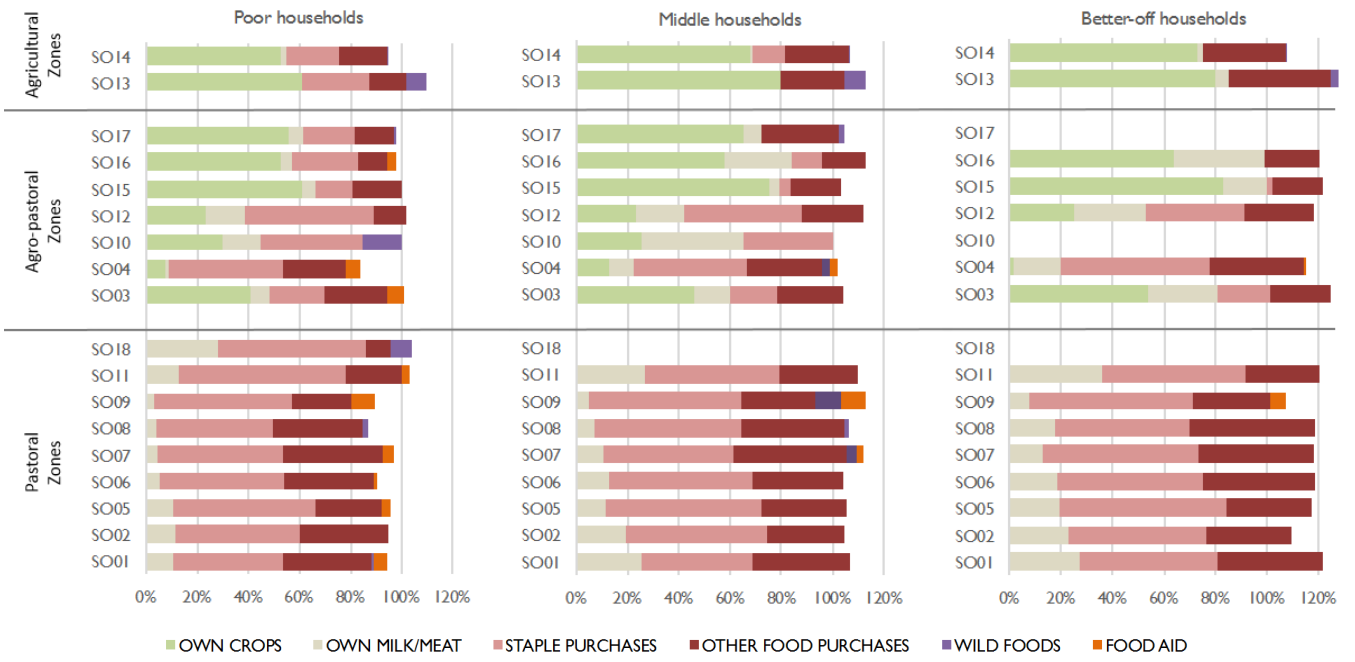
% of HHs	Pastoral LZs	Agropastoral LZs	Agricultural LZs
POOR	32%	31%	31%
MIDDLE	50%	51%	53%
BETTER-OFF	18%	18%	16%
% of population			
POOR	26%	27%	27%
MIDDLE	51%	52%	51%
BETTER-OFF	23%	21%	22%

Source: FSNAU/ FEWS NET

Sources of food

Understanding how people obtain their food is essential for determining what will limit - or potentially expand - this access. A fundamental component of the HEA baseline, therefore, is a detailed set of information on the **sources of food** for each wealth group in each livelihood zone. The synthesis of this information is shown below in **Figure 6**.

Figure 6: Sources of food



Source: FSNAU/FEWS NET

The graphs present the energy provided by each source of food throughout the year, as a percentage of the minimum energy requirements for a household, based on the international benchmark of 2100 kcal per person per day. Once again, for ease of presentation and interpretation, the zones have been grouped into three clusters: the pastoral zones, the agropastoral and the agricultural zone.

In pastoral zones, households are highly dependent on markets, where they purchase cereals (sorghum, rice, and wheat flour), oil and sugar – the basics of the pastoral diets. Camel milk, and to a lesser extent, goat milk and the meat of slaughtered animals, complements their diet, especially during the wet seasons when milk availability peaks. Poor households have less access to milk than the other two wealth groups, as their herd sizes are smaller and include less lactating camels. Some do, however, receive gifts of milk from wealthier neighbors and received food aid (cereals, oil and pulses) in their respective reference years in the majority of livelihood zones.

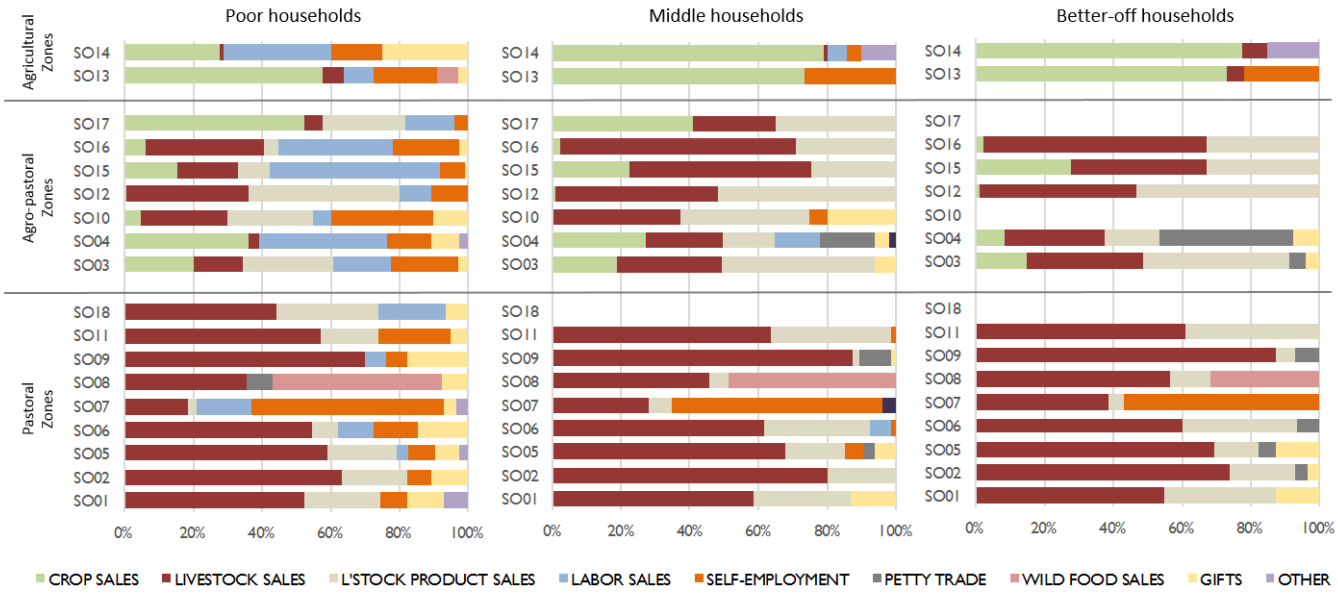
The proportion of agricultural produce reserved for household consumption is relatively high in agropastoral zones; it covers an average of 40-45% of annual food needs across the three wealth groups. Between 7 and 13% of the annual food needs of poor and middle households are covered by milk and meat from the households' own herds, more if the herds include higher numbers of camels, for example, in zone *SO10 Cowpea Agropastoral - cowpea belt.* Better-off households own larger herd sizes than their counterparts and therefore enjoy the largest percentage of "own milk and meat" (on average 25% of annual food needs). The rest of households' food needs (45-50%) are covered by market purchases. Poor households prioritize the purchase of staple foods (cereals) over non-staple foods, but the trend is reserved at the other end of the wealth scale.

Households in agricultural areas are virtually self-sufficient in staple foods, except poor households whose land sizes are smaller (many of them are also agricultural laborers) and are obliged to purchase a large portion of their yearly cereal consumption. Milk and meat from households' own herds are negligible but shows a little clearer for better-off households in the figure above. The data category "other" in zone *SO13 Riverine Pump Irrigation* refers to fish caught during peak and low river flow, as well as wild meat and wild greens. The consumption of fish is also common in zone *SO08 Coastal Deeh Pastoral/Fishing* (yet here fish is more important as a source of income) and in some areas of zone *SO07 East Golis Frankincense/Fishing,* however it is not typical in the remainder of the livelihood zones.

Sources of cash income

Food is only part of the story; there are a range of essential goods and services that require cash to cover, and it is important to understand how households generate this cash so that we can understand, both, what will potentially undermine the access to cash in each livelihood zone, as well as how we might strengthen these cash flows. The graphics below in **Figure 7** compare the **sources of cash income** in the reference year for households in all three wealth groups by livelihood zone cluster. The information is presented in relative terms, that is, the figures show the weight of each source of income in the annual household budget.

Figure 7: Sources of cash



Source: FSNAU/FEWS NET

In pastoral zones, livestock sales provide almost half of annual household income (around 50% for poor households but closer to 60% for middle and better-off households). Usually export quality animals outnumber animals sold to local consumers. In terms of numbers, goats and sheep are the most traded animals, as their more tender meat is preferred for consumption. Islamic celebrations (*Hajj* and *Eid*) provoke a surge in demand from local urban consumers and especially from Gulf country markets. Livestock products, especially camel milk but also hides and ghee, provide an important secondary source of income for pastoral households. Poor pastoral households have diversified their income sources the most, and include charcoal and firewood sales (labeled "self-employment"), labor sales and gifts in their portfolios of income sources. Middle and better-off households also receive gifts, mostly in the form of remittances from family members in urban areas or from the Somali Diaspora.

The economy of most agropastoral areas is dominated by the pastoral element: livestock sales and milk sales. Once again, poor households have the most diversified sources of income, as neither their livestock holdings nor their agricultural land

are large enough to sustain the family for a whole year. Labor provides an average of 25% of their annual income; most of it is agricultural labor for wealthier local households. The patterns of income for middle and better-off households resident in the same livelihood are relatively similar. In some zones the importance of agriculture increases for the better-off, in others it is the relative importance of livestock that increases with wealth. These shifts mainly depend on the outcome of the rainy seasons for the different reference years, which affect the balance between the two main livelihood options.

Households living in riverine agricultural areas gain the majority of their income from the sale of food crops, cash crops and, sometimes, fodder. In livelihood zone *SO13 Riverine Pump Irrigation* poor households managed to generate 58% of their annual income from crop sales, while the same wealth group in neighboring zone *SO14 Riverine Gravity Irrigation* only generated around 30% of their annual income from the sale of crops, making up the difference with income from the sale of agricultural labor. The relative weight of crops sales to annual income is more constant among the middle and better-off wealth groups, who rely on these for 75% of their income.

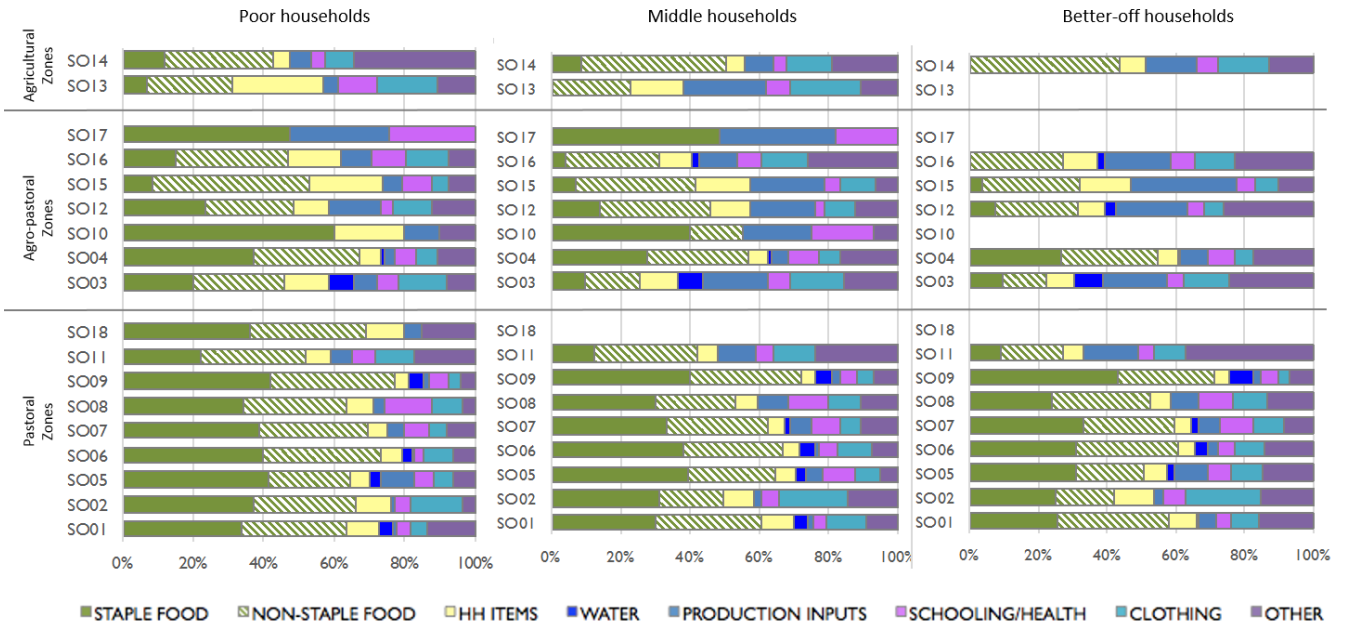
Income derived from the sale of fish (labeled "wild food sales" in figure 10) is very important in zone SO08 *Coastal Deeh Pastoral/Fishing*, in parts of zone *SO07 East Golis Frankincense/Fishing* and among the poor households in zone *SO13 Riverine Pump Irrigation.*

Expenditure patterns

Figure 8 presents expenditure patterns for the reference year by livelihood zone cluster and wealth group. While absolute expenditure increases with wealth in line with total cash income, the expenditure breakdown by percent in this graph shows the relative amount of income spent on different categories as an average across the wealth group and for the livelihood zone cluster.

There are a number of points to make about the information presented below. First is the decline in relative expenditure on staple food as you move up the wealth spectrum. The reduced need to purchase food is related directly to the amount of milk and/or crops generated by the household on its own. Overall, middle income and better-off household produce more of their own food than poorer households, leaving them with less of a requirement to buy staple foods. This is especially noticeable in agropastoral and agricultural zones.

Figure 8: Expenditure Patterns



Source: FSNAU/FEWS NET

Expenditure on staple and non-staple foods combined is highest in pastoralist communities, where all staple grains need to be purchased. Food purchases represent close to 60% of annual budgets for all households, with small variations between the poor and the better-off. The diet in these livelihood zones is very limited and consists primarily of purchased cereal (sorghum, rice or wheat flour), sugar, oil and tea, complemented with milk and meat from the households' own production.

All households spend a sizeable proportion of their cash income on household items (shaded yellow), such as tea, salt, soap, utensils, jerry cans and kerosene. Water is presented as a separate expenditure item to household items. It is purchased in the majority of pastoral zones and in some agropastoral zones. The quantity and frequency of purchases varies in line with the outcome of the rains in each reference year. Poor households are more likely to have to spend money on water than better off households, who have better water catchment and preservation systems in place.

The relative proportion of annual cash spent on agricultural and livestock inputs ("production inputs"), including seeds, tools, labor hire, livestock drugs, salt for animals, plowing, etc. is greater in agropastoral and agricultural zones. It also increases in line with wealth within these livelihood zones. In these zones, in addition to paying for all the costs associated with keeping livestock, households need to put money into agricultural production, which can include things like tractor hire, oxen rental and labor hire – all things that take a sizeable proportion of the annual budget.

Hazards

Somalia is a very vulnerable country, both in relation to natural disasters and from a political perspective. While not all hazards affect all livelihood zones, it has been the case that natural hazards have had worse household level consequences exacerbated by the political conflict and civil instability.

The main hazards affecting rural Somali households are outlined below, in no specific order of importance or frequency:

Drought and **water shortages** are two of the most common hazards in Somalia. Droughts cause a cascade of negative effects. In pastoral and agropastoral zones, the knock-on effects of drought include poor range conditions, weakened animals, reduced milk production, low prices for livestock and high terms of trade. Thus, declining livestock production and high food prices during droughts both create conditions of widespread food shortage. In agricultural and agropastoral areas inadequate rainfall causes reductions in crop yields, which lowers demand for agricultural labor and decreases the amount available not just for local consumption, but also for gifts (zakat). An increase in staple food prices accompanies most droughts, especially in areas where market integration tends to be poor.

Moreover, La Niña drought years and wetter-than-usual El Niño years across the East-African region are happening every 3 to 7 years. Tropical storms, such as Tropical Cyclone 3 that hit parts of Somalia in November 2013, can lead to flash floods and the loss of fishing equipment and other property along coast areas, but also the loss of farmlands and livestock herds. During the rainy season, areas can also be inundated when runoff from upland areas and heavy rainfall combines to exceed to capacity of seasonal riverbeds. Crop pests and insects are also associated with these wet years causing poor crop outcomes.

Environmental degradation has, in part, been associated with the problems of drought and water scarcity. Coping with these hazards has become a vicious cycle as one problem leads to an interim solution that in turn has negative consequences and additional hazards. For instance, the spread of private *berkads* in a fragile environment opened up certain rangelands to all-season grazing but in turn this has contributed to long-term environmental degradation, especially around water points. Similarly, water trucking across arid soils has had consequences on the land such as gully erosion. The proliferation of charcoal production for sale to cope with reduced income from livestock during droughts, disease and market bans, has further accelerated the problems of environmental degradation. Additionally, illegal (over) fishing by foreign trawlers and toxic waste dumping by foreign companies have put the environment, households and livelihoods at risk in coastal zones.

Civil insecurity and market closures have been major hazards since the collapse of Somalia's central government, especially in southern and central parts of Somalia. Sporadic fighting between Federal Government of Somalia forces supported by

the African Union Mission in Somalia (AMISOM) forces on the one hand and anti-government insurgents on the other hand has at times restricted the flow of food and other basic items, which in turn has increased food prices and the cost of living. Disrupted trade flows, restricted movement of people and animals and the loss of assets have seriously undermined local livelihoods. Displacement to neighboring regions within Somalia or Kenya and Ethiopia has been common. Cereal prices can shoot up in the event of regional market disruptions leading to localized food gaps.

Although some stability has returned to the northeast and northwest regions encompassing the self-declared autonomous regions of Somaliland and Puntland, clan conflict continues to erupt at different times in various parts of these regions. Additionally, problems with shipping – such as piracy and high seas across the Gulf of Aden– and limited transport in the more remote areas also have an effect on food prices and food availability.

Livestock disease is another major hazard across all Somali livelihood zones. Contagious Caprine Pleura Pneumonia (CCPP), sheep and goat pox and tick-borne diseases are some of the most common diseases. Internal parasites (*gooriyan*), diarrhea (*shuban*), lumpy skin disease, and *diif* (a respiratory disease affecting sheep and goats) are also present. Disease outbreaks can lead to significant rises in livestock mortalities. In addition, disease outbreaks affect price and market access. The most notorious example was the ban placed by Saudi Arabia on livestock exports from the Horn of Africa due to an outbreak of Rift Valley Fever which began in 1998 and was not lifted until 2009. Limited pest control services, restricted supplies of veterinary medicines and a poor animal health infrastructure reduce local capacity to manage these problems.

Finally, **crop diseases and pests** including bird and insect infestations, also periodically cause significant crop losses.

Response or coping strategies

Households engage in a number of strategies in response to bad years, when things like drought or conflict occur. These strategies are listed below:

In order to cope with changes in weather patterns and other hazards, households resort to certain timeworn survival strategies. Many of these are used every year, such as adjusting the timing of mating and birthing, migrating or selling first quality goats to build up a reserve of cash in pastoral areas, or adjusting the sowing season and the types of crops sown in relation to the arrival of the first rains in areas with crop production.

Listed below are the common strategies used during bad years, following a particularly bad season.

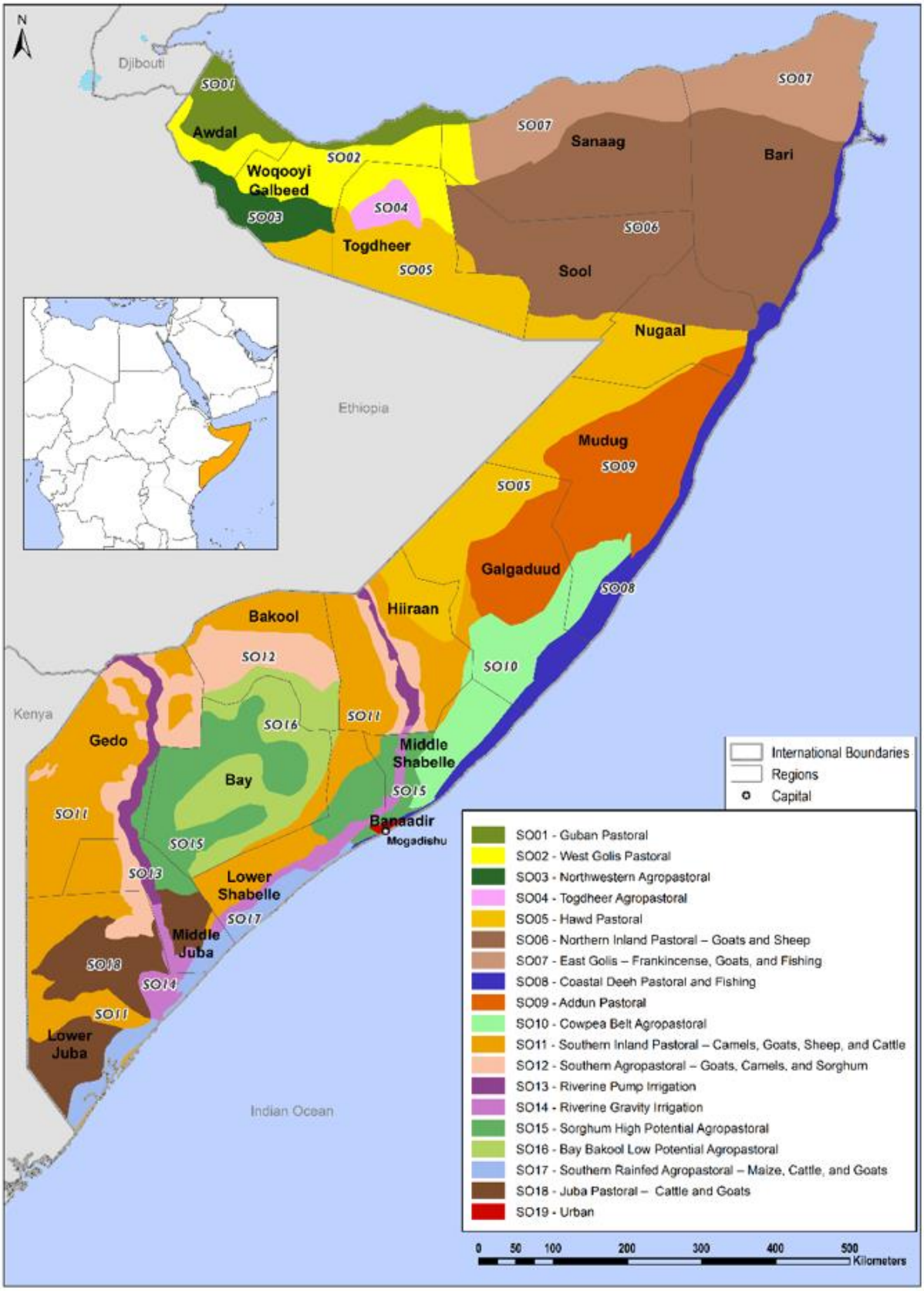
Table 4: Common coping strategies by wealth group and livelihood zone cluster

PASTORAL & AGRO-PASTORAL LIVELIHOOD ZONES	
Very poor/poor	**Middle/better off**
Migration to more distant range lands	Migration to more distant range lands (including trucking animals)
Livestock mating control (sheep)	Livestock mating control
Purchase water for livestock	Purchase water for livestock
Increase milk sales	Increase milk sales
Increase livestock sales	Increase livestock sales
Charcoal/firewood sales	Family splitting (livestock migration)
Family splitting (in search for labor/livestock migration)	Seek gifts, remittances and credit
Seek gifts and loan in kind and cash	
Temporary labor migration to towns	
AGRICULTURAL & AGRO-PASTORAL LIVELIHOOD ZONES	
Very poor/poor	**Middle/better off**
Increase agricultural labor (locally or outside the zone)/increase number of family members involved	Increased crop sales, if possible, waiting to sell stocks until prices are highest, taking advantage of the low supply of grain

Search for share-cropping opportunities	Seek remittances and credit
Increase sale of charcoal/firewood sales	
Increase collection of wild foods/fish	
Migrate to urban centers for work	
Reduce number of daily meals	
Intercropping short cycle crops (pumpkins, beans, etc.)	
Collection of wild foods for both consumption and sale	

Source: FSNAU/FEWS NET

SOMALIA LIVELIHOOD PROFILES



GUBAN PASTORAL (ZONE SO01)

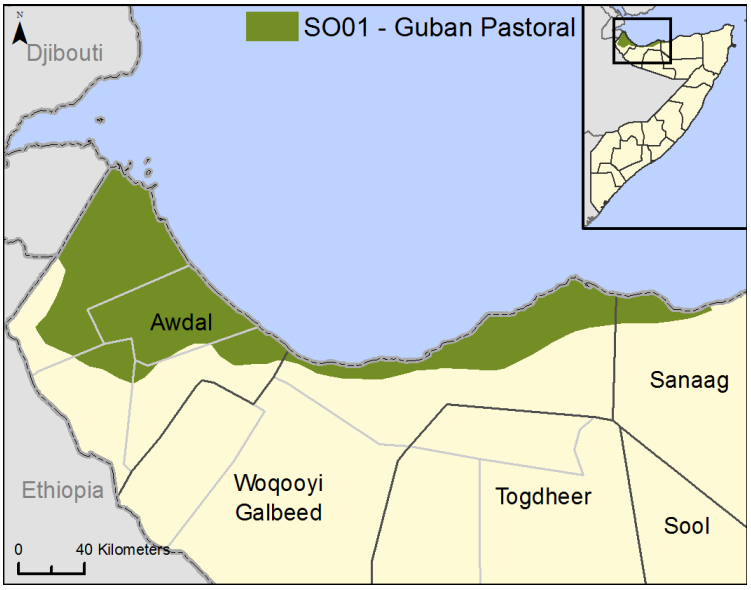
General Livelihood Zone Description

Table 1: Summary of data supporting the Guban Pastoral livelihood profile

Field data collection	Oct, 2014
Consumption year	January-December 2013
Reference year	2013
Initial estimated validity	2018

Source: FEWS NET/FSNAU

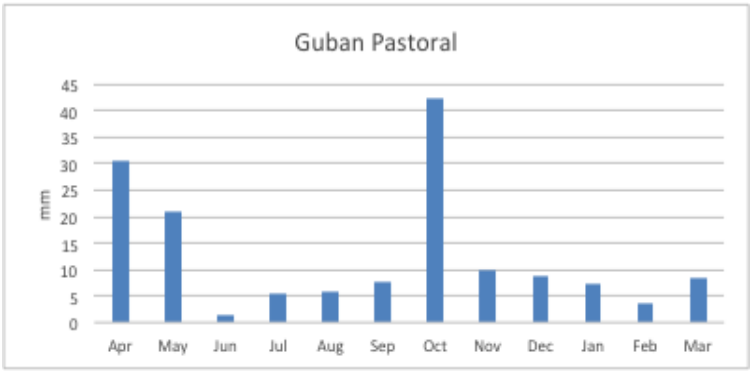
The Guban refers to the coastal plain in northwestern Somalia, which runs parallel to the Gulf of Aden for about 150 miles between Seylac district (Awdal region) in the west and Berbera district (Woqooyi Galbeed region) in the east. The Guban plain narrows gradually from 35 miles in the west to about 4 miles in the east but remains low-lying throughout - less than 100 meters above sea level. It is bordered by the much higher Golis mountain range to the south. The Guban Pastoral livelihood zone covers the same geographic area. The area is sandy and has a sparse vegetation cover, characteristic of steppes. The zone suffers high temperatures and high humidity, but very little rainfall - in fact *guban* means "burnt area" in Somali. The basis of the economy is pastoralism. The total estimated population for the livelihood zone is 205,202 (UNFPA 2014).



The Guban livelihood zone has two main seasons. The *jilaal* season covers December to May. In this zone, exceptionally, *jilaal* is the only season to see some rain; the locally named *xays* rains of December-January. The second season is the *gu-hagaa* season, which is a dry period in this area spanning June to November. The *jilaal* in the Guban livelihood zone does not reflect the *jilaal* experienced in the rest of the country, likewise the *gu* season in this zone is different. The area receives mean annual rainfall of 57 mm to 93 mm. The hottest period falls between June and August with temperatures of over 40°C, the cooler months are November to February.

The adjacent rainfall chart shows the average rainfall levels for the zone during the year based on an analysis of satellite imagery. This chart becomes clearer when an analysis of temperature levels is included. Temperatures are so high between June and August that any rainfall during that period is largely ineffective - it evaporates before it can contribute to pasture growth. On the contrary, the *xays* rains of January and December (little more that sea mists and dew, which is why they do not show up on the satellite imagery), fall in the cool season and do promote pasture growth. Nevertheless, the *xays* rains have decreased in recent seasons and the zone has received unseasonal rains – the effects of climate change are evident.

Figure 1: Estimated average rainfall in mm in Guban Pastoral



Source: USGS CHIRPS Data, FEWS NET GeoCLIM[10]

[10] Based on USGS CHIRPS data, a combination of satellite-based Rainfall Estimates (RFE) and station data, with data extending more than 30 years (1981-2014). Source, FEWS NET and USGS.

Soil type varies from sandy alluvium on the coastal plain to sandy deposits mixed up with marine soil. The dominant vegetation types are dune grasses (locally called *darif*) with pockets of acacia trees (*qurac*), argan trees (*kulan)* and shrubby sea blite (*sauda fruiticosa,* named *xudhun* locally). When the rains arrive the vegetation is quickly renewed and, for a time, the Guban provides some grazing for nomad livestock.

The zone is crossed by broad, shallow watercourses that are normally beds of dry sand, except in the rainy seasons. Water scarcity is prominent in the Guban area and there are only three main boreholes (in Ceel gaal, Karuura and Kalowle). Animals are heavily concentrated in these areas during the dry season. Additionally, shallow wells that are hand dug for domestic use also exist. Due to the scarce vegetation cover and water, milk production is relatively low compared to other pastoral areas of the country.

The reference year was considered a normal or average year for the zone. There were good *xays* rains that improved pastures and livestock production and reproduction, leading to an improvement of overall food security. In fact, local goat prices increased by 47% compared to the last five-year average (2008-2012). Because the price of cereals declined, the terms of trade between goats and rice improved further.

The livelihoods of the dominant pastoral economy are based on rearing camels and small livestock for milk production and trade. Due to successive droughts and diseases that have mainly affected sheep, goats have become the dominant species among the small stock. Camels are the most valuable animals; they provide milk during the dry seasons, they serve as pack animals and they are prized trading commodities. The majority of households do not own cattle. Agriculture is completely absent from this zone, which means all cereals and non-staple foods must be purchased (or bartered).

Normal livestock migration routes are limited to the Guban area if the *xays* rains have been normal. These rains also attract pastoral communities from further south in Somaliland. During a bad year, livestock are moved south to the Golis, to the Galbeed region and up to the Haud of Hargeisa or to as far as the Shinile or Siti zones of Somali region in Ethiopia. Family members move with livestock, particularly the father and the eldest son, sometimes accompanied by additional family members. Clan ties are strong within this livelihood zone.

The main markets for the livelihood zone are Seylac, located inside the zone, and Djibouti, roughly 200 km apart. There are other important trading centers further away, such as Hargeisa and Borama (further inland) and Berbera, one of the main export ports on the Gulf of Aden coast. The main road in the zone links Seylac on the coast with Borama and Hargeisa in the interior. Seylac is also linked to the coastal towns of Lugheya and Berbera, although the second leg of this route veers inland. Due to the mountainous terrain of the neighboring zone, there are no other major roads that traverse the zone. The majority of the transport routes are dirt tracks, which link rural settlements with rural markets and are transited mainly by camels and donkeys.

Markets

Livestock markets

Trade in livestock and livestock products are the fundamental economic activities for the communities living in the Guban Pastoral livelihood zone. Local and export quality goats and camels are the main species traded and camel milk is the main animal product sold. The major markets are listed below. These markets serve as livestock trading points, as supply centers for essential food and non-food items and as sources of labor opportunities during bad years.

- Main markets: Seylac (or Seila), Lawaya-Adde, Lawyacado and Djibouti
- More distant markets: Tog Wajaale (close to the Ethiopian border), Borama, Hargeisa, Burao, Berbera

Export quality livestock are concentrated in Hargeisa and Berbera to be airfreighted or shipped out of the country to Yemen, Saudi Arabia, Egypt and other Gulf states. Between 2000 and 2009 a livestock export ban into the Arabian Peninsula put a stop to exports especially those out of Berbera, an exit point at which control over livestock movements was easier. The reason for the ban was to limit the spread of livestock diseases, mainly Rift Valley Fever. Since then, quarantine

facilities have been established in Aljaberia and Indhodeero (near Berbera) provide health screening and vaccinations before export.
Djibouti emerged as a major livestock export hub in the region especially during the 2000-2009 export ban. In Djibouti a regional quarantine facility was established in 2006, which allowed the port to resume exports to Saudi Arabia enjoying sole official access for the next three years - although some sheep and goat exports were still transiting from Berbera unofficially.

Within Somaliland, animals are trekked along a number of corridors, which are primarily organized according to clan networks. These routes can change over time and according to the climatic and security context. The main corridors in the livelihood zone are the *Issa* corridor, which links the Somali *Issa* of Djibouti, western Somaliland and the northwestern Somali Region of Ethiopia. This corridor uses the port of Djibouti. The Berbera corridor is mainly used by the *Isaaq* clan, although the *Ogadeni* and other clans are part of the supply chain. This corridor starts in Ethiopia and reaches Berbera port either by Hargeisa or Burao[11].

Animals are also trekked and trucked to Tog Wajaale, situated close to the Ethiopian border for sale in Ethiopia and to Burao market on the *Hawd* plateau, which is the largest assembly market for livestock because of its central location and proximity to the Ethiopian-Somali region as well as to Central Somalia.

Livestock markets are generally in poor conditions and need upgrades in basic infrastructure such as water provision, fencing, feedlots, holding grounds, loading ramps and veterinary services. Animals can spend a number of days or weeks in intermediary markets waiting for onward transport and livestock condition can deteriorate during this period lowering the value of the animal.

Livestock prices are influenced by a number of factors, first of which are the animal's age, sex and breed and, especially, body condition, which is linked to rainfall and water and pasture availability. Other factors include exchange rate fluctuations; especially between Somali shillings and American Dollars, the currency many export transactions take place in (the Djibouti Franc is also pegged to the dollar), and the level of demand in Gulf markets. Demand from Islamic countries increases during the main Islamic festivals (*Eid* and *Hajj*). The *Hajj* pilgrimage is the most important season for small stock sales and around half of all goats and sheep are exported during this period and during the period leading to the *Eid* celebrations.

Cereal markets

With respect to food trade, overall, this livelihood zone's market routes veer most toward the large urban center of Djibouti city. Most of the staple cereals consumed locally are imported from Djibouti, while sorghum is mainly obtained from the Northwest agro-pastoral livelihood zone, which is located further south (especially from Borama, Gabiley and Baki. Border closes between Djibouti and this livelihood zone hamper commodity flows, provoking blockages to the trade of goods, which lead to an escalation of food prices. In general, market infrastructure is weak in most areas within the livelihood zone and alternative routes are few.

Casual labor markets

Household income in the Guban Pastoral livelihood zone is derived primarily from the trade of animals and milk, supplemented with self-employment activities, such as selling charcoal and firewood. Paid labor was not recorded during the reference year, but is included as a response strategy during difficult years when households may split and some members travel to towns inside the zone or in the neighboring zones (for example Djibouti) to find work. Some amount of labor is available locally, herding animals for better of households, but this was not a common source of income during the reference year for the majority of households in any of the wealth groups.

[11] Chatham House (2012)
http://www.fao.org/fileadmin/user_upload/drought/docs/chatham%20house%20majid%20djibouti%20livestock.pdf

Credit

Credit is a common source of income for pastoral households, borrowing arrangements are informal and flexible and repayment deadlines are not fixed. As a result, this source of cash income should be interpreted rather as a gift. Credit is usually arranged with wealthier households of the same community or with livestock traders.

Conflict

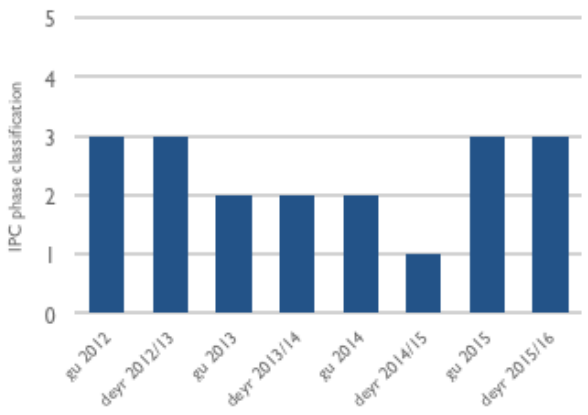
The war in southern Somalia between Islamist insurgents on the one hand and the Federal Government of Somalia and its African Union allies on the other, has for the most part not directly affected Somaliland, which, like neighboring Puntland, has remained relatively stable. As a result, this small coastal livelihood zone has been relatively peaceful, compared to other zones in the country.

Conflict affected the zone between the 1980s and early 1990s as the Somali National Movement (SNM), with many links to the *Isaaq* clan, waged a guerrilla struggle in the northwest of the country aiming to overthrow and replace the military government. Violence continued to shape Somaliland's state-making process once it had officially broken away from Somalia (May 1991) and a UN peacekeeping mission was deployed there in the mid-1990s. With the end of the conflict, peace and stability returned to the area. The *guurti* or "council of elders" played a key role in solving disputes between clans and steering through peace talks. Smaller outbursts of violence and unrest have preceded recent key political moments in Somaliland, such as the presidential elections (26 June 2010) and parliamentary elections (15 November 2014).

Food access history

Based on the analysis of the last 4 years (2012 to end 2015) shown in the adjacent figure number 2, as well as FSNAU's food security briefs, the 2012 and 2012/13 seasons were comparably worse in terms of food and livelihoods security in relation to the baseline reference year (Jan-Dec 2013). Pastoral households' vulnerability has increased once again since the *gu* season of 2015.

Figure 2: Recent trend in IPC phase classification with 1 as worst and 5 as best



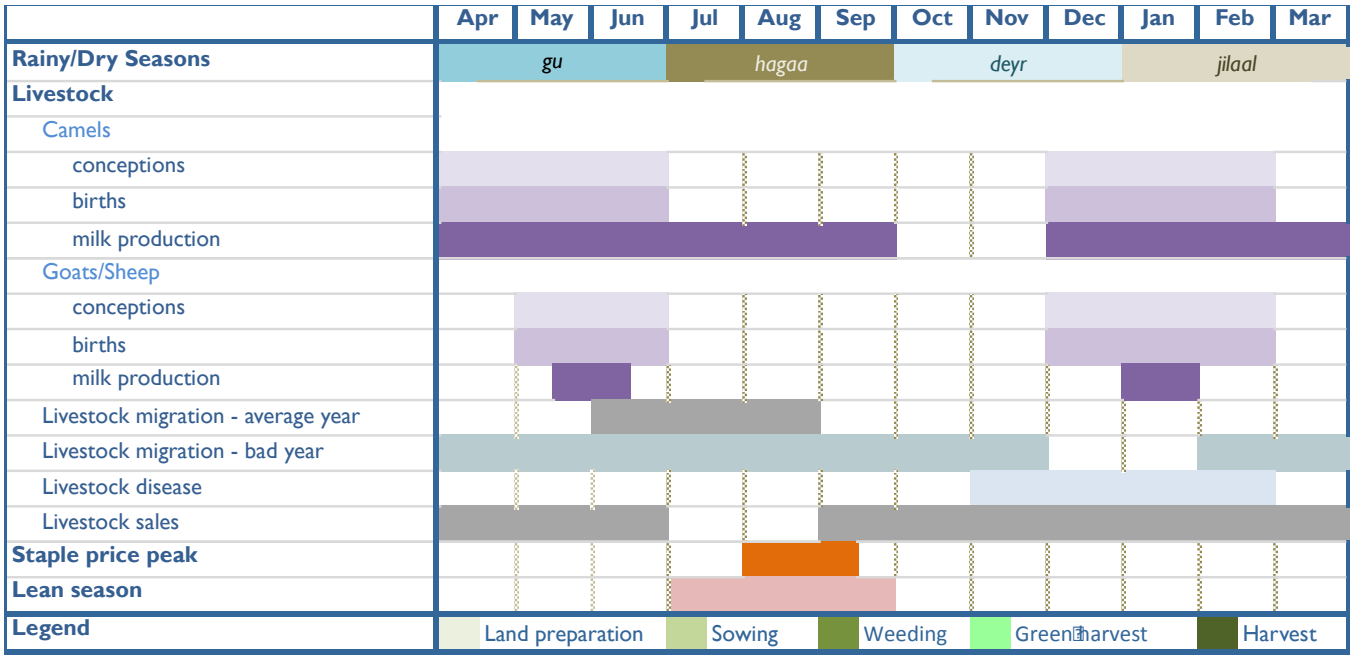
Source: FSNAU

The December to February *xays* rains are the only rainy season as such in this livelihood zone. Twoyears of consecutive failed *xays* rains (2010/11 and 2011/12), pushed food security levels to IPC level 3 (acute food and livelihoods crisis) for all of 2012. Failed rains, along with consistently high temperatures dried shallow wells, reduced pasture and water availability and increased trekking distances to reach boreholes. The 2012/13 *xays* rains were also poor, but the zone received unusual moderate rains between October and November 2013, which generally improved pasture and water conditions and sustained livelihoods into 2014. Again, unusual localized moderate rains fell in May 2014. The food security situation improved from the post-deyr 2014/15 season in most pastoral and agro-pastoral livelihoods of Northwest regions, including the Guban livelihood zone. However, post *gu* 2015 assessments indicate that drought conditions contributed to severe water shortages and unusual livestock deaths - acute food security Crisis (IPC Phase 3) prevailed during the *deyr* 2015 season. The livelihood is dependent on the rains in October, which bring run-off water from the adjacent highlands and *xays* rains which start in December in the livelihood itself.

Seasonal calendar

The traditional year (*nauris*) starts in August. There are two main seasons in this zone: the *jilaal* season (December to May) which, although commonly a dry season in the rest of the country, is the season that receives the *xays* rains (concentrated between December and January). The *gu/hagaa* dry season follows, from June to November. The *xays* rains are the only rainy period in the Guban area. *Xays* rains have three phases, locally known as *kodxin*, *dirir* and *daalaalo*. If *kodxin* and *dirir* fail, it is probable that the *daalaalo* will also fail, according to the traditional forecast. Pasture availability and grazing conditions improve thanks to the *xays* rains and, for a short period, attract pastoral communities from outside the area where the *jilaal* season is completely dry.

Figure 3: Seasonal calendar for the Guban Pastoral Zone



Source: FEWS NET/FSNAU

Livestock production follows the seasons as water and pasture availability is crucial in determining the outcome of reproductive cycles and milk yields. Pastoral communities in the livelihood zone do however migrate outside of the zone in search of better access to water and pastures, once the benefits of the *xays* rains are no longer visible. Usually livestock migration is kept within the boundaries of the region. During the long seasons with very little rainfall, all livestock is moved towards the south, to the areas of the Golis and the Haud, and further inland across into Ethiopia, to the pastures near Ayshica, Dawanlle, Jigjiga, Dhegar or Shiniile, according to clan relationships and affiliations. During the *xays* rains migration into the livelihood zone occurs from pastoral communities based in Borama, Gabiley and Hargeisa. This in-migration puts pressure on the local pasture and can lead to overgrazing.

The control of mating seasons, especially for sheep, which are less hardy and adaptable animals, is common in the zone. Locally this practice is referred to as *sumal.* This custom allows birthing to be timed with the beginning of the rainy season – whether in the home livelihood zone or in the area of migration.

Camels are milked throughout the year, although there is a drop in their milk yields outside of the rainy seasons. During the best months in terms of water and pasture availability, camel milk yields average 3 liters per day, but go down to 2 liters per day for the rest of the year. Goats are only milked for two months of out of year in this zone. Their milk yields are much lower, between 0.25 and 0.5 liters per day depending on the season.

Livestock sales, especially those for export markets, peak with the main Islamic celebrations, when demand increases exponentially. The timing of the celebrations differs each year, but in the build-up to the *Hajj* and particularly for a 70-day period between *Eid al-Fitr* and *Eid al-Adha* there is a huge additional demand for livestock across the region. Local livestock sales peak during and just after the rains when animal conditions are at their best and also before *Eid*. Animal sales also occur during the dry seasons and the pastoral lean season when cash income is needed.

The most difficult time of the year is the *hagaa* season (June to August). This is the hottest period of the year, with temperatures reaching 40-45°C. Animal conditions and production is at its lowest. It is a period when asking for loans becomes more common, especially among the poorer households. Food prices can increase towards the end of this period too, which coincides with the end of the monsoon season (August), if rough navigation conditions reduce shipping activities and limit food imports, especially the staple cereals.

Wealth breakdown

The size and composition of herds are the determinant criteria of wealth in this livelihood zone. Camels are the most valuable animals as they provide milk throughout the year and their sale value is much higher than that of sheep or goats. However, volumes of trade in small stock are higher as there is stronger demand for their meat, both locally and abroad. Poor households in this livelihood zone are those who own between 3 and 5 camels and between 30 and 45 sheep and goats (shoats). Goats are preferred over sheep as they are able to endure the difficult conditions of the zone better. Due to their smaller herd sizes, poor households avoid having to sell a camel every year and instead trade a larger proportion of their small stock in order to have the necessary cash to purchase cereals. During the reference year, poor households sold approximately 20% of their stock. Poor households commonly receive gifts in cash (*zakat*) and in kind (sheep or goats but never camels) from wealthier households.

Table 2: Wealth group characteristics in Guban Pastoral

	Poor	Middle	Better-off
Household percentage (%)	20-30	45-55	15-25
Household size (#)	5-7	7-9	9-11
Land holding (ha)			
Land area owned	0	0	0
Land area cultivated	0	0	0
Typical livestock holding (#)			
Sheep	10-15	15-25	25-35
Goats	20-30	35-55	60-100
Cattle	0	0	0
Camels	3-5	7-10	20-30
Donkeys	0-1	1-3	2-4

Source: FEWS NET/FSNAU

Middle-income households are those who own between 7 and 10 camels, rarely more, and keep herds of between 50 and 75 shoats. Their livestock holdings are sufficiently large to sells animals, slaughter a small number of them and also give some away animals. Better-off households own significantly larger herds which, on average, total between 20 and 30 camels (over three times the number of camels owned by middle households) and between 85 and 135 shoats (almost twice as much as middle households). However, the number of animals sold per year by better-off households is not very different from the number sold by the middle households, which indicates that much of the wealth is stored "on the hoof" and physical assets are only liquidized when necessary. Overall, livestock holdings in this zone are somewhat lower than in the neighboring West Golis Pastoral zone because climatic conditions are harsher in this zone and water and pasture more difficult to find.

Monogamy is very common in this area, because of difficulty of giving a dowry. Normally poor and middle households consist of husband and wife and their direct dependents, yet many households in the better-off wealth group have two wives. It is common for middle and better-off households to send a household member, sometimes two, to live with their relatives in Djibouti in order to access better education and labor opportunities. Poor households send part of their families to Djibouti as a coping strategy, in order to find alternative sources of income during a bad year or a bad season. Djibouti is an important neighbor to Somaliland for several reasons, one of them being that Djiboutians and Somalilanders have a common ancestral lineage and geographical tenancy, since the people of Somaliland live both in Djibouti and Somaliland.

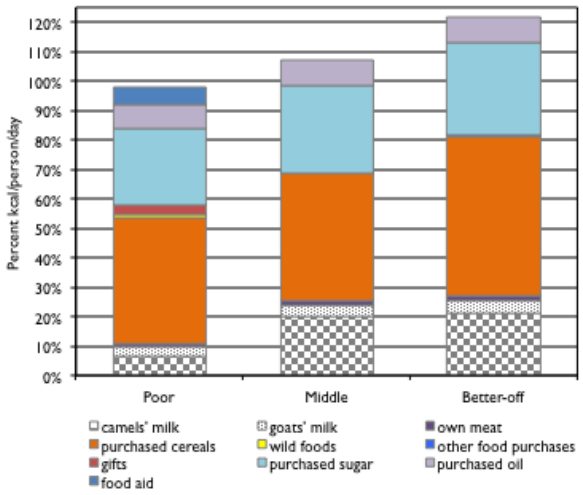
Sources of food and income and expenditures

There are two main sources of food in this pastoral livelihood zone: own livestock products and market purchases. Market purchases of cereals, oil and sugar provide the majority of the energy requirements for the three wealth groups defined in this livelihood zone – between 75% and 95% of minimum annual kilocalorie needs (see figure below). As a result, vulnerability to market price fluctuations is high. Milk and meat from the households' own supplies supplements the local diet, providing an important source of protein but also and important additional source of calories - approximately 10% of annual needs for poor households but closer to 30% for middle and better-off households. At certain times of the year, especially when household members are away with their herds, milk can be the only source of food for the day.

While middle and better-off household rely on those two major sources of food, poor households have a more diversified portfolio of ways of accessing food. They consume wild foods at certain points of the year (one of the main types of wild foods are *kullan* fruits – *balanites aegyptiaca*) and they receive gifts in kind from wealthier households; mostly gifts of milk and occasionally gifts of meat or sugar. Food aid was also recorded as a source of food for poor households during the reference year. This is the only wealth group to have received external support. On average each household received 50 kg of cereal and 25 kg of pulses. They received this food aid package only once during the reference year.

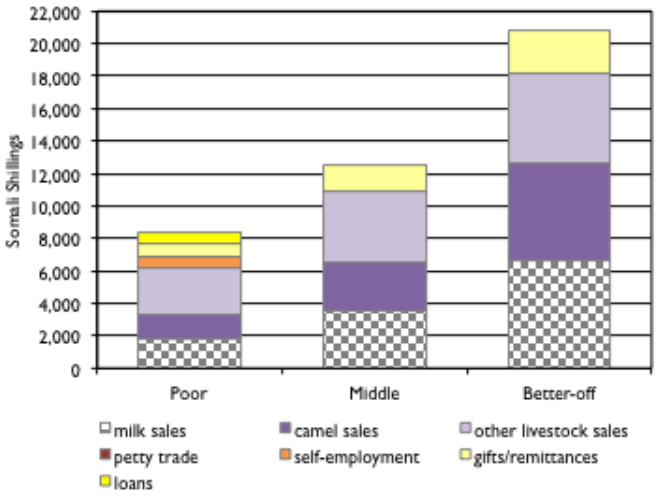
The staple cereals are imported rice and wheat flour. These products are sold at similar prices. Wheat flour is mainly consumed for breakfast as *injera*, while rice provides the starch for the main meal of the day; as a result, rice purchases slightly outdo wheat flour purchases. Better-off households also purchase pasta as a complementary staple food (this type of food is double the price of rice). The proportion of food needs covered by market purchases are relatively similar across the three wealth groups and the major differences in consumption patterns are derived from the much larger quantities of camel milk consumed by middle and better-off households.

Figure 4: Food sources by wealth group, Guban Pastoral Zone



Source: FEWS NET/FSNAU

Figure 5: Cash income sources by wealth group, Guban Pastoral Zone



Source: FEWS NET/FSNAU

During the reference year, on average, poor households had access to 1 lactating camel and sold 50% of the milk production. Middle households had 3 lactating camels and better-off households had 5 lactating camels – on average. They sold between 30 and 35% of the milk production. Significantly larger quantities of milk were sold per day during the months with the highest milk yields. As well as year-round camel milk, households had access to goat's milk (sheep are not commonly milked in this zone). Goats were milked for approximately 60 days per year and provided between 0.5 and 0.25 liters of milk per day, none of which was sold. Poor households were able to milk between 10 and 15 animals from within

their herds, middle households between 15 and 18 and better-off households 20 to 25. This represents between 30 and 40% of their flocks of goats and between 60 and 70% of all lactating goats, as not all lactating goats are milked every day. There are frequent gifts of milk from middle and better-off households to poorer households, especially during months when milk yields are high. No households purchased milk during the reference year.

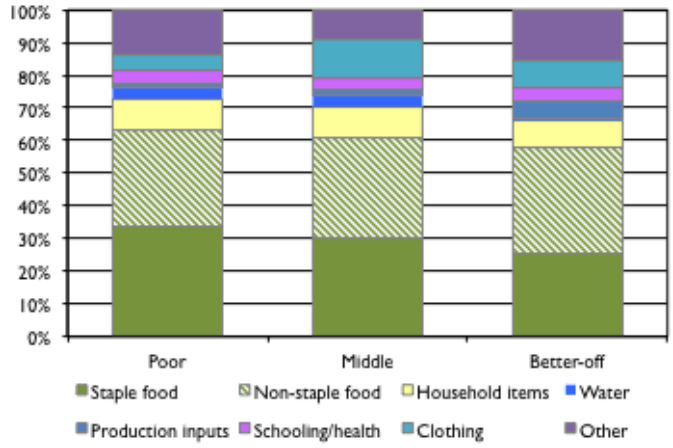
In terms of meat consumption, camels are not commonly slaughtered, yet all households slaughter goats and sheep. Poor households slaughtered between 1 and 2 animals during the reference year for the Islamic festivals, while middle and better-off households slaughtered 5 to 6 animals throughout the year.

The sources of income and income levels are determined by livestock holdings. During the reference year, middle and better-off households supported their livelihoods through the sale of camel milk, one export quality camel and between 12 and 14 small livestock, of which more than half were sold for export. A number of better-off households could have sold a second camel at a local market in the same year. Poor households sold 8 animals on average, 5 for local markets and 3 for export. Poor households did not typically sell a camel during the reference, however, if necessary, they may sell one animal every two years.

Export prices were around 30% higher than local sale prices, however, the conditions of the animal sold for export are also more demanding. Male animals are the preferred type of animal to be exported. This can be a pre-requisite for exports to the Gulf – a policy that is more easily implemented at the seaports and is in place to prevent the export of breeding stock. The vast majority of exported animals are immature animals: camels between 4 and 6 years of age (referred to as *qaalimo* or *cujuul*) and goats between 3 and 5 years old. However, these trends are changing and selling younger shoats has been encouraged by the rising demand for younger, tenderer meat in the Gulf States. Camels are sold in order to pay off debts and gather some capital for small scale trading activities.

To supplement the income derived from the sale of milk and livestock, poor households sold firewood and charcoal almost every month of the year. It is mostly men who collect firewood and burn charcoal. These activities take place outside of the livelihood zone, towards the Golis where the raw material can be found. The produce is sold in local markets. It is not common for households in this livelihood zone to go in search of labor opportunities, unless it is a particularly bad season. Poor households do not typically have members of their family who can send them remittances, as is the case for middle and better-off household, and rely on cash gifts or loans from wealthier local households. Traders working locally also supply loans. Remittances represent around 10% of annual income for middle and better-off groups. Family members who are based in cities inside the country or abroad send cash transfers. They use the *xawilaad* system, an informal system of value transfer, which is present in almost every country of the world. The system involves private companies and relies heavily on telecommunication networks. Between 3 and 4 transactions were received during the reference year per household. This additional source of income is labeled as "gifts" in the figure above.

Figure 6: Allocation of expenditures by wealth group, Guban Pastoral Zone



Source: FEWS NET/FSNAU

With respect to expenditure patterns, food represents the largest expenditure category across the wealth groups. The relative weight of this item is similar for all households, approximately 65% of their annual income. Roughly half is spent on staple purchases (rice and wheat flour) and half on other foods (mainly oil, sugar and a small variety of cooking ingredients: tomatoes, onions and potatoes). All households purchase similar products but in varying quantities. Poor households' low purchasing power means their diets only just meet the minimum annual energy requirements.

The category labeled "household products" is the next largest expenditure. These include tealeaves, salt, soap, utensils and batteries for lanterns, the only source of light in the evenings. Additionally, households must purchase water for human consumption. They buy water in drums, which cost approximately SISh4,000. The better-off households spend considerably less on water because they have better access to boreholes. *Berkads* (water reservoirs) are not very common in this livelihood zone.

Small amounts are spent on family health and schooling as education and health services are limited due to poor infrastructure, however absolute expenditure increases with wealth as per capita expenditure increases and the number of people per household increases too. If children are sent to Djibouti to study, the host family usually covers a large part of the expenses incurred. Clothing, which includes school uniforms and footwear, represents a considerable expense, equaling and even tripling expenditure on basic social services. "Production inputs" refer to livestock drugs and, in some cases, also purchasing water for animals.

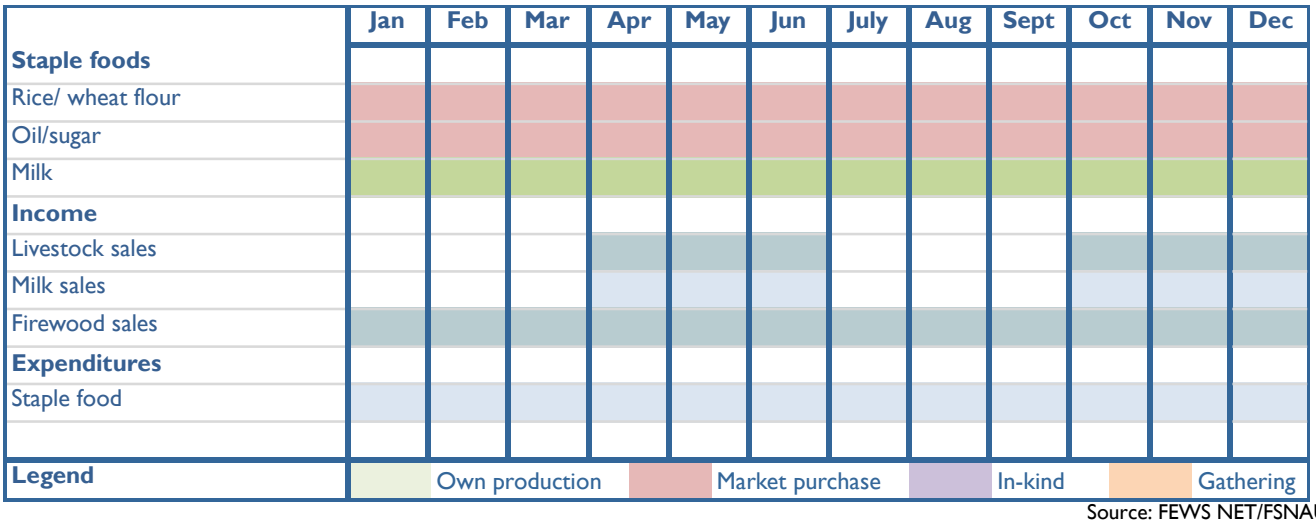
The expenses included under "other" areloan repayments (by the poor households), monetary gifts (mainly by the better-off households), the purchase of *qat* and tobacco and other non-essential miscellaneous items. This group of expenses could be more easily reduced in times of need, when household income is lower than usual.

Calendar of major sources of food and income for poor households

The figure below includes additional information of how and when poor households in particular obtained access to the main types of food and cash throughout the reference year and how these sources of food and cash related to their expenditure requirements.

In terms of food, poor pastoral households are dependent on the market throughout the year to access staple foods (rice, wheat flour, sugar and oil). Milk is also an important part of their diet, yet because poor households own at least one milking camel they have access to their own source of milk year round, complemented with goat's milk during the wet season. Milk and animal sales generally peak during the rainy seasons when milk yields are at the highest point and animal body condition is best. Money must be saved for purchase of staple foods every month, supplemented with the income gained from the sale of firewood and additional cash loans.

Figure 7: Main components of the food access calendar for poor households in livelihood zone SO01 (Guban Pastoral Zone)



Source: FEWS NET/FSNAU

Hazards, response, and monitoring variables

The main hazards that affect the pastoral economy of the Guban livelihood zone are listed below:

Drought/weather shocks – by far the main hazard is the lack of pasture and water due to reductions or delays in rainfall levels and drought situations, which lead to weakened animal body weight and value. Insufficient water and pasture also reduce milk production. Recurrent and persistent droughts affect livestock production and herd viability as miscarriages can occur alongside the death of young animals. The drying up of water sources can result in having to relying on water trucking (and increased household expenditure on water) and increased migration and family separation. In addition to reductions and delays in rainfall, strong winds during the *hagaa* season, locally referred to as *asow,* and high temperatures rising above 45^{o}C, cause the early drying up of pasture and contribute to the acceleration of sand dune movements that eventually cover up vegetation.

Livestock diseases – livestock diseases follow in importance and are frequent especially during the dry season, when animal conditions have deteriorated. The most common diseases in this area are endo-ectoparasits, Contagious Caprine Pleuro Pneumonia (CCPP) and Peste des Petits Ruminants (PPR) (called *susun* locally) that affects goats. Camels suffer from respiratory diseases. Limited pest control services, restricted supplies of veterinary medicines and a poor animal health infrastructure reduce local capacity to manage these problems.

Livestock ban or restrictions – this affects mainly livestock exports. The recent construction of quarantine facilities has improved the control over possible disease transmission across borders. The last such ban was in place between 2000 and 2009.

Border closure – a critical hazard noticed in this border livelihood zone. The likely impact is the restriction of trade transport and movement of the people to and from Djibouti. In the event of border closures, market routes are likely diverted to Borama, with distances increasing to over 240 km of rocky and sandy routes. As a result, commodity prices rise and food access is limited.

Insecurity - mainly as a result of conflict among different clans of the livelihood zone and neighboring zones, over pasture and water sharing. Civil insecurity causes frequent displacement of pastoralists and it can disrupt trade, increasing the cost of essential food items. Sometimes conflict results in death.

High food prices – especially for rice, wheat flour, sugar, and oil, all of which need to be imported to the livelihood zone.

Environmental degradation – this is an endemic problem contributing to the loss of pastures due to changing climatic conditions and lack of proper land and water resource management systems.

In order to cope with changes in weather patterns and other hazards, households resort to certain strategies. Many of these are used every year such as adjusting the timing of mating and birthing, migrating, hand feeding animals, selling older animals and/or exchanging them for younger ones, storing ghee for consumption during the lean season or selling first quality goats to build up a reserve of cash. Listed below are the common strategies used during bad years, following a particularly bad season.

Table 3: Coping strategies in response to shocks in Guban Pastoral

Very poor/poor	Middle/better off
Reduction of expenditure on non-food items and meal sizes	Reduction of expenditure on non-food items and meal sizes
Increasing livestock sales	Increasing livestock sales (especially export quality animals)
Increased migration to mountainous areas with better water and pasture	Increased migration to mountainous areas with better water and pasture

Increased milk sales	Increased milk sales
Increased firewood and charcoal sales	Alerting family members in urban centers and abroad (increase remittances)
Consumption of wild fruits (*Kulan* and *Garas*)	Migration to urban areas in search for work (especially Djibouti)
Seeking gifts, loans and other forms of social support locally	
Migration to urban areas in search for work	

Source: FEWS NET/FSNAU

Table 4: Key parameters to monitor in Guban Pastoral

Item	Key Parameter – Quantity	Key Parameter – Price
Animal production	Supply of camels Supply of goats Supply of sheep Supply of camel milk (season 1 and 2)	Price of camels (local and export quality) Price of goats (local and export quality) Price of sheep (local and export quality) Price of camel milk (season 1 and 2)
Other	Remittances from permanent migrants Supply of fuel wood and/or charcoal Flows of zakat and other social support (other monetary gifts, remittances)	Price of wheat flour and rice Price of sugar Remittances from permanent migrants Price of fuel wood and/or charcoal Flows of zakat and other social support (other monetary gifts, remittances)

Source: FEWS NET/FSNAU

Estimated Population for Guban Pastoral Livelihood Zone

Zone	Region	District	Livelihood zone	UNFPA 2014 Population
North West	Awdal	Borama	Guban Pastoral	6,375
North West	Awdal	Baki	Guban Pastoral	4,632
North West	Awdal	Lughaye	Guban Pastoral	81,997
North West	Awdal	Zeylac	Guban Pastoral	67,924
North West	Woqooyi Galbeed	Berbera	Guban Pastoral	40,579
North West	Sanaag	Ceel Afweyn	Guban Pastoral	3,695
Total				**205,202**

WEST GOLIS PASTORAL (ZONE SO02)

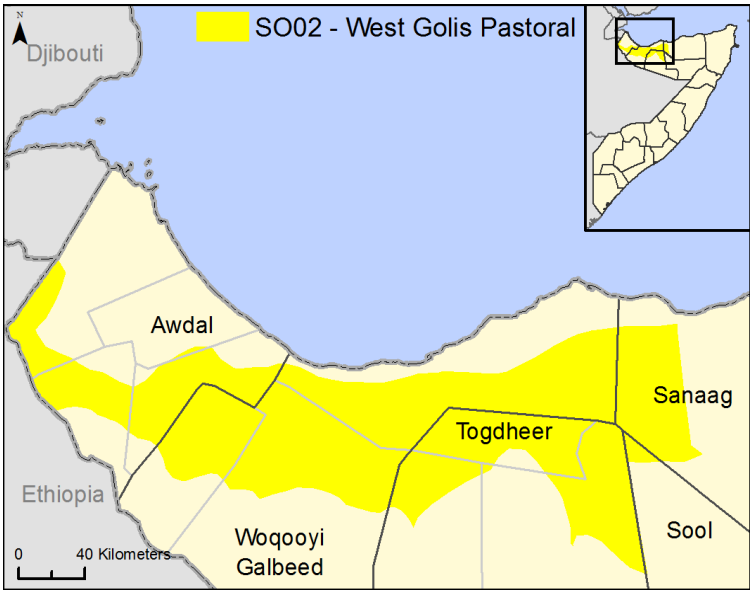
General Livelihood Zone Description

Table 1: Summary of data supporting the West Golis Pastoral livelihood profile

Field data collection	October, 2014
Consumption year	April – March
Reference year	2013/14
Initial estimated validity	2018

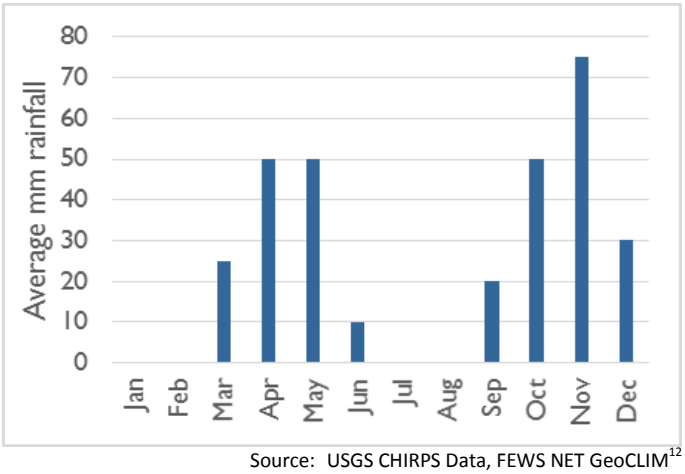
Source: FEWS NET/FSNAU

The West Golis Pastoral zone covers the highlands of the Golis mountain range and stretches from the international border in western Awdal region, into Woqooyi Galbeed region and northern Togdheer region. The zone also includes a small section in the west of Sanaag region (the district of Ceel Afweyn). The general elevation along the crest of these mountains averages 1800 meters above sea level, intercepted with shallow plateau valleys. The ecology of the zone is semi-desert and the basis of the economy is pastoralism. The total estimated population for the livelihood zone is 335,989 (UNFPA 2014).



On average this livelihood zone receives more rain than the adjacent Guban pastoral zone (SO01). There are two main rainy seasons *gu* and *deyr*, but annual rainfall patterns vary across the livelihood zone from East to West. The Golis of Togdheer mainly receives *gu* and *deyr* rains, while the Golis of W/Galbeed and Awdal regions receive *gu* rains (April –June), *karan* rains (late July – August) and only minor *deyr* rains (Oct-Nov). The Golis in Borama, facing the Guban Pastoral zone, receives *xays* rains (Dec-Feb). The average annual temperatures range between 20 ^{0}C and 22^{0}C. The reference year was considered a normal or average year for the zone, based on average *gu* rains in most areas, complemented by slightly above average *deyr* rains. The reference year follows 3 to 4 consecutive years of below average rains. Nevertheless, post *gu* 2013 and *deyr* 2013/14 seasonal assessments findings show that herd size trends have remained positive due to the more stable mountain water supply, the good migration options and normal rates of calving and kidding.

Figure 1: Estimated average rainfall in mm in Guban Pastoral



Source: USGS CHIRPS Data, FEWS NET GeoCLIM[12]

The main water sources in the zone are shallow wells in the valleys, *ballis* (water catchment areas on the slopes of the mountains), springs and small seasonal streams and cascades that allow bushes and trees to flower after the rains. Watercourses are usually dry outside of the rainy seasons, however, and private and communal wells become the only source of water for animals and population alike. The zone is vulnerable to water scarcity. The vegetation cover is dominated by grasses, shrubs and forest trees, including ancient cedar forests on the highest peaks. The acacia trees are the most important for livestock feed especially during the dry seasons.

[12] Based on USGS CHIRPS data, a combination of satellite-based Rainfall Estimates (RFE) and station data, with data extending more than 30 years (1981-2014). Source, FEWS NET and USGS.

Forest resources also permit the production of charcoal, which is sold by poor households in times of need.

The livelihoods of the dominant pastoral economy are based on rearing camels and small livestock for milk production and trade. Due to successive droughts and diseases that have mainly affected sheep, goats have become the dominant species among the small stock. Camels are the most valuable animals; they provide milk during the dry seasons, they serve as pack animals and they are prized trading commodities. Agriculture is completely absent from this zone, which means all cereals and non-staple foods must be purchased (or bartered).

Usually livestock migration routes are contained within the region, towards the *Guban* coastal area and the *Hawd* plateau pasture lands. The *Guban* provides watering holes during the dry seasons while the Hawd provides more extensive pastures during the wet seasons. During the *xays* rains that usually fall in the *jilaal* season, herders based in Borama, Gabiley, and Hargeisa migrate into the livelihood zone. Camels, goats and sheep migrate together with the herdsmen and boys in search of pastures; however, milking camels get priority access to watering points. Sick animals, some goats and a small number of milking camels stay behind with the women, young children and the elderly. When the move involves the whole family, all animals are moved together and camels are used as pack animals to carry tents and supplies.

The main markets for the zone are the urban centers of Borama and Hargeisa. There are other important trading centers further away, such as Wajaale, Burao, Oodweyne, Berbera and, across the border, Djibouti. The main roads in the area link Borao, Hargeisa and Berbera forming a triangle to the east of the zone, and also Hargeisa to Djibouti crossing the western limits of the livelihood zone. Due to the mountainous terrain, there are no major roads that traverse the zone. The majority of the transport routes are dirt tracks, which link rural settlements with rural markets and are transited mainly by camels and donkeys. Access with motorized transport is difficult. Although road transport is poor, communication networks have improved and mobile phones are widely used to transmit information.

Markets

Livestock markets

Trade in livestock and livestock products is the fundamental economic activity for the communities living in the West Golis livelihood zone. Local and export quality goats and camels are the main species traded and camel milk is the main animal product sold. The major markets are listed below. These markets serve as livestock trading points, as supply centers for essential food and non-food items and as sources of labor opportunities during bad years.

- Main markets: Borama and Hargeisa
- More distant markets: Tog Wajaale, Oodweyne, Burao, Berbera, Djibouti

Export quality livestock are concentrated in Hargeisa to be airfreighted out of the country and, more importantly, in Berbera where animals are shipped on *dhows* or cargo ships to Yemen, Saudi Arabia, Egypt and other Gulf states. In the past several decades, Gulf exports have been disrupted by a series of trade bans due to fear of the spread of livestock diseases, mainly Rift Valley Fever and Rinderpest. The last such ban was imposed in 2000 and was not lifted until 2009. Animals are now quarantined before export in Aljaberia and Indhodeero (near Berbera) where quarantine facilities were established in 2007 and 2011 to provide health screening and vaccinations. Animals are also trekked and trucked to Tog Wajaale (situated close to the Ethiopian border) for sale in Ethiopia and Djibouti. Burao market on the *Haud* plateau is the largest assembly market for sheep, goats and camels because of its central location and proximity to the Ethiopian-Somali region as well as to Central Somalia.

There are a number of agents and intermediaries along the livestock value chain: producers (pastoralists and agro-pastoralists), *jeeble* (traders), agents, brokers, transporters, escorts and exporters. *Jeeble* are traders who buy livestock in rural villages, keep them for a short period and sell them on at secondary markets. Selling directly to traders reduces the cost of the trip to the main markets and often traders pay the producers even before collecting the animals. Brokers facilitate livestock sales at the main markets but also secure animals against theft during the transaction.

Livestock markets are generally in poor conditions and need upgrades in basic infrastructure such as water provision, fencing, feedlots, holding grounds, loading ramps and veterinary services. Animals can spend a number of days or weeks in intermediary markets waiting for onward transport and livestock condition can deteriorate during this period lowering the value of the animal.

Livestock prices are influenced by a number of factors, first of which are the animal's age, sex and breed and, especially, body condition, which is linked to rainfall and water and pasture availability. Other factors include exchange rates (Somali shillings against American Dollars) and the level of external demand in Gulf markets, which increases during the main Islamic festivals (*Eid* and *Hajj*). The *Hajj* pilgrimage is the most important season for small stock sales and around half of all goats and sheep are exported during this period and the preparations leading to the *Eid* celebrations.

Cereal markets

The main markets for cereals are Borama and Hargeisa, where retail, wholesale and assembly markets can be found. Ethiopian agricultural produce is also traded in these two urban centers.

Casual labor markets

Household income in the West Golis livelihood zone is derived primarily from the trade of animals and milk and supplemented with self-employment, such as selling charcoal or trading manufactured goods. Paid labor was not recorded during the reference year, but is included as a response strategy during difficult years when households may split and some members travel to towns inside the zone or in the neighboring zones to find work. Some amount of labor is available locally, herding animals for better of households, but this was not a common source of income for the majority of households in any of the wealth groups.

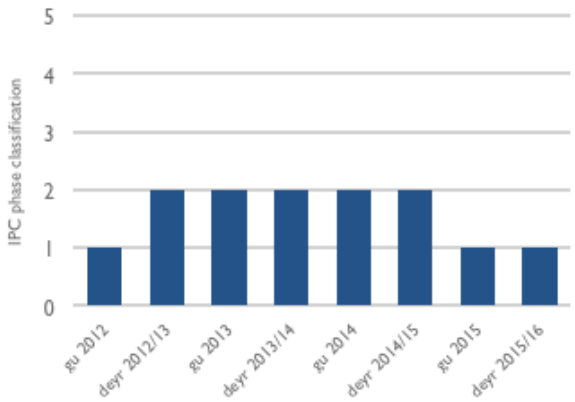
Credit

While credit is a common source of income for pastoral households, borrowing arrangements are informal and flexible and repayment deadlines are not fixed. As a result, this source of cash income should be interpreted rather as a gift. Credit is usually arranged with wealthier households of the same community.

Conflict

While some conflict affected the zone from the late 1980s to 1993 due to clashes between the local inhabitants and the main opposition groups, with the end of the conflict in 1993 there has been relative peace and stability in the region. Clan elders have played a key role in steering through a series of reconciliation conferences that defused conflict between clans and have laid the basis for the stability that exists in Somaliland today. Smaller outbursts of violence and unrest have preceded recent key political moments in Somaliland, such as the presidential elections (26 June 2010) and parliamentary elections (15 November 2014).

Figure 2: Recent trend in IPC phase classification, with 1 as worst and 5 as best



Source: FSNAU

Food access history

The northern regions of Somalia have been less affected by the recent food crises that have had damaging consequences across the center and southern regions. Two factors protect food security in this livelihood zone: it is relatively sheltered

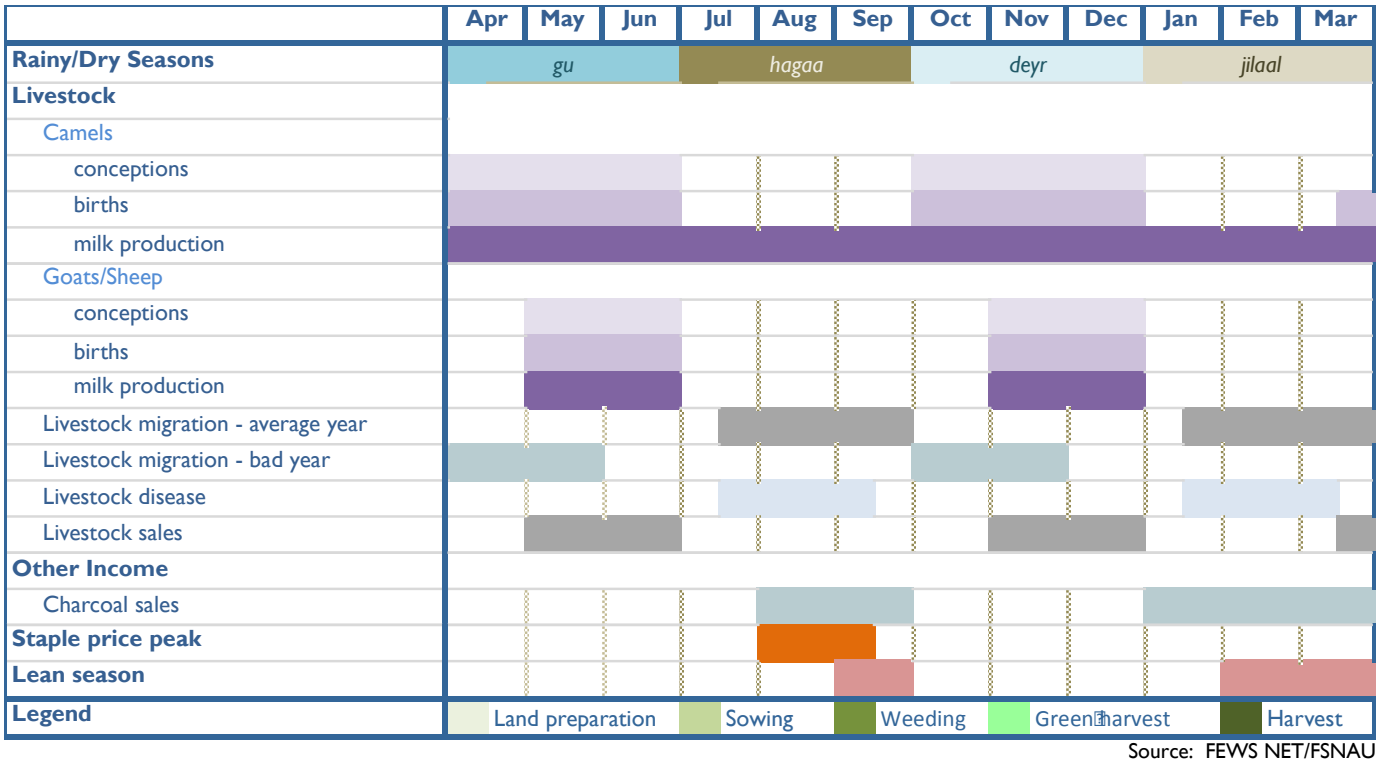
from the political instability and insecurity that affects the southern areas of the country and the topography and geographic location of the zone ensure better access to water and pasture, which has maintained animal health and herd reproduction trends stable, despite a number of consecutive years of below average rainfall. Additionally, rainfall patterns tend to vary between the east and west of the livelihood zone - between Awdal and W/Galbeed regions and Togdheer and Sanaag regions. For example, the 2010 *deyr* and 2011 *gu* rains were normal in the west, but below average on the east, leading to different food security outcomes.

As shown in the chart in Figure 2, the last 4 years have been free from food crisis situations (IPC level 3) in this livelihood. The baseline reference year 2013/14 fell in the middle of a context of stressed food security levels, which, however, did not develop into a food security crisis. Livelihoods have improved more recently, since the 2015 *gu* season.

Seasonal calendar

In general, the zone receives bi-modal rainfall: the *gu* rains (April-June) and the normally shorter *deyr* rains (October-December), separated by two dry seasons *jilaal* (January-March), harshest but less hot, and *hagaa* (July – September). During the wet seasons, surface water and pasture availability for livestock production improves, thereby increasing

Figure 3: Seasonal calendar for the West Golis Pastoral Zone



Source: FEWS NET/FSNAU

livestock reproduction and productivity. Livestock migrations (for all three types of animals) are mainly influenced by availability of pasture and water and insecurity (clan alliances and conflicts).

Livestock sales, especially those for export markets, peak for the *Eid* and *Hajj* season when demand increases (the timing of which differs each year), while local sales peak during and just after the rains when animal conditions are at their best. Animal sales also occur during the dry seasons and the pastoral lean season when cash income is needed. Milk production increases during the rainy seasons when most mating and birthing takes place. Normally camel milk prices increase during *Hagaa* and remain steadily high throughout the short rainy season due to limited supply of goat and sheep milk in the

markets. Milk prices decrease when there is a concentration of livestock at watering points and when production increases during the rainy season.

Food prices can increase towards the end of the monsoon season (August) if rough navigation conditions reduce shipping activities and limit food imports, especially the staple cereals. The major pastoral lean season falls between the months of February and March at the end of the harsh *jilaal* season, a secondary less intense lean season can occur between September and October, until the first *deyr* rains.

Wealth breakdown

The clear determinant of wealth in this livelihood zone is the ownership of livestock; firstly, camels, which are worth 10 times the economic value of a goat, followed by goats and, lastly, sheep. Poor households are defined as those who have up to 5 camels and between 40 and 60 shoats (mixed herds of sheep and goats, although goats are the dominant species). Due to their smaller herd sizes, poor households are not able to sell a camel on a yearly basis and are therefore obliged to trade a larger proportion of their small stock every year in order to have the necessary cash to purchase cereals. Poor households commonly receive gifts in cash (*zakat*) and in kind (shoats but never camels) from wealthier households. Middle households are those who own more than 5 camels but less than 15-16 and keep herds of between 100 and 150 shoats. Their livestock holdings are sufficiently large to sell animals, slaughter close to 10 animals per year and give some away. Better-off households own significantly larger herds, which, on average, number more than double the amount of camels owned by middle-income households, and twice as many small livestock.

Table 2: Wealth Group characteristics West Golis Pastoral

	Poor	Middle	Better-off
Household percentage (%)	30-35	50-55	15-20
Household size (#)	5-7	8-9	11-12
Land holding (ha)			
Land area owned	0	0	0
Land area cultivated	0	0	0
Typical livestock holding (#)			
Sheep	10-15	25-45	35-75
Goats	30-45	80-100	90-200
Cattle	0	0	0
Camels	3-5	9-15	17-40
Donkeys	0-1	1-3	2-4

Source: FEWS NET/FSNAU

The percentage of female animals, especially female camels, is always higher within a herd. Male animals are castrated after a certain age and are the main types of animals to be sold. During the reference year the proportional rate of growth for herds was similar across the wealth groups, balanced by the sales and slaughter of animals and in kind gifts.

Marriage arrangements vary across the wealth groups with the middle and better-off wealth groups more likely to be polygamous, which explain the larger household sizes. Commonly each wife takes care of her flock of sheep and goats with the help of her children, while boys and men are typically in charge of camels and livestock movements.

Sources of food and income and expenditures

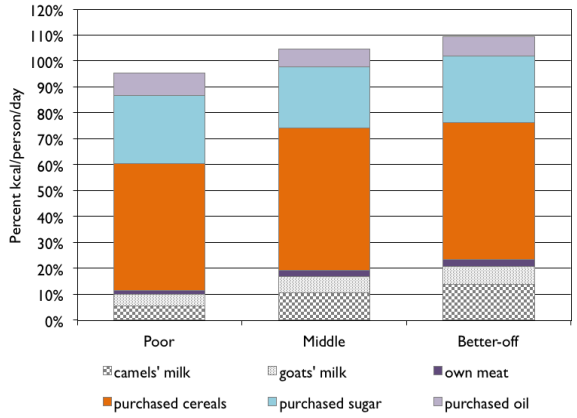
Market purchases of cereals, oil and sugar provide the majority of the energy requirements for the three wealth groups defined in this livelihood zone - approximately 85% of minimum annual kilocalorie needs. As a result, vulnerability to market price fluctuations is high. No food aid was recorded for the reference year. Milk and meat from the households' own supplies supplement the diet, providing an important source of protein. At certain times of the year, especially when household members are away with their herds, milk can be the only source of food for the day.

The staple cereals are imported rice and wheat flour - two products that are sold at similar prices. Poor households also purchase small quantities of sorghum, as it is a cheaper type of cereal, while better off households include maize meal in their staple basket, which is more expensive than rice and wheat flour. The major differences in consumption patterns across the wealth groups are the larger quantities of milk and meat consumed by middle and better-off households

(roughly double that of poor households). Goats are only milked for two months of the year (during the peak rainy season) while camels provide six months of milk supplies for the household, even if lactating periods are longer, split into the two rainy seasons. During the reference year, on average, poor households had access to 1 lactating camel and sold 60% of the milk production. Additionally, they had milk from 10-12 lactating goats and none of this milk was sold. Middle households had 3 lactating camels and 30 lactating goats and better off households had 6 lactating camels and 45 lactating goats. Camels produce between 2 and 3 liters of milk per day, while goats produce close to 0.5 liters daily. Not all lactating animals are milked every day. Middle and better off households reserve some milk for the young calves after they have been weaned. Milk is also transformed into ghee for better conservation into the dry seasons. No milk was purchased during the reference year. In terms of meat, camels are not commonly slaughtered yet all households slaughter goats and sheep; poor households slaughter at least 3 animals per year during the Islamic festivals while better-off households can slaughter up to 10 animals.

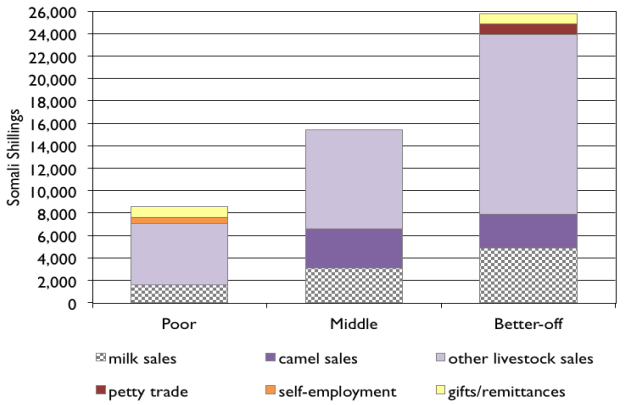
Income patterns are equally determined by livestock holdings. Middle and better-off households who own larger herds support their livelihood through the sale of camel milk, at least one live camel per year and between 30 and 40 small livestock, mainly goats. The majority of these animals are sold for export to the Gulf States - export quality livestock fetch around 60% higher prices than local sale prices. Male animals are the preferred type of animal to be exported. This can be a pre-requisite for exports to the Gulf – a policy that is more easily implemented at the seaports and is in place to prevent the export of breeding stock. The vast majority of exported animals are immature animals: camels between 4 and 6 years of age (referred to as *qaalimo* or *cujuul*) and goats between 3 and 5 years old. However, these trends are changing and selling younger shoats has been encouraged by the rising demand for younger, tenderer meat in the Gulf States. Camels are sold in order to pay off debts and gather some capital for small scale trading activities.

Figure 4: Food sources by wealth group, West Golis Pastoral Zone



Source: FEWS NET/FSNAU

Figure 5: Cash income sources by wealth group, West Golis Pastoral Zone



Source: FEWS NET/FSNAU

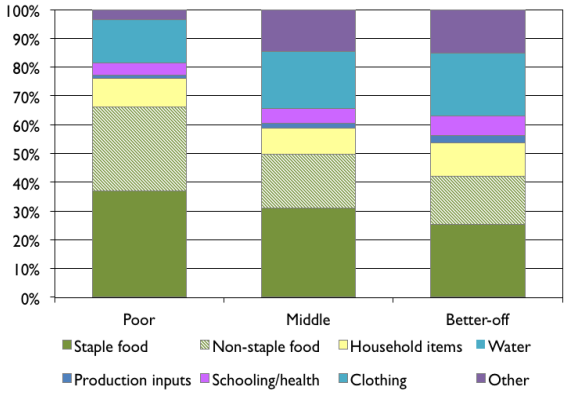
Poor households sell camel milk but will not sell any large livestock if this can be avoided. Instead, poor households sell between 10 and 15 small livestock; mainly goats at local markets as they have fewer opportunities to access to the brokers than manage export markets. To supplement their income, poor income group households sell charcoal during the dry seasons (for approximately 5 months of the year) and rely on borrowing money from wealthier households. Although the majority of poor pastoral households are in debt, borrowing arrangements are flexible and households are not under pressure to return the loans. This source of income has been included under "gifts" in the figure below. Poor households also receive monetary gifts. Typically, a wealthier household will sell a camel and donate the profits to a group of disadvantaged households as part of the Islamic system of *zakat*.

In addition to the sale of livestock, better-off households top up their annual income through petty trade activities and remittances from the Diaspora or from family members based in urban areas inside the country. Remittance flows to the pastoral communities is common, but not typical for all wealth groups, differing from urban communities. Like better-off

households, middle-income households offer gifts to poorer households and may receive gifts or remittances from family members, but the latter are not common strategies for their livelihoods.

With respect to expenditure patterns, food represents the largest expenditure category across the wealth groups. The relative weight of this item is heaviest for the poor households (approximately 65% of their annual income) but it is also an important expenditure category for better-off households (roughly 40% of their annual income) due to the larger number of people per household to be fed (better-off households are double the average household size of poor households). All households purchase similar products but in different quantities. Household products include: tea, salt, soap, batteries and phone charging costs. Very small amounts are spent on family and animal health and schooling as education and health services are limited due to poor infrastructure. Schooling is mainly Quranic. Clothing is the next largest expense after food; this category includes school uniforms and footwear. Clan taxes are paid by the middle and better-off groups, they pay an average of 300.000 and 500.000 SoSh per year and these costs are included under "other" in the figure below. Households did not typically pay for water in this zone, which indicates that water trucking was not necessary during the reference year.

Figure 6: Allocation of expenditures by wealth group, West Golis Pastoral Zone



Source: FEWS NET/FSNAU

Calendar of major sources of food and income for poor households

In addition to the seasonal information presented in Figure 3 above, Figure 7 focuses on poor households and provides further details on how and when these households obtained access to the main types of food and cash throughout the reference year and how these sources of food and cash related to their expenditure requirements.

Figure 7: Main components of the food access calendar for poor households in livelihood zone SO02 (West Golis Pastoral Zone)

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Staple foods												
Rice/ wheat flour												
Oil/sugar												
Milk												
Income												
Livestock sales												
Milk sales												
Firewood sales												
Expenditures												
Staple food												
Legend		Own production			Market purchase				In-kind		Gathering	

Source: FEWS NET/FSNAU

In the absence of agriculture, all staple foods must be purchased. Poor households are only self-sufficient in milk, which is available from their camel herds throughout the year. During the wet seasons, milk yields peak and surplus milk can be sold. It is at this time that livestock sales usually peak too, as animal body condition is at its best, although livestock can be

sold at other times of the year if in need. Income from livestock rearing is complemented with income from the sale of firewood, which is mainly gathered and sold during the dry seasons.

The lean season falls at the end of the *jilaal* dry season, which is typically the harsher of the two. At this time of the year there is little camel milk available and no goat milk, livestock are at their weakest point after the dry months and if sold they will not fetch a very high price. There is a secondary, less intense lean season between September and October, as livestock and households await the first *deyr* rains.

Hazards, response, and monitoring variables

The main hazards which affect the pastoral economy of the West Golis livelihood zone are listed below:

Drought/weather shocks – by far the main hazard is the lack of pasture and water due to reductions or delays in rainfall levels and drought situations, which lead to weakened animal body weight and value. Insufficient water and pasture also reduce milk production. Recurrent and persistent droughts affect livestock production and herd viability as miscarriages can occur alongside the death of young animals. The drying up of water sources can result in having to relying on water trucking (and increased household expenditure on water) and increased migration and family separation.

Livestock diseases - animal disease outbreaks follow in importance and are frequent especially during the dry season. Tick-borne diseases deteriorate livestock body conditions and reduce their value. Common livestock diseases include internal parasites (*Gooriyan*), diarrhea (*Shuban*), lumpy skin disease and respiratory diseases.

Livestock ban or restrictions especially tothe Gulf States - an example is the aforementioned livestock 2000-2009 ban to contain the spread of livestock diseases into the Gulf peninsula.

Insecurity - as a result of conflict among different clans of the livelihood zone and neighboring zones over pasture and water sharing. Civil insecurity causes frequent displacement of pastoralists and it can disrupt trade, increasing the cost of essential food items. Sometimes conflict results in death.

High food prices – especially for rice, wheat flour, sugar, tealeaves and oil.

Environmental degradation - an endemic problem contributing to the loss of pastures due to changing climatic conditions and lack of proper land and water resource management systems. The loss of pastures is further intensified by the increase in agricultural land areas, *Qat* farming and charcoal production. Moreover, uncontrolled construction of *berkads* for commercial purposes results in overgrazing around water points.

Table 3: Coping strategies in response to shocks in West Golis Pastoral

Very poor/poor	Middle/better off
Reduction of expenditure on non-food items and meal sizes	Reduction of expenditure on non-food items and meal sizes
Increasing livestock sales	Increasing livestock sales (especially export quality animals)
Long distance migration (camels and sheep, followed by goats later on)	Long distance migration (camels and sheep, followed by goats later on)
Consumption of wild fruits (*Kulan* and *Garas*)	Consumption of wild fruits (*Kulan* and *Garas*)
Seeking gifts, loans and other forms of social support locally	Alerting family members in urban centers or other areas (increase remittances)
Splitting family members to go and work in urban centers	Migration from affected areas to safe areas in cases of livestock disease epidemics

Source: FEWS NET/FSNAU

In order to cope with changes in weather patterns and other hazards, households resort to certain strategies. Many of these are used every year such as adjusting the timing of mating and birthing, migrating, hand feeding animals, selling older animals and/or exchanging them for younger ones, storing ghee for consumption during lean season or selling first quality goats to build up a reserve of cash. Listed below are the common strategies used during bad years, following a particularly bad season.

Table 4: Key parameters to monitor in West Golis Pastoral

Item	Key Parameter – Quantity	Key Parameter – Price
Crop production	n/a	n/a
Animal production	Supply of camels Supply of goats Supply of camel milk (season 1 and 2) Supply of goat milk (one season only)	Price of camels (local and export quality) Price of goats (local and export quality) Price of camel milk (season 1 and 2)
Other	Remittances from permanent migrants Supply of fuel wood and/or charcoal Volumes of petty trade Flows of zakat and other social support	Price of maize Price of sorghum Price of wheat Price of rice Price of sugar Remittances from permanent migrants Price of fuel wood and/or charcoal Volumes of petty trade Flows of zakat and other social support

Source: FEWS NET/FSNAU

Estimated population in the West Golis Pastoral Livelihood Zone (SO02)

Zone	Region	District	Livelihood zone	Population 2014
North West	Awdal	Borama	West Golis Pastoral	57,377
North West	Awdal	Baki	West Golis Pastoral	74,114
North West	Awdal	Lughaye	West Golis Pastoral	4,555
North West	Awdal	Zeylac	West Golis Pastoral	2,830
North West	Woqooyi Galbeed	Hargeysa	West Golis Pastoral	66,969
North West	Woqooyi Galbeed	Berbera	West Golis Pastoral	60,868
North West	Woqooyi Galbeed	Gebiley	West Golis Pastoral	11,668
North West	Togdheer	Burco	West Golis Pastoral	3,662
North West	Togdheer	Owdweyne	West Golis Pastoral	6,285
North West	Togdheer	Sheikh	West Golis Pastoral	35,432
North West	Sool	Caynabo	West Golis Pastoral	1,143
North West	Sanaag	Ceel Afweyn	West Golis Pastoral	11,086
Total population 2014				**335,989**

NORTHWEST AGROPASTORAL (ZONE SO03)

General livelihood zone description

Table 1: Summary of data supporting the Northwest Agro-pastoral livelihood profile

Field data collection	April/May 2011
Consumption year	April – March
Reference year	April 2010-Marh 2011
Initial estimated validity	Through 2015-2016

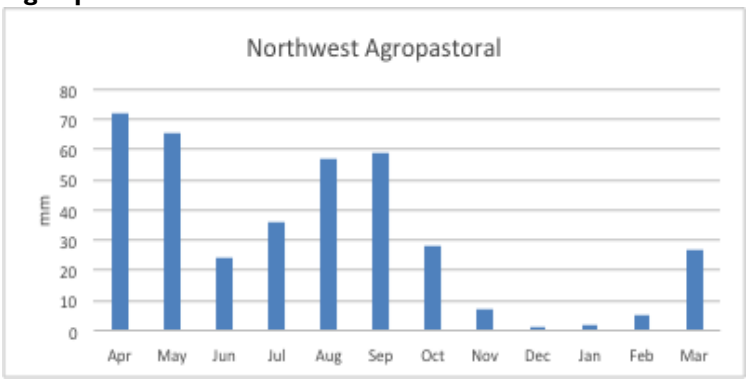
Source: FSNAU

The *Northwest Agro-pastoral Livelihood Zone* (SO03) is located in the Northwest Zone of Somalia and covers parts of Adwal and Woqooyi Galbeed regions, including Borama, Baki, Hargeysa and Gebiley districts. It is bordered by the *West Golis Pastoral Livelihood Zone* to the north, by the *Hawd Pastoral Livelihood Zone* to the east and south and by Ethiopia to the west. The most recent population estimate for this zone is 191,784 (UNFPA 2014).

This zone occupies approximately 6,590 km^2 and the topography ranges from 1050 meters above sea level to the south of West Galbeed to 1700 meters above sea level at the Ethiopian border. Soils are mainly loamy-clay, which supports rain-fed farming. The terrain is undulating, with scattered canopy and acacia trees throughout the zone. The northeast is more arid, with grasslands giving way to low brush and grass clumps. The livelihood zone receives relatively high rainfall compared to most parts of Somalia, ranging from 350 - 400 mm[13] during an average year. As shown in figure 1, this livelihood zone has one extended rainy season with two distinct peaks. Unlike much of southern Somalia, where the first season occurs from April to June and the second from October to December, here the first period, known as *gu-karan* spans April-August and the second rainy season, from January to mid-March, is known as the *hays*. Another brief period of rain typically occurs in November, and these rains are referred to as the *deyr*, but these are most likely to fall in the areas around the East Golis Mountains and Guban of the northwest. Temperatures in March-October range from 30-35°C, and drop to 11°C from October to February.

The main water sources in the livelihood zone are water catchments and shallow wells. Most of the better-off and part of the middle, particularly those bordering the *Hawd Pastoral Livelihood Zone*, have at least 1 *berkad*, although most were in bad condition during the reference year. Rainwater collection is most common in the Golis mountains area, whereas the northern part of the zone relies on shallow wells. During the dry season, throughout the zone water is generally only available from shallow wells for about 3 months, at a cost. Brief periods of water trucking occur in some areas, increasing water costs to 500-800 SoSh per 20-liter jerrican of water.[14]

Figure 1: Estimated average rainfall in mm in Northwest Agro-pastoral



Source: USGS CHIRPS Data, FEWS NET GeoCLIM

[13] Based on USGS CHIRPS data, a combination of satellite-based Rainfall Estimates (RFE) and station data, with data extending more than 30 years (1981-2014). Source, FEWS NET and USGS.

[14] FSNAU, Northwest Agro-pastoral Livelihood Zone Baseline Report, Technical Series Report No VI. 39, Sept 2011

Sorghum and maize cultivation and cattle production are the main economic activities in this livelihood zone. Portions of the zone have been under sorghum and maize cultivation since the 1930s and in the 1990s it was the only significant area of sedentary cultivation of these staple crops in Somalia. Three crop harvests occur during the year. Long duration (6 months) sorghum and two plantings of short cycle (3 months) maize are the main cereal crops, with sorghum planted at the end of March to mid-April and harvested in October and maize planted in February-March and September and harvested in July and January. Another variety of sorghum with a short cycle (3 months) is common in Gebiley. Other minor crops include cowpeas, watermelon (in Gebiley Region) and Bulrush millet (in Awdal Region). Various methods of land preparation are used; tractors are the main method, along with oxen and hand ploughing used mainly by poor households. Seed broadcasting is the main sowing method. Harvested cereal crops are mainly stored in underground pits, making them susceptible to pests and variable soil moisture levels, contributing to post-harvest losses. Historically, no major annual livestock migration occurs in the zone. However, in recent years, with decreased rainfall there has been some movement across the border into Ethiopia, where animals remain through the *gu-karan* season. Continued ongoing shortages in annual rainfall may cause permanent shifts in livestock migration patterns in the zone in future years.

Livestock provide the most important source of cash income in this livelihood zone. Milk sales and live animal sales combined accounted for the majority of cash income for all households in the reference year. Camels and cattle are the most valuable of the livestock raised in this zone; sheep and goats particularly vital for poorer households, who have very few cattle. Poorer households also depend on seasonal labor, self-employment, such as selling firewood and charcoal, and social support from relatives and neighbors.

The market infrastructure is relatively developed in this livelihood zone due to sale of livestock products and cereal trade, which link rural households to markets in Hargeisa, Borama and Gebiley. Trade in cereal commodities peaks after harvest, with maize sold at the Hargeisa market and Borama and Gebiley the primary markets for sorghum. Dry seasons see a peak in local livestock sales and export sales peak during the *Hajj*, particularly for goats. Milk sales are continuous throughout the year, with peaks in May-June and in October.

Services here are better than in many other areas, with formal and non-formal schools present in most villages, although the quality of education is not high. Health posts, private clinics and hospitals are also accessible in most areas, although they lack medical supplies and qualified medical staff. Most of the villages have access to cellular services. About 4 cellular agencies (Telsom, Telecom, Somtel, and Nation link) operate in the livelihood zone. Communication services facilitate remittance flows, trade, information and local money transfers. Availability of water, poor sanitation and health facilities remain limited, while unsafe drinking water, inadequate health facilities, poor sanitation, poor childcare and feeding practices remain critical health and nutrition concerns.

The most damaging intermittent hazards in this livelihood zone in order of severity are droughts and chronic water shortages, inflation, particularly of food products, insecurity due to clan rivalries, pests, diseases (both human and livestock) and environmental degradation. Livestock production is constrained by lack of veterinary services, with agro-pastoralists relying on indigenous knowledge to manage ecto- and endo-parasites. In some instances, agro-pastoralists purchase drugs from veterinary centers.

Markets

Households in the *Northwest Agro-pastoral Livelihood Zone* depend heavily on selling milk and livestock to generate cash income, and they also rely on the market to obtain much of their food. The main markets in this zone are Hargeisa, Borama and Gebiley. Food and other goods flow through these markets to local consumers and they also act as hubs for cross-border trade with Djibouti and Ethiopia. Roads in this zone are relatively good, compared to many other areas of Somalia, however, most remote villages are still connected to the main tarmac roads by dirt tracks that quickly become impassable during the rainy seasons. These roads, which run across riverbeds, hills and mountainous terrain, are difficult to traverse even at the best of times. In addition, most households do not have access to affordable transportation options. Village markets, therefore, tend to be the immediate connection that poorer households have to the larger market network, which

puts them at a disadvantage in terms of both the price at which they are able to sell their goods, as well as the price they need to pay for food and other goods.

Cereal, milk and livestock markets

The main markets that provide cereals consumed by most households are Borama, Gebiley and Hargeisa markets. Maize and sorghum are brought into the zone mainly from Zone 5 in Ethiopia. Traders bring sorghum to the Borama and Gebiley markets, from where it is purchased by local traders who carry it on east via major tarmac roads to the Burco village market or when roads permit, northwest into Djibouti. Maize is traded at the Hargeisa market, and then taken by local traders to the Burco market as well as into Djibouti. Like other parts of Somalia, the prices of imported items are linked to periodic monsoon tides that affect sea transport.

There are no storage or processing facilities for milk, so it is essential for milk to make the journey from producer to consumer in a short period of time. Demand for milk comes from local towns and households sell their milk or ghee locally throughout the year.

The northern Somali livestock trade involves the annual export of millions of dollars' worth of live animals through the ports of Berbera, Bosasso and Djibouti across the Gulf of Aden. This is said to be the largest movement of live animal – 'on the hoof' – trade anywhere in the world. The ports are linked to the interior rangelands through a series of clan-based corridors through which the trade is managed.[15]

Casual labor markets

The labor market for this zone is mainly comprised of local seasonal agriculture. Better-off and middle households cultivate fields of 2 to 3 hectares, requiring extra-household labor to manage during the peak labor season. Seed sowing, weeding and harvesting times are the most labor-intensive periods, and households on the upper end of the wealth spectrum hire extra help, sourced from members of poor households, to work on their farms. Average daily labor rates in the reference year were SoSh 29,167, representing an increase of 8% from the 5-year average and 3% from the previous year. This was due to average climatic conditions that favored increased agricultural activities. In a bad yearwhen drought or flooding decrease agricultural labor opportunities, poor rural households may seek casual labor in urban areas or increase firewood and charcoal sales.

Credit

Most households take out credit from traders and shop-keepers in the main towns and villages. Better-off households typically take out credit to purchase inputs for crop and livestock production and additional livestock. Poorer households who have smaller asset holdings have limited access to loans since their repayment ability is low. The poor households who do take out small loans to cover their immediate food needs, have an increasing debt burden during the hunger seasons when terms of trade are poor and during droughts when livestock production declines. There is a strong social support network among agro-pastoral communities in the zone. The better-off and some middle households receive remittances and access loans in times of crises[16]. *Goos*, a form of community collaboration in exchanging farming services and activities, is practiced communally from land preparation to harvest. In addition, neighborhood support such as community money contributions for the most vulnerable, food gifts and kinship support are common. Obligatory *Zakat* is normally given annually by the better-off. This social support is in the form of livestock and crops, and is targeted at the poor alongside other gifts in cash and in kind. Additionally, the middle and better-off households donate meat and milk to poor households. Dry food contributions and loans in cash and in kind are also common.

[15] Nisar Majid, Livestock Trade in the Djibouti, Ethiopian, and Somali and Ethiopian Borderlands, Africa Programme, September 2010, AFP BP 2010/01

[16] http://www.fsnau.org/downloads/Remittances-and-Livelihoods-Support-in-Puntland-and-Somaliland.pdf

Conflict

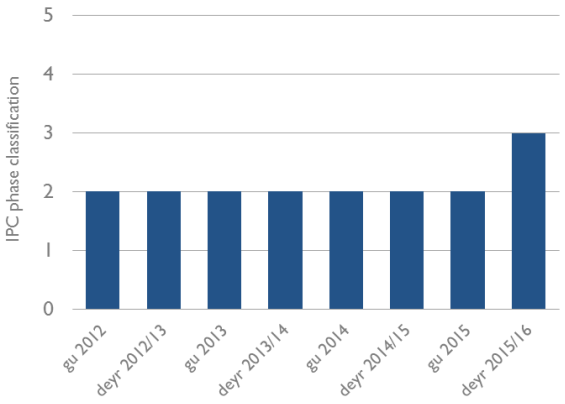
The 1991 overthrow of President Siad Barre ushered in a new era of conflict and anarchy from which Somalia has not fully recovered. The ousting of President Barre by forces of the United Somali Congress (USC) began a period of conflict, instability, food crisis and extreme food insecurity that continues in parts of Somalia today. In the absence of a central government, warlords and armed factions have violently vied for political and economic dominance. In 2011, the plight of the Somali people was further exacerbated by the worst drought in six decades, which left millions of people on the verge of starvation and caused tens of thousands to flee to Kenya and Ethiopia in search of food.

While the *Northwest Agro-pastoral Livelihood Zone* is relatively stable compared to southern Somalia, clan rivalries continue to foster ongoing instability and insecurity. Conflict over grazing land in the Kalshaale area of Buhoodle District resulted in nine deaths and injuries in the reference year. However, efforts from both elders and the house of parliament aimed to promote peace in the area and dialogue between clans with government assistance has led to an agreement to resolve the conflict over the disputed El-bardaale agricultural land in the Gebiley District.[17] Localized opportunistic conflicts (political and tribal-driven) and insecurity due to ongoing clan rivalry disrupt trade flows and access to casual labor opportunities, goods and services. This not only has negative implications for households' access to food and income, but also causes displacement and disruption of vital social networks.

Food access history

The effect of ongoing conflict has been devastating over the years. Inter-annual drought compounds the many negative outcomes of war, which include a collapsed industrial base, the breakdown of infrastructure, especially roads, the loss of state services, like schools and health clinics, lawlessness which results in violence towards women, supply shortages, price hikes, population displacement, disrupted trade, and impeded movement to seasonal grazing areas. Fields have been abandoned and livestock diseases left untreated as pastoralists lacked access to veterinary care. All these effects have had devastating consequences for the food and livelihood security of the local people. Over the years this has meant that parts of Somalia have witnessed over twenty years of food and livelihood insecurity.

Figure 2: Recent trend in IPC phase classification, with 1 as best and 5 as worst



Source: FSNAU

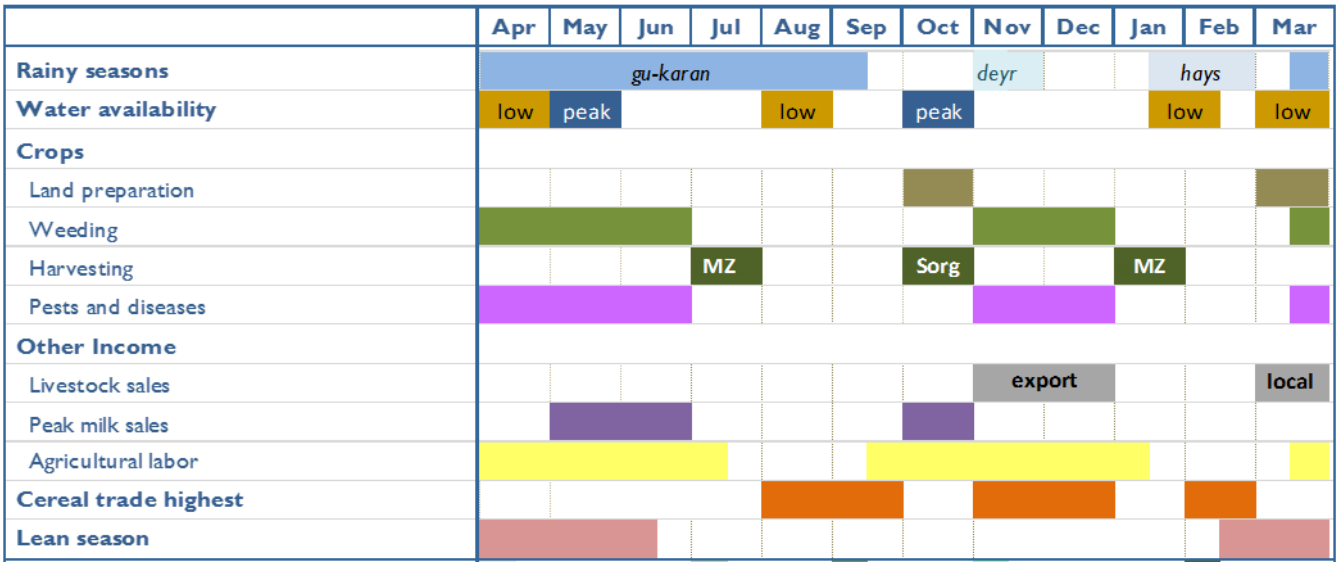
Throughout the conflict, timely and effective interventions have been severely constrained due to insecurity. A major international emergency effort ensued in response to the country-wide widespread deaths of 1991-1992, 2005-2006 and 2011, and in 2008 and 2009 the country received the largest amounts of international food aid since the reported severe food insecurity of 1992-93, however in late 2009 all US-funded food aid *to Al Shabaab*-controlled southern Somalia was halted. Because of its location away from the worst of the conflict and instability of southern Somalia, the *Northwest Agro-pastoral Livelihood Zone* has not been the recipient of large-scale interventions.

Seasonal calendar

This livelihood zone has one extended rainy season with two distinct peaks. Unlike much of southern Somalia, where the first season occurs from April to June and the second from October to December, here the first period, known as *gu-karan*

[17] FSNAU, Northwest Agro-pastoral Livelihood Zone Baseline Report, Technical Series Report No VI. 39, Sept 2011

Figure 2 Seasonal calendar for the Northwestern Agro-pastoral Livelihood Zone



Source: FSNAU, Northwest Agro-pastoral Livelihood Zone Baseline Report, Technical Series Report No VI. 39, Sept 2011

spans April-August and the second rainy season, from January to mid-March, is known as the *hays*. Another brief period of rain typically occurs in November, and these rains are referred to as the *deyr*, but these rains are fickle and they are most likely to fall in the areas around the East Golis Mountains and Guban of the northwest.

Water availability in the zone is influenced by seasonal rainfall patterns, with corresponding peak surface water resources available in May and October, during peak *gu-karan* rains. Trucking of water increases from late February to early March, coinciding with the cessation of the *Hays* rains. Land preparation begins in late March before the *gu-karan* rains and in October before the *deyr* rains. Two main crops are planted in the livelihood zone: long duration (6 months) sorghum and short cycle (3 months) maize varieties. Three crop harvests are harvested in a year: *gu-karan* (for sorghum) and *Badhayso Dhayro (for* maize*).* The *Badhayso* (meaning "very available") maize variety is planted in early April and harvested in the end of *gu*, while *Dhayro* is planted in October (3-month maturity) before the start of the *deyr* rains, and harvested in January. Another variety of sorghum with a short cycle (3 months) is common in Gebiley. Weeding occurs from mid-march to June and November-December, and crop pest and disease outbreaks coincide with these periods. Crop pests and diseases coincide largely with the weeding period, from mid-March to June and November-December.

The lean season occurs from mid-February to mid-June. Consumption of households' own food peaks from July-August, mid-September to November and mid-December to February, following the harvests. Trade in sorghum and maize happens mainly in August-September and November-December, with some trading in February. Sale of livestock and livestock products provide the main financial capital for agro-pastoralists. Livestock sales occur throughout the year due to the type of livestock reared and fed using crop fodder in paddocks (semi-zero grazing) even during the dry season. While some form of livestock or livestock product sales occur year-round, local livestock sales peak in March and export sales peak when demand around the Hajj is high, occurring in November/December in the reference year. Milk sales peak in May-June and October. Opportunities for casual labor peak from March to mid-July and from mid-September to January. Peak trade in cereal commodities occur after every harvest, while labor opportunities coincide with the peak of agricultural activities (land preparation, weeding and harvesting). Terms of trade (goats to rice) fluctuate over a typical year, highest in January (almost 80 kg/head) and lowest in September (hovering around 60 kg/head).

Wealth breakdown

In this agro-pastoral zone, wealth is determined both by the number of livestock owned and by the amount of land cultivated. Species of livestock owned, productivity of land and other livelihood activities also determine wealth. Cattle and goats are the most commonly owned livestock, with camels the most valuable animals, both in terms of direct sales value and in terms of the food and cash income they are able to generate for the household. Moving up the wealth spectrum, there is an increase in the number of livestock owned, the amount of land cultivated, and the household size. Poor households comprise about a third of the households, although these households are also the smallest in size (typically around 7 people per unit) whereas better-off households have the most people (around 10 people per unit).

Better-off households make up around 20% of the households in this livelihood zone, and those in the middle wealth group make up 50% of the households. Most households are male-headed, however, the proportion of female-headed households is slightly higher among the poor wealth group (10%) compared to the middle and better-off (5%). Most poor households and middle groups are monogamous, while better-off have 1-2 wives.

Table 2 Wealth group characteristics in Northwest Agro-pastoral

	Poor	Middle	Better-off
Household percentage (%)	30	50	20
Household size (#)	7	8	10
Land holding (ha)			
Land area owned	2	4	7
Land area cultivated	1.25	2	3
Typical livestock holding (#)			
Sheep	9	17	42
Goats	8	13	20
Cattle	3	7	14
Camels	0	4	8
Donkeys	1	1.5	2

Source: FSNAU
Note: The figures in the table are the mid-point of a range.

Households here typically own more land than they cultivate. Lack of time due to working for cash on other farms and livestock management, lack of resources to pay for hired labor, as well as inferior land quality, are reasons why farmers may not cultivate all the land they own. Middle and better off households cultivate more land, in part because they have more productive household members within the homestead; and in part because they are able to recruit more labor by hiring poorer household members in exchange for cash, food or access to their oxen and ploughs. These households are also able to maintain larger herd sizes, effectively balancing household labor between herding and cropping activities.

The amount of food needs households are able to fulfill from consumption of their own crops also varies significantly among wealth groups. Poor households are typically able to grow enough sorghum and maize to consume their own cereals for 4-6 months out of the year. Middle income households can afford to consume their own cereals for 8-10 months out of the year and better-off households consume their own cereal crop yields for more than 12 months out of the year.

Milk production from their animals and direct sales of animals along with crop production from their land allows better off households to cover all of their own food and cash income requirements in a year like the reference year. Poor households, on the other hand, are not able to cover all of their basic food and non-food requirements by relying on their livestock herds and crop production alone. Poorer households provide agricultural labor for middle and better-off households in exchange for the use of plough oxen and/or for food. These households tend to have fewer productive members, which is one of the limits on their ability to cultivate larger land sizes and maintain more livestock.

Farmers, who require agricultural labor but cannot afford it, can rely upon family members, neighbors and fellow clan members to provide that labor. *Goos* (meaning “working together”)—a form inter-communal collaboration in undertaking different farming activities—is practiced communally from land preparation to harvest. For example, most households in the middle wealth group have 1 ox, while better-off households have 2 oxen; therefore, oxen sharing—a form of *Goos*—is a common practice. Often two middle-income households will pool their oxen to pull a plough. Services obtained through *Goos* are mainly paid for with food.

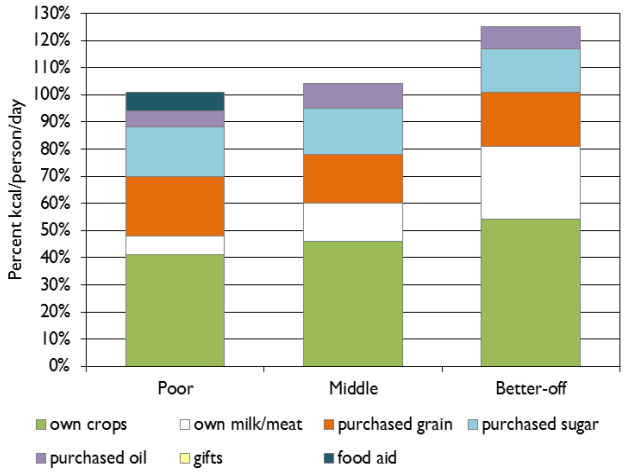
There is a strong social support network among agro-pastoral communities in the *Northwest Agro-pastoral Livelihood Zone*. The better-off and some middle households receive remittances and access loans in times of crises. Owing to relatively

stable food sources (except for the poor) remittances of about USD 200-300 are common during the lean season[18]. In addition, neighborhood support such as community money contributions for the most vulnerable, food gifts, kinship support and religious obligation are also common. Obligatory *Zakat* is normally given annually by the better-off. This social support is in the form of livestock and crops, and is targeted at the poor alongside other gifts in cash and in kind. Additionally, the middle and better-off households donate meat and milk to poor households. Dry food contributions and loans in cash and in kind are also common.

Sources of food and income and expenditures

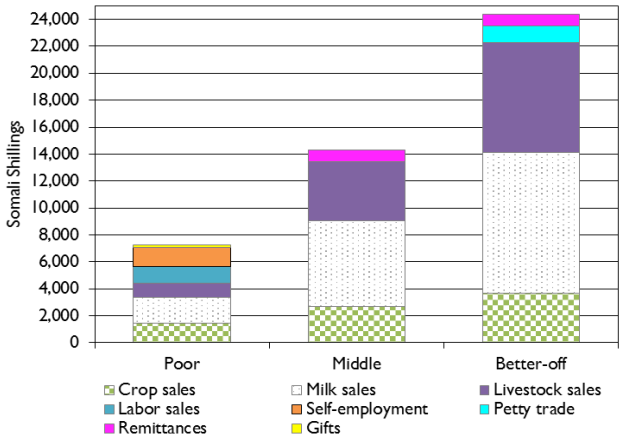
The graphs below depict the relative importance of different sources of food and cash income and expenditure patterns for different wealth groups in this livelihood zone during the reference year. It should be noted that the reference year (April 2010-March 2011) was an average consumption year, characterized by decent climatic conditions (good *gu-karan* rains balanced out the poor *deyr* season), peaceful presidential elections (in June 2010), good crop production, increased milk production (g*u-karan*), stable milk prices (d*eyr*), low cereal prices, average livestock body conditions in *deyr*, and the use of normal coping strategies by most poor HHs. Therefore, the description below tells us how households here make ends meet in an average year.

Figure 3: Food sources by wealth group, Northwest Agro-pastoral Livelihood Zone



Source: FSNAU, 03 Northwest Agropastoral_28Oct15 BSS.

Figure 4: Cash income sources by wealth group, Northwest Agro-pastoral Livelihood Zone



Source: FSNAU, 03 Northwest Agropastoral_28Oct15 BSS.

There are three main sources of food in this livelihood zone. Own crop production, milk from households' own livestock and food purchases make up the majority of calories consumed annually. Poor households also depend on gifts of food from middle and better off-households. Depending on the rains, these three main sources – own crops, milk and purchase – are balanced out against each other to meet annual needs. In years when rains are poor and crops and milk production decrease, the reliance on purchased food expands; likewise, when crop and milk production are higher, households purchase less food.

In a year like the reference year, which was relatively good, own crop production accounted for 41 – 54% of calories consumed by households, with the contribution increasing in line with wealth. Sorghum is the most important crop; in the reference year poor households produced around 600kg and better-off households about 2000kg. Of the sorghum produced, poor households sold about 200kg, kept about 25kg for seed and consumed the remainder. Sorghum provided

[18] http://www.fsnau.org/products/research-studies

approximately 25% of the calorie needs of poor households in the reference year. For better-off households who grew about 2000kg of sorghum, they sold or exchanged around 950kg, kept around 350kg for seed and other uses and consumed the remainder. Sorghum accounted for about 32% of the calorie needs of better-off households during the reference year. Maize is the second most important crop in the zone. Poor households produced about 360kg of maize during the reference year, compared to better-off households who produced on average 1050kg. Poor households sold or exchanged around 100kg, kept 42kg for seed and consumed the remainder, which contributed 14% of the calorie needs for the year. Of the 1050kg better-off households produced, they sold or exchanged about 400kg, kept 250kg for seed and other uses and consumed the remainder, which provided about 19% of their calories for the year.

Milk is a second major source of food produced by these agro-pastoral households. Consumption of milk and milk products accounted for 7-27% of total calories consumed by households, with better-off households meeting almost a third of their calorie needs through the consumption of livestock products. Poor households, on the other hand, owning fewer livestock, produce less milk and must sell more of the livestock products to earn cash for the purchase of less-expensive foods. Only middle and better-off households owned camels in the reference year. Camels offer the most reliable and plentiful source of milk. Poor households typically have only 1 or 2 milking cows, producing around 660 liters in a year like the reference year (most of this produced in the *gu* season). Around three-quarters of milk produced is sold, but the rest is consumed. This, along with the milk obtained from around 5 milking goats and 4 milking sheep, supplies about 7% of the calories poor households needed in the reference year. Milk yields for cattle are around 3 liters per day in the wet season and 2 liters per day in the dry season; goat milk yields are about a ½ liter and sheep milk yields are just under a ½ liter daily. Better off-households, on the other hand, had between 1-2 camels milking throughout the reference year and 4 cows, producing a total of around 3600 liters in the wet season and 1290 liters in the dry season. Around 60% of the camel's milk and 40% the cows' milk was sold. Milk and milk products from all animals (camels, cows, goats and sheet) provides around 27% of the calories that better-off households needed in the reference year.

Food purchases made up the remainder of calorie needs for middle and better-off wealth groups. While poor households obtained about 46% of their food needs from purchases, food aid and gifts also accounted for about 7-10% of their food needs. For middle and better off households, all the remaining calorie requirements for the households came from market purchases, about 44% for middle and 45% for better-off households. Imported rice and wheat flour are purchased throughout the year by all wealth groups. Rice accounts for 8% of the calorie needs of the poor and 5% for the better-off, while wheat flour fulfills 14% of the calorie needs of the poor and 12% for the better-off. Better-off households purchase pasta 10 months out of the year, which accounts for 3% of their calorie needs. Purchased sugar and oil also contributed substantially to the annual calorie intake. Purchased sugar provided 18% of calorie requirements for poor households and 16% for better-off households. Purchased oil accounted for 6% of calories for poor households and 8% for better-off households.

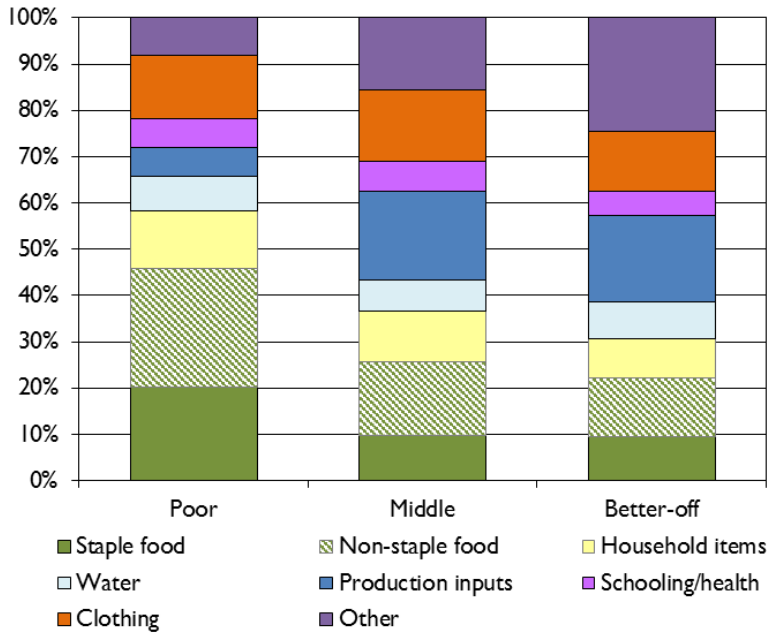
The main sources of cash income in this agro-pastoral zone are milk sales, livestock sales, crop sales and labor sales. At the upper end of the wealth spectrum crop sales, milk sales and livestock sales contribute most significantly to household income. Poor households, unable to cover their minimum cash requirements with crops and livestock, turn to casual labor and self-employment activities and rely additionally on gifts of cash. Typical better off and middle households also relied to a small extent on remittances sent back from family members living outside the zone, and better off households engaged in petty trade activities as well, which provided supplemental cash income.

Milk and crop sales combined brought in well over half of the cash income of all wealth groups in the reference year. Milk sales provided over 40% of household income for the better-off and just over a quarter of annual income for poor households. Camels' and cows' milk is sold throughout most of the year; small amounts of goats' milk is sold as well, but only during the *gu/karan* season. Poor households sold 774 liters of fresh milk on average, mainly from cattle, while the middle sold about 2,360 liters of fresh milk (66% from camel and 34% cattle). The better-off wealth group sold 2,600 liters of fresh milk (67% from camel and 33% cattle milk) on average. Camels' milk is the biggest earner in this category with cows' milk just slightly behind for middle households. Because poor households do not own camels and they consume all of their goats' milk, they rely exclusively on cows for milk income. This is important to keep in mind during years of poor

rainfall, when milk yields for cows will be the first to drop. Better off households have a surer source of cash in this regard, given that camels are hardier and sustain higher milk yields even when rainfall falters.

Crop sales alone helped to cover 15 - 20% of total cash income in the reference year. Sorghum, maize and garden crops, like onions, tomatoes and watermelon are grown and sold - as well as some *khat*. Sorghum was the most important crop sold by better off households and the mixed garden crops brought in the most crop-based cash income for middle and poor households. Livestock sales contributed an additional 34% of better-off household cash income and 14% of the cash income for poor households in the reference year. Both of these figures represent the upper end of what households might expect because income from livestock sales was relatively high in the reference year, benefitting from good livestock body condition which had resulted from the normal *gu-karan* rains and normal pasture and fodder; and crop production was relatively good as well, given the decent *gu-karan* rains that year.

Figure 5: Allocation of expenditures by wealth group, Northwest Agro-pastoral Zone



Source: FSNAU, 03 Northwest Agropastoral_28Oct15 BSS.

Even though the reference year was one in which households were able to generate decent returns on their crop and livestock assets, poor households are not able to meet their food and cash needs in even the best of years with these assets alone, and need to turn to other income earning options, including seasonal labor, self-employment and gifts. These three options accounted for 40% of cash income for poor households in the reference year. Seasonal jobs are found almost entirely in the local agricultural sector, and poor households are commonly employed by better off households to help with land preparation, planting, weeding and harvesting. Because it was a good year, average daily labor rates in the reference year were higher than both the 5-year average and the previous year. Terms of trade for labor (in relation to sorghum) brought households 12kg or sorghum for the cash earned from a day's work, compared to 10 kg for a day's work associated with the previous year. A day's work, therefore, was equivalent to at least 4 days' of minimum calorie requirements covered for a household of 7 people, the average for poor households. Self-employment activities included mainly firewood collection and sale, and the burning and selling of charcoal. Both of these pursuits are leading to a degraded environment with a range of associated negative consequences such as soil erosion, loss of biodiversity and a less productive rangeland. Poor households depend on gifts – *zakat* - from better off households; these are obligatory distributions and can come in the form of food, cash, milk or meat. As a percentage of household cash income this did not cover more than a few percent for poor households in the reference year.

Turning to expenditure, we see from the graph that households in the reference year spent cash on a range of goods and services, including staple and non-staple food, household items, water, production inputs, schooling, health, clothing and other less essential items.

The picture conveyed by the graph is that of a relatively comfortable year by local standards. Expenditure on staple food does not exceed 20% of total cash income for any wealth group, and even when we look at staple and non-staple food combined, this expenditure accounts for less than 50% of cash income for poor households and below 30% for middle and

better off households. Non-staple expenditure was actually higher in the reference year than in previous years, 80% higher than the previous year and 11% higher than the previous 5-year average. These increases were a result of reduced global supply and increasing demand for sugar in ethanol production. Cooking oil was also over 30% higher than the five-year average, pushing up the cost of non-staple purchases. Nevertheless, if we compare the expenditure on food to that in the *Addun Pastoral Livelihood Zone,* where the reference year was a below-average year, and where all wealth groups devoted more than 70% of their cash income just to buying food, we see that households in the *Northwest Agro-pastoral Livelihood Zone* were in far better shape in the reference year. It is also important to note that in this agro-pastoral area, households are able to produce a good deal of the food they would otherwise need to buy in a pastoral zone.

Because households spent a relatively small amount of their total cash on food, they had more cash left over to devote to other needs. For middle and better off households a large portion of their remaining cash was spent on productive inputs. Input costs in agro-pastoral areas tend to be on the high end since households need to ensure they invest in both crops and livestock. This zone is no exception. Households in all wealth groups spent money on veterinary drugs, salt and water for livestock, ploughing and tools. Middle and better off households, in addition, spent money on seeds, labor and livestock (such as goats and sheep). As a percent of annual expenditure, investment in livestock slightly exceeded the investment in cropping, accounting for 7%, 13% and 15% for poor, middle and better off households, respectively, compared to 4%, 12%, and 11% spent on cropping. Crop production provides a solid source of food and cash here, but livestock are still a fundamental driver of the household economy and a careful balancing act between the two productive bases takes place every year.

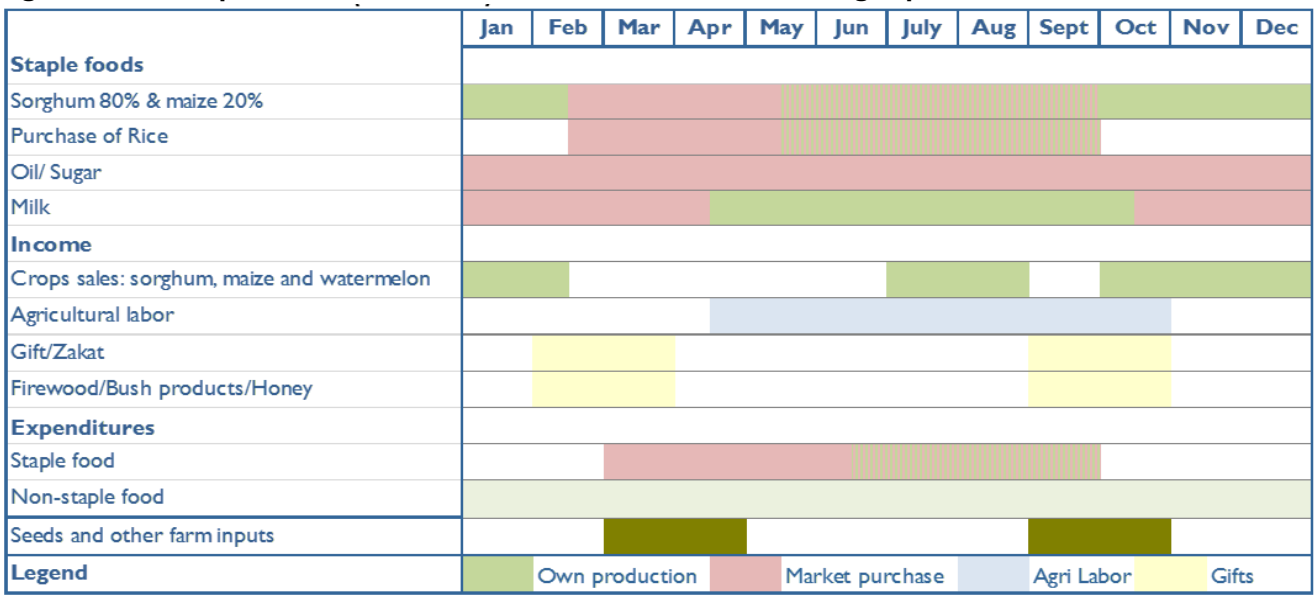
Households spent almost the same in relative terms on social services, such as school and health, although in absolute terms spending in these areas increased with wealth. Both formal and non-formal schools are available in most villages, although the quality of formal education is low due to lack of qualified teachers, limited equipment and poor educational infrastructure. Enrolment and attendance is regular for children in the better-off wealth group, while children in the poor and middle wealth groups attend school irregularly or do not attend school at all. More boys (60%) than girls (40%) attend formal schools. The better-off send at least 2 boys and 1 girl to school, whereas the poor and middle only send 1 boy or girl to formal schools. It is very difficult for households to send their children to secondary school, however, because very few secondary schools are available in this livelihood zone, and the cost of sending children to board in an urban area is prohibitive for all wealth groups. A number of health posts, private clinics and hospitals operate in this zone, although most of these facilities lack medical supplies and qualified personnel. In most remote villages, high transport and consultation and drug costs (10,000-15,000 SoSh constrain effective access to basic health services.

The 'other' category on the graph above includes items like taxes, gifts, clan contributions, transportation and other non-essential expenditures that could potentially be reduced in a bad year to help cover food and essential livelihood-related items. This expenditure, both in absolute and relative terms, increases with wealth highlighting the fact that better off households have far more to draw down on than poor households.

Calendar of major sources of food and income for poor households

When viewed in conjunction with the seasonal calendar shown in Figure 2, the calendar of consumption, income and expenditure flows shown in Figure 6 helps provide a fuller picture of how and when households obtained access to their main sources of food and cash throughout the reference year, and how these sources of food and cash related to their expenditure requirements. For example, we can see that during the lean season, from March through May, households spend the most on staple foods. This is because they have run out of their stocks from the previous October's harvest, and milk production, which does not increase until April, is still low. At the same time, households are required to buy seeds and other farm inputs, making this a particularly stressful time of the year. Milk from own production peaks from mid-April through mid-October, followed by the availability of own crop production from October to February. Cash income from agricultural labor peaks from April through October, supplemented by income from gifts, which are given twice a year (February/March and September/October) and bush products (available at the same time).

Figure 6: Consumption and income calendar for the Northwestern Agro-pastoral Livelihood Zone



Source: FSNAU

Hazards, Response and Monitoring Variables

The main chronic hazards affecting households in the *Northwest Agro-pastoral Livelihood Zone* are, in order of importance: drought, inflation, civil insecurity (clan rivalry), pests, *Quelea quelea* birds, diseases (human & livestock), chronic water shortages, and environmental degradation.

Drought is a common and damaging hazard. A failure of either of the seasonal rains negatively affects pasture and water availability as well as crop and livestock production. With successive failures household economies are devastated as crop yields plummet, livestock body condition deteriorate, leading to a reduction in conception and birth rates, losses in milk production and much reduced prices per head of livestock. Labor demand on local farms goes down and wild food yields are negatively affected as well. At the same time that incomes decline, the need to spend money increases as people are forced to buy more food and water, and they typically need to spend more money on human and animal health costs as opportunistic diseases take hold in malnourished people and animals. Persistent droughts in NWAP ruin investments in crop production and livestock and hinder access to household basic services including school, clothing and health services.

Pests and Diseases Crop pests, human and livestock diseases as well as *quelea* birds, which attack sorghum and maize crops, are the additional hazards here. Major livestock disease outbreaks, such as tick-borne disease and *Contagious Caprine Pleura Pneumonia (CCPP*), can cause significant deterioration in livestock body conditions and deaths, reduce income from livestock sales and deplete livestock herds. Limited availability of and access to veterinary drugs and services means that households have few options for preventing these outbreaks. Malaria and upper respiratory diseases are also common, leading to losses in labor – the most critical livelihood capital that poor households possess.

Market Disruption Because households here produce some of their own food, their vulnerability to market disruptions is not as high as it is in pastoral zones, but reliance on the market for food is still quite high, covering 3 – 7 months of the year for the lower two wealth groups, and access to cash depends on markets for selling milk, livestock and crops. A number of factors can disrupt markets here, including rough monsoon winds that hinder shipping activities, bans on livestock export

trade, border closures and flooding on local roads. Local conflicts also occasionally disrupt the flow of commodities and access to labor, goods and services.

Environmental degradation Increasing variability and changes in climatic conditions are the main threat to the sustainability of the rain-fed agro-pastoral production systems here as well as in many other parts of the Horn of Africa. At the same time, poorer households in the *Northwest Agro-pastoral Livelihood Zone* have few options for meeting their cash needs and turn to collecting firewood and/or burning and selling charcoal to earn cash. Indiscriminate tree cutting and charcoal burning, beyond just contributing to rangeland degradation (through increased soil erosion during storms), are responsible for generating potential long-term impacts that result in a declining productive base for future generations.

In bad years, households employ a number of survival strategies in order to make ends meet and to find ways to reduce their non-essential consumption, increase cash income where possible and change their expenditure patterns. The better-off and middle households have more assets and diverse sources of income than the poor, which enable them to recover much faster from shocks like droughts. Better off households are able to more effectively shift expenditure away from non-essential items (as shown in the expenditure graph) and they can consume surplus crops that would otherwise have been sold. They also have larger herds so can sell more livestock while remaining viable. Better off households are more likely to have relatives outside the zone who send remittances, and they are also able to increase the amount of loans they take as they are seen as more credit-worthy.

Figure 3: Coping strategies in response to shocks in Northwest Agro-pastoral

Very poor/poor	Middle/better off
Shifting of expenditure to essential items, especially cheaper staple grains, and reduction of expenditure on non-essentials.	Shifting of expenditure to essential items, especially cheaper staple grains, and reduction of expenditure on non-essentials.
Increased self-employment activities, including firewood collection/sale, charcoal burning/sale, and construction poles	Consumption of crop surpluses rather than sale
Increased search for local agricultural labor opportunities	Increased sale of livestock and slaughter of livestock
Increased sale of livestock, although this is limited for poorer households due to small herd sizes	Increased loan taking
Increased reliance on social support/gifts	Increased reliance on remittances
Migration over border into Ethiopia	Men in the middle wealth group increase short-term seasonal labor migration
	Increased petty trade activity by women in better off wealth group

Source: FSNAU, Northwest Agro-pastoral Livelihood Zone Baseline Report, Technical Series Report No VI. 39, Sept 2011

Poor households try to expand their reliance on labor, sending male members to urban areas or other agricultural zones to find work. They also increase their collection/production and sale of firewood/charcoal and sell as many livestock as they can while still retaining a viable herd. These households also try to seek additional support from better off households in the form of gifts, or sometimes sending some of household members to live with others; but drought does not discriminate, and in the worst years the ability of better off households to give gifts is also reduced. In the worst years, people migrate across the border into Ethiopia in hopes of finding better conditions there.

Table 4: Key parameters to monitor in Northwest Agro-pastoral Livelihood Zone

Item	Key Parameter – Quantity	Key Parameter – Price
Crop production	Sorghum – amount produced Maize – amount produced Mixed vegetable crops - amount produced	Sorghum – producer price Mixed vegetable crops - producer price

Animal production	Camels' milk – yields (season 1 & 2) Cows' milk – yields (seasons 1 & 2) Camels – herd size Cattle – herd size Goats – herd size Sheep – herd size	Camels' milk – producer price Cows' milk – producer price Camels – export price Cattle – export & local price Goats – export & local price Sheep – export & local price
Other	Cultivation labor – availability of seasonal jobs Harvest labor – availability of seasonal jobs Remittances – frequency of transmissions Petty trade – amount of petty trade	Cultivation labor – wage rates for planting/weeding Harvest labor – wage rates Remittances – amount per transmission Petty trade – returns on petty trade
Expenditure		Wheat flour – consumer price Rice – consumer price Sugar – consumer price

Source: FSNAU, 03 Northwest Agropastoral_28Oct15 BSS.

Estimated population of the Northwest Agro-Pastoral Livelihood Zone (SO03)

Zone	Region	District	Livelihood	Population 2014 UNFPA
North West	Awdal	Borama	Northwest Agro-pastoral	63,752
North West	Awdal	Baki	Northwest Agro-pastoral	13,896
North West	Woqooyi Galbeed	Hargeysa	Northwest Agro-pastoral	55,807
North West	Woqooyi Galbeed	Gebiley	Northwest Agro-pastoral	58,329
2014 Total				**191,784**

TOGDHEER AGROPASTORAL (ZONE SO04)

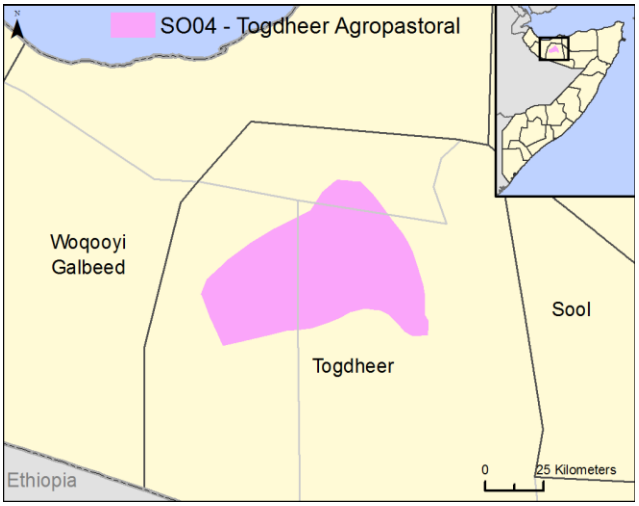
General Livelihood Zone Description

Table 1: Summary of data supporting the Togdheer Agropastoral Livelihood Zone

Field data collection	April-May 2010
Consumption year	April-March
Reference year	2009/2010
Initial estimated validity	Through year 2015

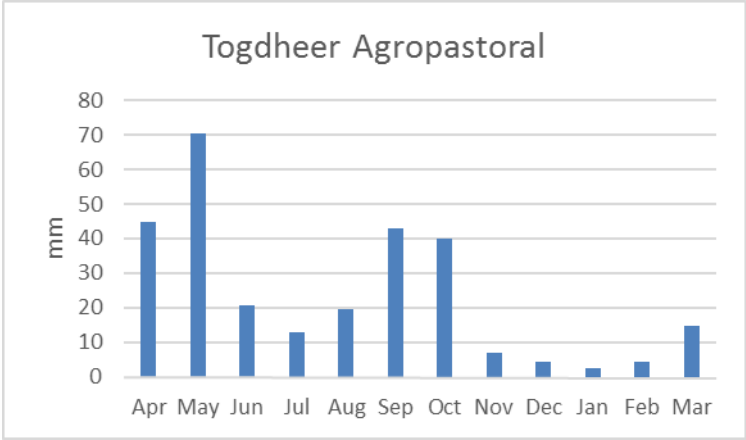
Source: FSNAU

The Togdheer Agropastoral Livelihoods Zone is relatively small compared to other livelihood zones of the country. It occupies a semi-arid, hilly environment within the northern part of Togdheer Region, and it is surrounded by purely pastoral areas: the Nugal Valley to the east, the West Golis higher elevations to the north, and the great Hawd rangeland to the south and west. What makes agriculture possible in this zone is not simply slightly higher rainfall than in its surroundings, still only marginally adequate for viable cultivation, but also its location at the foot of the West Golis mountains, where it receives water run-off in the rainy seasons that is directed to fields. This position under the mountains also results in the loamy nature of soils. Normally, water availability is not a major concern in most rural villages since they have good access to shallow wells along the main streams as well as berkads, the cement-lined rainwater run-off tanks built into the ground. However, access to safe water is the main concern throughout the area. The estimated population of the livelihood zone is 17,052 (UNFPA 2014).



By far the main food crop is sorghum, but there is some maize as well, and cowpeas, and water melons, some fruit trees, and vegetables, especially tomatoes, in localized sites. Otherwise the bush and grasses vegetation cover offers browse and pasture for goats and sheep (split roughly 65% and 35%, respectively) and camels, while for the cattle the fodder from the crop residues as well as from cut fodder grasses is an important addition to pasturing. In years of normal rainfall, grazing migration is limited to within the zone. But in poor rainfall years – and the reference year was one such - pastures are inadequate, and grazing migration extends eastwards to Las 'Anood and beyond in the main gu rainy season and south/southwest towards the Ethiopian border in the deyr lighter rainy season. This is a truly agropastoral area in that there is a balance between the importance to livelihoods of herding and of crop cultivation, although that balance shifts one way or the other depending on how a season's rainfall affects grazing and crop conditions, respectively. But the zone is never self-sufficient in crops, and people depend on the market to fill the gap, especially with sorghum coming from Ethiopia and southern Somalia and rice, wheat flour, vegetable oil, sugar and other items imported through the northern Somalia ports – through which livestock from this zone amongst others are

Figure 1: Estimated average monthly rainfall in mm in the Togdheer Agropastoral Livelihood Zone



Source: USGS CHIRPS Data, FEWS NET GeoCLIM[19]

[19] Based on USGS CHIRPS data, a combination of satellite-based Rainfall Estimates (RFE) and station data, with data extending more than 30 years (1981-2014). Source, FEWS NET and USGS.

exported to the Gulf states. The towns in and near the zone, especially the big center of Burao, are important to the rural households as market centers both for purchasing food and other essential items and for selling live animals as well as milk and ghee, while fodder sales especially at the export livestock holding ground at Burao also bring important earnings. The towns are a source of periodic employment in construction and other casual work; and the construction also creates a demand for stones and gravel traded from the zone. Women find work in sisal processing. Finally, towns also present a demand for charcoal, as do wealthier rural households, and wood-cutting and charcoal production are an important 'self-employment' item for poorer rural people in the zone; but over the recent decades the increasing exploitation of this natural resource in a climatically challenged environment has threatened to become unsustainable, in that regeneration of wood species cannot keep up.

As a whole, livestock are more the basis of the livelihoods than farming, and the toll taken by bad years is considerable. The size of the sheep and goat herds were estimated to have declined by some 12% in the reference year, and that of camels by 17% compared to the start of the reference year. This is also linked to kidding and calving rates affected by the stress of the previous seasons. Taking a slightly longer-term view, repeated climatic and environmental problems over the period between a baseline study for 2003 and the reference year appear to have caused a decline in sheep and goat holdings amongst different households by 20-57%, and of camels by upwards of 50% generally, while cattle have declined most, by two-thirds or more.

Markets

Apart from Burao, the zone's people have access to other main markets: Hargeisa, Sheikh, Owdweyne. Burao sits strategically on a central axis in Somaliland for trade from the east and west, and from the south beyond the Ethiopian border. The road from Burao to the port of Berbera is a main trade route for Somaliland – for both export and import.

Livestock markets

Burao hosts the biggest livestock market of Somalia (and of the Ethiopian Somali Region which it also serves). It is a collection market for the animals – mainly goats and sheep – that are taken on mainly to Berbera for export across the Red Sea to the Arabian Gulf states. Saudi Arabia, the biggest customer, periodically imposes import bans on livestock from Somaliland due to health certification issues. One such ban ended during the reference year in October 2009, and the export of animals in the season reached nearly 3 million head of goats, an increase of 41% on the five-year average, while prices of local and export quality goats increased by 22% over the five-year average. This was an important matter for the people of the Togdheer Agropastoral Zone in a year where agricultural production was very low.

Cereal markets

The zone is a net importer of grain, including sorghum that comes, as we have said, from southern Somalia as well as from Ethiopia. The prices of the imported food and non-food commodities are influenced by the fluctuation in the exchange rate, by crises in the international prices and by changing supply conditions. Big traders export livestock to Gulf states and other commercial traders also import food and non-food items through Berbera and Bossasso ports, where storage facilities and capacities are adequate for the wholesale off-take by other medium traders; these in turn transport the commodities to other big towns (Beletweyne, Dhusamareeb, Galkayo, Las 'Anood, Hargeisa, Burao and Buhudle). These commodities are consumed at this level and distributed further to the smaller towns - and finally ends up to the rural settlements in retail transactions. These markets also act as transit points for livestock from other parts of the country and Ethiopia's Region 5 to Berbera and Bossaso.

In the reference year sorghum prices at Burao in the months after the rainy seasons were some 20% above the five-year monthly averages. But this was actually a relief compared with the extreme inflation that occurred in 2008: in the reference year the sorghum prices were on average 49% lower, due to improved supply from southern Somalia and Ethiopia, as well as the effects of food aid distributions. The prices of the rice and wheat flour imported through the sea-ports fluctuate with supply, which in turn fluctuates according to the monsoon tides that determine shipping, as well as according to

international price trends. In the reference year, with the influence of such local harvest as there was as well as the marketed harvest of the nearby Northwest Agropastoral zone, the price of sorghum decreased in October and November as it is normally expected to do. In the reference year imported commodities were more expensive especially in the long jilaal dry season from December onwards: rice and wheat flour prices rose by 21% above the five-year average and vegetable oil by 25%. But again these were all considerable decreases on the 2008 prices, except for sugar that continued an upward price-trend due to international market supply problems.

The casual labor market

This is an invisible 'market', but if there was a 'market place' in the reference year, when agricultural labor opportunities declined with the poor seasons, it was Burao town. Here temporary labor migrants from around the zone came to earn money principally to buy food for their households. Given their level of wages and sorghum prices, the terms of trade for labor against sorghum rose by 54% compared to 2008 and 13% compared to the five-year average. There was a comparable rise in relation to rice, which is an important commodity even for poorer households of the zone. The goat-against-rice terms of trade declined somewhat in the reference year by up to 20% compared to the five-year average, especially in jilaal, when a goat at the lowest point was exchangeable for a little over 30kg of rice. But this was still 52% better than in 2008.

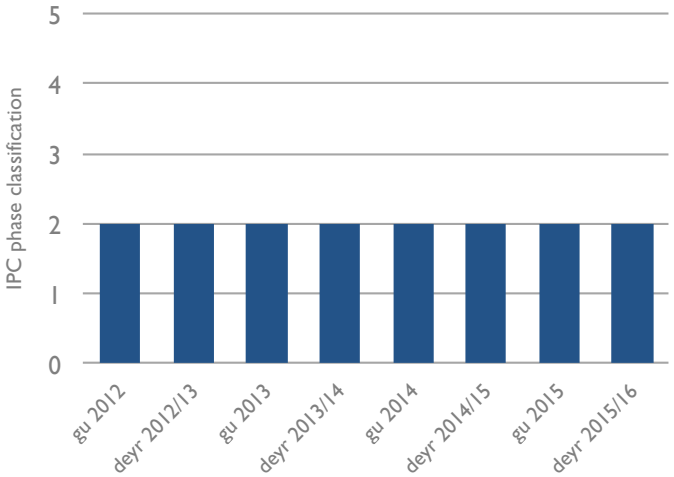
Credit

Loans are mostly taken from livestock traders and shopkeepers, especially in the long jilaal dry season that becomes the hottest and potentially the hungriest time. However, even with goodwill, the propensity of creditors to lend relates to their expectation of repayment, and loans taken in the reference year, at the end of two years of economic stress, were small at around 2% of total annual income for both the Poor and Middle income households.

Conflict

The *Togdheer Agropastoral Livelihood Zone* is very small, but has been subject to the influence of conflict over the years in the hinterland of both the Hawd to the south and the rest of Somaliland to the north, conflict that can limit seasonal grazing movement and disrupt the market for both buyers and sellers. Somalia has seen several periods of violence and political tension throughout its 55-year history as an independent country. These tensions exploded in 1991 when President Siad Barre was forced to flee Mogadishu, first to Kismayu then to Nigeria. Shortly after the fall of Siad Barre's government, Somaliland declared itself an independent state. In 1997, President Egal was re-elected for an additional 2-year term as head of Somaliland. Meanwhile, in the north east, regional leaders were joining forces in order to form the autonomous region of Puntland. In 1998, 7 years after the collapse of Somalia's central government, Puntland was officially formed.

Figure 2: Perception of historical food access with 1 as best and 5 as worst



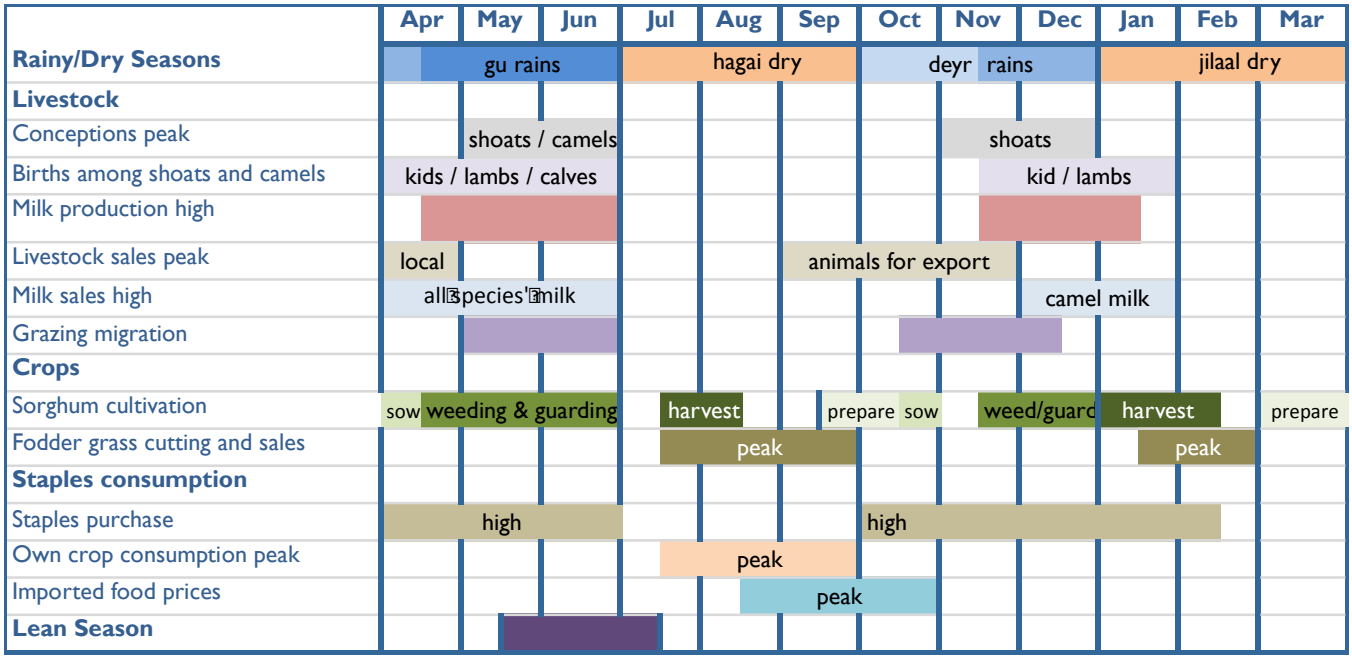
Source: FSNAU

Since the establishment of self-declared autonomous authorities in Somaliland and Puntland, there has been more stability and peace than in war-torn south-central Somalia. However, both Sool and Sanaag Regions are contested by Somaliland and Puntland. This has led to continued armed clashes in these regions as well as population displacement as local villagers flee armed confrontations between the two political factions.

Seasonal calendar

The calendar shows the bimodal rainfall system that is characteristic of most zones of the country and splits the year into two cycles of livestock regeneration/milk production and of cropping. The second, deyr, rains are lighter than the gu rains, and the second, jilaal, dry season is longer and harsher than the *hagaa* dry season. Also, the *hagaa* season is in fact normally punctuated by showers that are an echo of the *karan* rains towards the north and coast. And it is from the mountains to the north that the water run-off of those rains, as for the gu and deyr rains, comes along the river courses and is spread to keep moisture in the soil at a critical time for sorghum plant development. This water is as important as rainfall, and sometimes more important, for the success of the crop.

Figure 3: Seasonal calendar for the Togdheer Agro-pastoral Livelihood Zone



Source: FSNAU/FEWS NET

Sorghum production is potentially a considerable food security benefit if the rainy seasons are favorable in terms of volume and geographical spread and the regular timing of showers. If these elements combine particularly well, a bumper harvest can be observed; but they rarely do combine so well, and the always unpredictable variations in precipitation from one rainy season to the next make each agricultural activity a gamble. The cultivation cycle normally offers important paid labor opportunities for poorer people, especially land preparation, sowing and weeding. But the reference year April 2009 to March 2010 was the second of two poor rainfall years, with the gu rains in particular at some 32% below the long-term average. Crops failed substantially in the two growing seasons, and this meant that much of the agricultural employment was no longer offered; the same was true of fodder grass production and cutting – in fact it was the stalks of failed sorghum that became more important for marketing. Members of Poor and even Middle households were under unusual pressure to travel to local towns and beyond in search of substitute employment. The rain failures also seriously affected pastures, and therefore the condition of animals, and conceptions and birthing rates, and finally milk production in the short term and herd sizes in the medium term.

Wealth breakdown

The twin pillars of wealth here are livestock holdings and the area of land cultivated. Livestock holdings vary greatly between the Poor and the rest. Taking account of the different household sizes, the Poor typically had about 1.5 sheep & goats per person and no camels or cattle, while the Better-off had about 8 sheep & goats per person, 1 camel and 0.5 cattle, and the majority Middle households have 5 sheep & goats per person, somewhat less than one camel, and about 0.4 cattle.

Land ownership also varies considerably, alongside the capacity of households to cultivate – i.e. the number of able-bodied people in the household as well as the number of people they can afford to hire to labor on their land. However much land they may own, the Poor typically cultivate less than 0.2 ha per person while the Better-off cultivate around 0.75 ha per person.

Table 2: Wealth group characteristics in Togdheer Agropastoral Livelihood Zone

	Poor	Middle	Better-off
Percentage of households	30%	50%	20%
Typical household size	5-7	6-8	9-11
Land holding (ha)			
Land area owned	1-4	5-6	10-15
Land area cultivated	1	1-4	6-9
Typical livestock holding (#)			
Sheep	3-5	5-15	20-35
Goats	5-12	10-35	40-60
Cattle	0	3	4
Camels		5	9
Donkeys	0	1	1

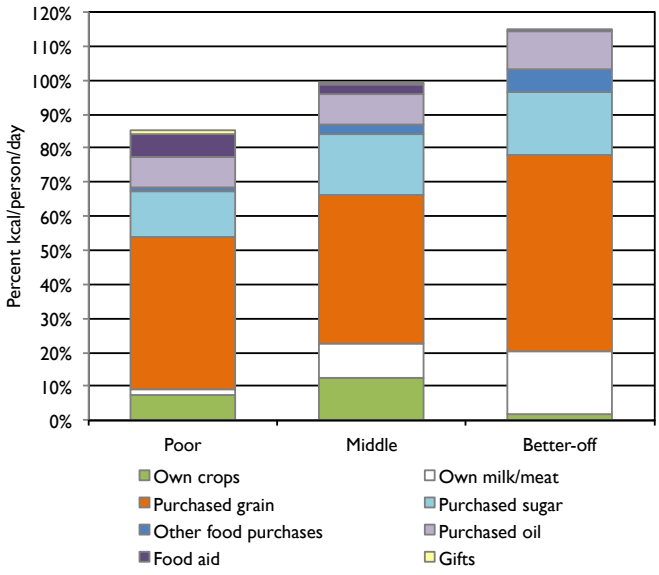
Source: FSNAU

It is not a simple thing to say which is more important, livestock or land, since they contribute economically in different ways for different wealth groups. On the one hand, households' livestock holdings are likely to be the first element in how wealth is evaluated in the community, and for the Better-off and Middle groups livestock are more important than crops in terms of earning cash, probably even in a relatively good year let alone in a poor harvest year. On the other hand, it is striking that for the Poor, what they can produce on their hectare of land even in a bad year is more important for cash earning than their livestock. Yet in the reference year the sorghum largely failed to develop a proper grain-head: it was the stalks that they sold for fodder that brought in the income; in a good year, therefore, they would have the double benefit of a harvest and of fodder for sale (over and above any harvest of cut fodder grasses).

Sources of food and income and patterns of expenditure

The first thing to note again is that the reference year was one of poor rainfall, following upon another poor year, thus four poor rainy seasons in a row. One result of this situation is immediately visible: even with food aid the Poor were unable to attain as much as 90% of their minimum food-energy requirement over the year as a whole, meaning that they were very hungry. Even the Middle group relied on food aid to just about achieve their minimum requirement (although they would probably otherwise have managed to fill the modest gap by further shifting expenditure from some non-food items).

Figure 4: Food sources by wealth group, Togdheer Agro-pastoral Zone



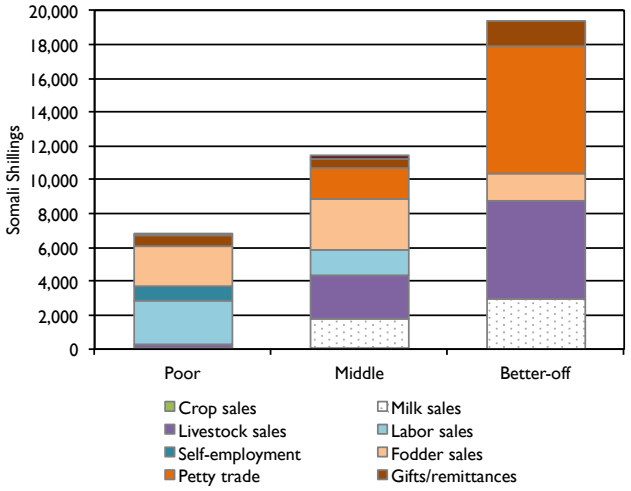
Source: FSNAU

The level of milk consumption in the above graph must reflect the effect of poor pastures in reducing milk in two ways: lactating animals (here mainly camels) in poor condition produce less milk or dry up altogether; and there are fewer births, and so fewer lactating animals

altogether. As regards the particularly low consumption of crops by the Better-off, this denotes very low production, as they made no sales: instead they used their standing, imminently failing crops as fodder for their own livestock. The probability is that with their wealth in animals, even in a year where their poor condition would fetch low market prices, they decided at a certain stage in the growing seasons that the harvest prospects were not sufficient to warrant the investment in labor (especially hired labor) on their fields; instead they would sell extra animals to buy food.

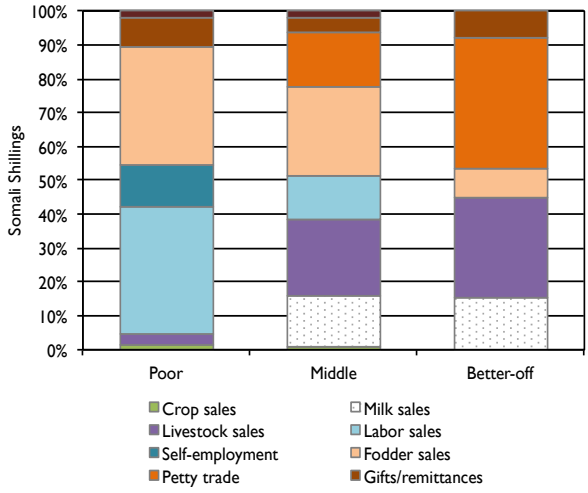
Food purchase forms the largest source of food by a huge margin; but even in a more normal year we may expect that it would account for above 50 % of the consumption by the Middle and far more for the poor; while with their sizeable land holdings and capacity to hire labor we might expect the Better-off to be able to obtain more, perhaps substantially more, than 50% of their consumption from their fields. In this year of scarcity sorghum prices rose substantially, but so did those of imported foods, notably rice and wheat-flour, which remained at roughly double the price of sorghum per unit weight. Nevertheless, the Poor purchased 20% of their total calorie consumption in the form of rice and 14% from wheat flour, as opposed to 11% from sorghum. Even given strong preferences for the imported types, it is surprising that people under great financial challenge to buy enough to eat should opt for the more expensive staples: one might therefore suppose that sorghum was so scarce that it disappeared from the market for substantial periods. The Middle got 16% of their calories from rice, 14% from wheat-flour and 11% from purchased sorghum; the Better-off 25%, 16% and 17% respectively. The Poor are sometimes able to obtain rice on credit, to be paid later when conditions improve.

Figure 5: Cash income sources (in absolute terms) by wealth group, Togdheer Agro-pastoral Zone



Source: FSNAU

Figure 6: Cash income sources (in relative terms) by wealth group, Togdheer Agro-pastoral Zone



Source: FSNAU

But even people under stress cannot live by staples alone: the basic palatability of the diet needs other items. Of these sugar is the biggest, and vegetable oil the second. Given the disparity of levels of income between the Poor and the rest it is remarkable that there is nothing like the same disparity in their purchase of these commodities, so intrinsic are they to the diet: in the reference year the Poor got 14% of their calories from sugar and 9% from oil; the Middle 18% and 9%; the Better-off 19% and 11%. Other food items were in small quantities, mainly pasta and potatoes giving in each case not more than 1% of calories; only the Better-off purchased cowpeas, giving them 3% of calories.

Food aid gave the Poor 7% of their calories and the Middle 3%; food gifts from within the community gave the two groups 1% of calories, consisting of rice and cooked porridge but also Corn Soya Blend powder, presumably passed on from rations received.

HEA baseline data from field inquiries relating to years considered normal in the mid-1990s suggest that in this zone, if rainfall is adequate, the Poor can expect to get 30-40% of their annual calorie requirement from their own crops, as opposed to 8% in this bad year; and the middle would expect 20-30% (compared to 13% in this study), probably preferring to sell a good part of their sorghum and to buy the preferred rice. Both the Poor and Middle would expect to purchase food

giving them 50-60% of their calories, while milk from their animals would give the Poor 5% or less as opposed to 15-20% for the Middle.

The graphs show two kinds of gradation across the wealth groups. The first is in terms of absolute yearly income, as expected; but we note that in this the Middle are nearer to the Poor than to the Better-off. The second gradation puts the Middle squarely in the 'middle': they, not the Poor, have the most differentiated income. They combine all the options, including the self-employment and casual labor on which the Poor almost exclusively rely, and the livestock and petty trade that provide most of the income of the Better-off.

'Self-employment' means principally the sale of fodder from the mainly failed crops, therefore essentially sorghum stalks. The value of such fodder would be particularly high in a year of relative pasture failure, whether sold to bigger stock-keepers within the zone or to herders of the pastoral hinterland. So a failure to produce grain was not a failure to earn something substantial from the effort, and this provided some substitute for the fodder grasses that could hardly be found to cut and bundle this year. The Poor also pursued other kinds of self-employment: collecting firewood and converting it to charcoal to sell probably mostly to townspeople, and collecting and selling stones for construction, again mostly in towns. And in this bad year it was construction that accounted for the greater part of casual labor earnings: local agricultural employment decreased from normal with the poor seasons, and more people migrated temporarily to find work in towns, especially in the big local center Burao.

For the Better-off and Middle, thus for some 70% of all households, the dependence upon livestock and dairy sales for 45% and 37% of their income testifies to the pastoral side of 'agropastoral'. No doubt in a better year for crops the agricultural side would be boosted by some amount of sorghum sales as opposed to only the fodder, and so the balancing 'agro' side would be better seen. However, in a bad year, for those with appreciable livestock holdings, it is these that guaranteed their economic – and therefore food – security: in other words, the livestock side of the equation is less vulnerable than the agricultural side. Petty trade in this year formed the largest single part of the income of the Better-off, which may not be the case in a more normal year when crop earnings come into play; however petty trade is probably always substantial. As regards gifts and remittances, there is a clean divide: for the Poor it is entirely gifts – mostly the zakat donations; for the Middle and Better-off it is entirely remittances. 'Other' denotes credit taken by the Poor and Middle.

Patterns of expenditure

When looking at this graph it has to be remembered that behind these proportions, and according with their income, the Middle spent nearly twice as much as the Poor overall, and the Better-off three times as much. It looks as if the Poor spent significantly more on staples than the wealthier groups, but in fact *per capita* they spent less: Sh. 425 as against Sh.456 for the Middle and Sh522 for the Better-off. For the Middle and Better-off their consumption of milk reduces their need to spend on other non-staple food.

Figure 7: Allocation of annual expenditure by wealth group, Togdheer Agropastoral Zone

Source: FSNAU

But it is interesting to see that the Poor in a hungry year spent as much as they did *per capita* on non-staple food: only 18% less than the Middle (36% less than the Better-off). As mentioned in the Sources of Food section, by far the greatest part of this expenditure is on oil and on sugar that is used in tea and in porridge. Sugar and oil are the basic palatability additions to the staples, since people do not have the pulses and vegetables common for farmers who produce them in more humid ecologies. For the Poor, who consume so little milk, these additions are all the more necessary. Nevertheless, these are expensive calories. In

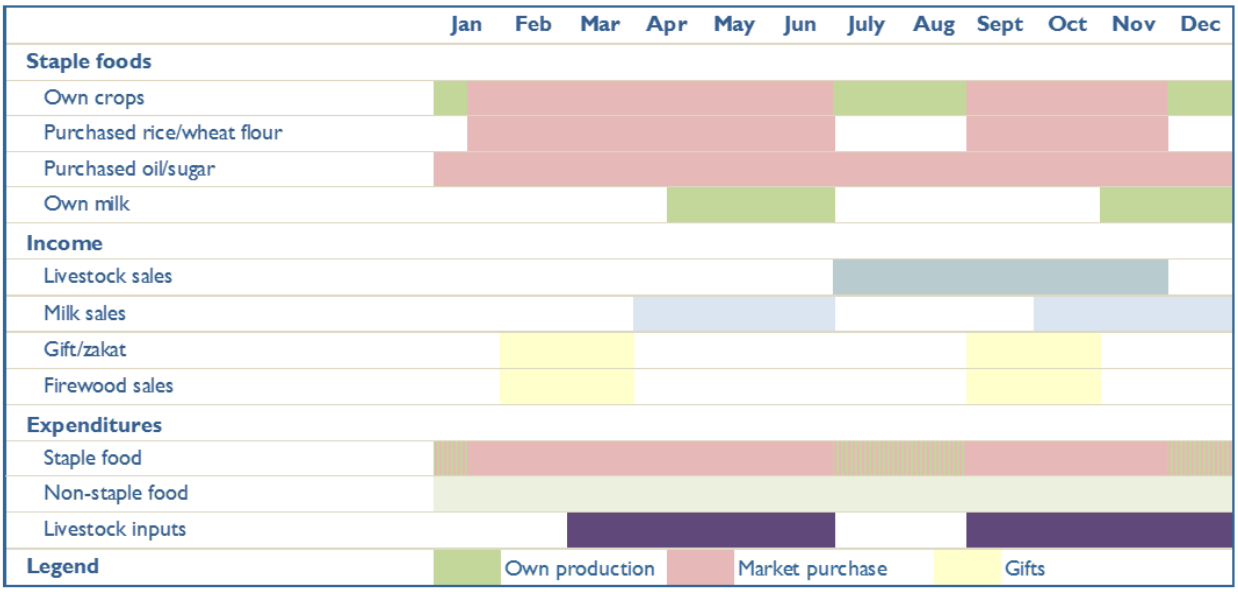
the reference year the price of 1 calorie from sorghum, as the cheapest grain, was roughly 60% of the price 1 calorie from oil and 40% of the price of a sugar calorie. Such purchases would be more explicable if sorghum disappeared from the market for substantial periods. One calorie from rice, as the grain most bought by the Poor, was 1.25% more expensive than an oil calorie, and 87% of the price of 1 sugar calorie. Both oil and sugar are highly calorific, and we can see how the Poor might sensibly divide their expenditure between rice and oil and sugar.

Among the other expenses, the Middle and Better-off naturally spent much more than the Poor on inputs for livestock, especially on fodder, and also for cultivation, including a little on seeds and the rest on tractor-hire hours for ploughing - but nothing on labor in this year when so much of the crop failed that it was not worthwhile to invest in laborers for weeding or harvesting. As regards household items, the Better-off households spent 2.5 times as much as the Poor on tea, 3 times as much on soap and 4.5 times as much on qat and tobacco/cigarettes. But even for the Poor these last formed the biggest single item of expenditure, more than for clothing, which was the next most expensive item. The Better-off spent twice as much on qat and cigarettes as on the next most expensive item for them, which was education costs.

Calendar of major sources of food and income for poor households

When viewed in conjunction with the seasonal calendar shown in Figure 3, the calendar of consumption, income and expenditure flows shown in Figure 8 helps provide a fuller picture of how and when households obtained access to their main sources of food and cash throughout the reference year, and how these sources of food and cash related to their expenditure requirements. In particular, it can be seen that imported cereals purchase is interrupted when the sorghum harvest is available in July/August and December/January, while milk and sugar purchases are regular throughout the year. Earnings from livestock are substantial in the latter half of the year but fade from December onwards.

Figure 8: Consumption and income calendar for the Togdheer Agro-pastoral Livelihood Zone



Source: FSNAU

Hazards, response, and monitoring variables

Pastoral and agropastoral livelihoods are in themselves an adaptation to relatively low rainfall regimes, and they are able to tolerate quite wide variations in precipitation from one season or year to the next. But no rural livelihood is immune to drought, and that is by far the major hazard here: not just the catastrophic drought that occurs perhaps once in a dozen years, but more often substantial rain shortage at one or another period of the season. A late start to the gu rains after the

rigors of the long and hot dry months of jilaal can bring increased livestock mortality; a fitful start of either rainy season can lead to the cost and effort of re-sowing sorghum or the abandonment of cultivation for the season; a long break in later showers, or an early end to rains, can stop the development of the grain on the standing stalks, as happened in the reference year. Since the crops rely as much on use of run-off rainwater from Golis mountains, the desiccation of the seasonal rivers is also a significant hazard when drought strikes the Golis high areas too. Finally, crop disease and pest are endemic, notable smut and stalk-borer on the sorghum, but it is rare for these to cause severe crop failure. Farmers sometimes buy chemicals to spray on the crop.

Poor volumes and irregular geographical spacing of rains can reduce pasture growth critically, with knock-on effects on animal condition that can echo over two years, as we have seen earlier. Routine or periodic vector borne diseases include tick borne fever and worms, foot-and-mouth disease, pox and anthrax. Herders buy drugs from local vendors and receive vaccination support from FAO. Apart from local animal and crop production shocks, other potential hazards are severe hikes in food prices for reasons outside the zone or even the country, and the re-imposition of a livestock export ban by Arabian Gulf states. But it should not be forgotten that some seasons are particularly fortunate, as was the gu season that followed the reference year: good seasonal rains were added to by unseasonal showers further improving pastures and thus animal condition, also inviting highly increased cropped areas and fodder production, while people returned from their unusually high labor migration in the reference year to make the best of the good prospects for the year ahead.

The following table lists responses to production and price shocks that essentially and acutely increase the need for extra cash for food purchase, and that also prompt strategies to save livestock.

Table 3: Coping strategies in response to shocks in the Togdheer Agropastoral Zone

Poor	Middle/Better off
Increase labor migration especially to towns	Increase sale of animals, including eventually camels
Increase the sale of small livestock	Grazing migration out of the zone
Increase charcoal production and sale	Feed grain to livestock
Switch expenditure from non-food items to staples purchase	Sale of failed sorghum as fodder
Seek social support	Increase petty trade activities
Take loans	Appeal for extra remittances
	Take loans

Table 4: Key parameters to monitor in the Togdheer Agropastoral Zone

Item	Key Parameter – Quantity	Key Parameter – Price
Crop production	gu season sorghum cropping area gu season sorghum harvest amount gu season in fodder grass harvest amount deyr season sorghum cropping area deyr season sorghum harvest amount deyr season in fodder grass harvest amount	gu season sorghum – producer price gu season fodder grass – producer price deyr season sorghum – producer price deyr season fodder grass – producer price
Animal production	reduction in births – goats, sheep, camels reduction in milk yields camels reduction in milk yields goats reduction in goat herd sizes reduction in sheep herd sizes reduction in camel herd sizes	price of goats for local purchase price of sheep for local purchase price of camels price of export quality goats price of export quality sheep price of camel milk price of ghee
Other	reduction in agricultural employment increase in charcoal sales	Agricultural labor wage rates preparation, weeding Construction labor wages

		Charcoal producer price Stones for construction producer price Sorghum consumer price Maize consumer price Wheat flour consumer price Sugar consumer price Vegetable oil consumer price

Estimated Population in the Togdheer Agropastoral Livelihood Zone (SO04)

Zone	Region	District	Livelihood	Population 2014 UNFPA
North West	Togdheer	Burco	Togdheer Agro pastoral	3,662
North West	Togdheer	Owdweyne	Togdheer Agro pastoral	7,856
North West	Togdheer	Sheikh	Togdheer Agro pastoral	5,535
Total population 2014				**17053**

HAWD PASTORAL (ZONE SO05)

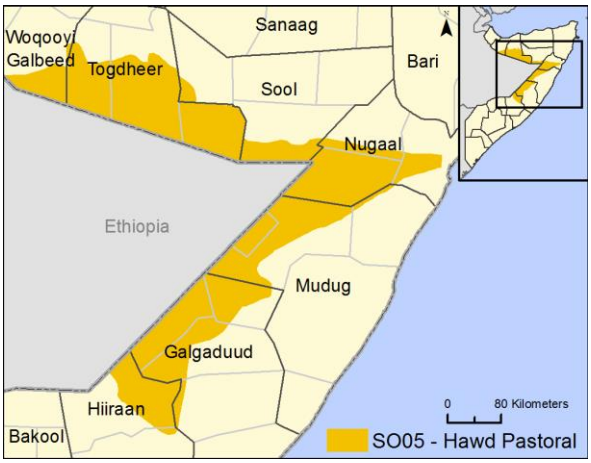
General Livelihood Zone Description

Table 1: Summary of data supporting the Hawd Pastoral Livelihood Profile

Field data collection	April-May 2010
Consumption year	April-March
Reference year	2009/2010
Initial estimated validity	Through year 2015

Source: FSNAU

The *Hawd Pastoral Livelihood Zone* is, with the Northern and Southern Inland Pastoral Zones, one of the three largest livelihood zones in the country. This semi-arid zone, with altitudes of between 800 and 1200 meters above sea level, stretches from just inside Hiran, where it meets the Southern Inland Pastoral Zone, through Central Somalia to far into Somaliland. As such the Hawd (including the Ethiopian part) is essentially a vast plateau that forms the prime grazing and browsing area, with patches of flat lowland covered with extensive bush and shrubs. The soil type in the Hawd is reddish loamy sands that are widely distributed in the Somali peninsula and found in the northeast and northwest regions, and throughout the neighboring Ethiopian Ogaden, and in the adjoining part of Mudug in the central regions. Vegetation cover is composed substantially of acacia (*geed qodaxeed*) and comiphora (*geed hagar*), which extend over a large area, together with a mix of numerous trees and the shrubs. However, there are also extensive grassy plains (*banka*) which are a distinctive feature of the ecology. Vegetation density varies from place to place. In the plains of the northwest region open grasslands are more dominant and suitable for sheep. However, as these become overgrazed the finer soil particles are loosened and washed or blown away by the agents of erosion (flash floods and wind) leaving a surface less favorable to grass growth. Overall, both the area and the intensity of the pastoral livelihoods are shrinking.



This very long zone sees some variation in the bimodal rainfall regime, although the differences are not great overall. As seen in Figure 1, by comparison with the central Hawd the northern Hawd has substantially more precipitation in September and slightly more in June at the end of the *gu* season (see the seasonal calendar below, Figure 3); and the southern Hawd has less rainfall in May and slightly more in November. With a mean annual rainfall total of round the 200mm mark the Hawd follows the particularly low rainfall pattern of the northern pastoral zones. *Gu* (April-June) is the main rainy season and its failure can have devastating effects on livestock productivity. *Deyr* (October–December) is the shorter rainy season. Some parts of west Togdheer and South Galbeed regions experience short *karan* rains (mid-August to September). Generally, in Somalia, seasonal monsoon winds influence the onset and cessation of rainfall/dry seasons. The northeasterly winds, emanating from Asia and Saudi Arabia, produce little rain. Temperatures correlate with altitude, with average monthly temperatures ranging from 30 to 41°C in March. Two dry seasons, *hagaa* (July-August) and *jilaal* (January-March) come between the rainy seasons. High temperatures in *jilaal*, and increased soil moisture loss lead to vegetation wilting (moisture deficiency), reduced quantity of surface water and forage. This forces pastoralists to migrate, separate herds, increase livestock sales or increase the use of boreholes, with potential for conflicts.

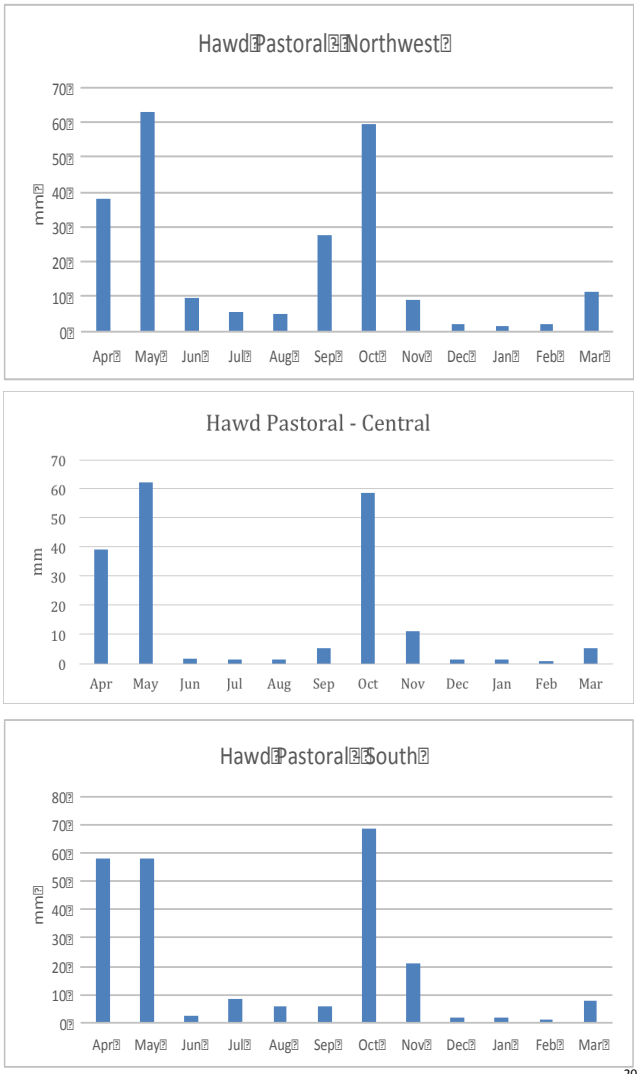
This rainfall is precious beyond the obvious need for regeneration of the pastures that allows a herding economy to exist: the general rule in the Hawd ecology is that there is no water table that allows wells to be successfully used, and therefore the main water-source for water for both humans and livestock alike is rainfall run-off collected as groundwater guided into cement-lined, open water tanks set in the ground – *berkads*. There are also uncemented rain water catchments (*balli*), and where soils offer better water-retention there are also shallow wells are also used for water harvesting (*muqsiid*); and sometimes water is collected behind small dams. Muqsiids are found in settlements with clay soils, such as Dhoqoshay and Harada Gobato (Burco district) and Harosheikh (Owdweyne district). Ballis can be found in all areas. Water from ballis, muqsiids and dams is free. But there is also water-purchase from vendors: main villages and towns rely on boreholes, but the better-off and some middle income households own *berkads*, and sell water from these during times of stress. In the

dry seasons, especially when the previous rainfall has been low, pastoralists depend on water delivered by tankers – water for which they must also pay.

The livestock consist of camels, goats and sheep. Goats are at least three times more numerous than sheep, because the vegetation cover offers more extensive and dependable browse than grasses across the year (even given the '*banka*' grassy plains where sheep predominate), and the watering regime is limited. The vast majority of people have no cattle, because these have become unviable of the recent years of rain failure. The herding is done traditionally with limited nomadism, that is to say households with their portable huts (*aqals*) move their animals in a limited circuit from pasture to pasture, water point to water point during the seasons, only undertaking extensive migration in bad years. Currently, pastoralists are shifting from pure nomadic to semi-nomadic pastoralism, thus reducing their movements in the rangelands. There is a growing tendency for wealthier pastoralists to settle into fixed houses in small settlements, where they may own one or several *berkads* and possibly a tea-shop or small goods store, and from where they send out their animals with family members or herders contracted from less wealthy households, since livestock are still their main wealth. For the rest of the population there is typically no income that doesn't depend directly upon livestock except for a small amount of casual labor on construction in towns and settlements, and firewood collection together with some production of charcoal for sale.

This economy essentially depends on the trade in live animals that provides the cash for them to buy from the market the cereals and other commodities that make up the greater part of their food consumption. This trade has been highly boosted over the years by the demand for livestock from the Gulf States, especially Saudi Arabia, UAE and Oman. Sheep of 'export quality' are prized above goats and fetch producer prices at least one-third higher. However, because of health certification problems, the Gulf States periodically place a ban on livestock imports from Somalia, so that the trade is depressed for the exporting season (which lasts up to the monsoon months when the Red Sea is too rough for the passage of the dhows). This happened several times during the 2000s decade (in 2000, 2002, 2006) but it was lifted by 2009/10, the reference year to which all the field data refer.

Figure1: Estimated average rainfall in mm in Hawd Pastoral Central, Northwest and South



Source: USGS CHIRPS Data, FEWS NET GeoCLIM[20]

The reference year was a poor year because of rain failure in both rainy seasons, and this followed upon several previous poor years during the decade. Information from two previous baseline studies in 2000 and 2005 of what used to be the Hawd & Sool livelihood zone point to a change in the overall composition of the livestock holdings. The Middle and Better-off households used to own around a dozen and 35 cattle respectively while today they typically own none; the Better-off seem to have been able to compensate with a doubling of their camel numbers, while the Middle have at best only been able to maintain their previous camel numbers; but the Better-off seem to have seen about a 20% decrease in their sheep

[20] Based on USGS CHIRPS data, a combination of satellite-based Rainfall Estimates (RFE) and station data, with data extending more than 30 years (1981-2014). Source, FEWS NET and USGS.

& goat holdings while the Middle have maintained roughly the same numbers. Only the Poor appear to have maintained their overall herd numbers: they never typically had cattle, and their possession of 5-10 camels and around 60 sheep & goats is a minimum for a viable pastoral livelihood. By the same token, the poorest households who could not maintain these minimum herd numbers, even to the extent of losing their pack camel, had to at least depend much more on existence around towns where they might get paid work, if not joining the Internally Displaced People (IDP) camps.

Markets

The main markets for all purposes within or near the zone are at the urban centers: Beletweyne, Garowe, Burtinle, Galka'yo, Buhoodle, Goldogob, Burao, Dusa Marreb, Las 'Anood, Abudwaq and Hargeisa. Here the herders bring their animals for sale, whether to purchasers for butchery or for adding to other herds, or to begin the export route, depending on the quality of the animal; here also they sell their soured camel milk and ghee. And here too the herders buy their essential supplies, including sorghum and cowpeas from the south of Somalia or from Ethiopia, and the imported foods that make up a substantial part of their diet: rice, sugar and vegetable oil, and other non-food essentials from soap to clothing.

Livestock markets

Burao is the biggest collection market for livestock, from where the export quality animals are taken on to Berbera port for shipping across the Red Sea. A secondary route is through the port of Bosaso. Livestock prices received by the producers were higher in the *gu* rains at the beginning of the reference year than the average for 2003-07, but then when the rains were found to be very poor, people migrated with livestock already in the rainy season, so that in June there was a considerable downturn in camel prices in particular. A more usual downturn in camel prices came later in the reference year in the jilaal dry season that marked the last three months. But this was after failed *deyr* rains, so that browse and watering conditions were even poorer than usual. On the other hand, the lifting of the export ban and the upswing in market demand brought goat prices up 214% above the prices over the past five years.

Cereal prices

The fluctuation of cereal prices is of critical importance to the pastoralists, for all of whom, rich or poor, the purchased cereals provide 55-65% of their annual basic food requirement in calories. This is all the more important in the dry seasons when milk production reduces sharply and with it not only consumption but sales. The prices of the imported food and non-food commodities are influenced by the fluctuation in the exchange rate, by crises in the international prices and by changing supply conditions. Big traders export livestock to Gulf states and other commercial traders also import food and non-food items through Berbera and Bossasso ports, where storage facilities and capacities are adequate for the wholesale off-take by other medium traders; these in turn transport the commodities to other big towns (Beletweyne, Dhusamareeb, Galkayo, Las 'Anood, Hargeisa, Burao and Buhudle). These commodities are consumed at this level and distributed further to the smaller towns - and finally ends up to the rural settlements in retail transactions. These markets also act as transit points for livestock from other parts of the country and Ethiopia's Region 5 to Berbera and Bossaso.

Early in the reference year, prices of imported goods for the pastoralists were drastically affected by the 67% devaluation of the Somali shilling. Rice prices were 199% higher than the five-year average, and wheat-flour prices 148% higher. Nevertheless, this was actually a decrease upon the 2008 prices by 34% and 46%, respectively, because the global price of these commodities had decreased. Sorghum was the least consumed cereal in volume in reference year, but still important in providing 14-17% of calorie requirement. Although some of the sorghum came from Somalia, it seems that both the devaluation of the shilling and the general influence of international price rises affected sorghum prices too, so that they rose 170% above the five-year average. However, for sorghum as well as for rice and wheat-flour, from June onwards in the reference year a decline in global prices and an increase in supply brought the prices down again somewhat.

The casual labor market

Most pastoralists operate far from substantial towns/commercial centers that could offer casual employment opportunities, while herding itself offers virtually no employment locally: Middle and Better-off households essentially manage their livestock with their own household labor, so that it is untypical for Poor people to be contracted as shepherds/camel herders – either on cash terms or as 'payment in kind', i.e. receiving grain or milk directly as payment for labor. It is possible that some poorer people receive some cash, or milk, or even goats as a kind of solidarity or charity from their wealthier kin, but in that case it too is not typical enough to show up in the baseline data. The two kinds of non-livestock earnings that were recorded for Poor households were charcoal production and sale, and construction work presumably in towns. Charcoal sales brought them more than twice as much as casual labor (even though labor wage rates were 144% above the five-year monthly averages) but the two together gave them only 11% of their total annual income. For the Middle, charcoal sales gave them 5% of their income. What this means is that the poor pastoralists must be able to survive essentially by their own livestock, while those who may be termed 'Very Poor' have so few livestock that they cannot live as nomadic pastoralists, and they are out of the baseline picture because they have to keep to the town peripheries in order to find employment or humanitarian aid.

Credit

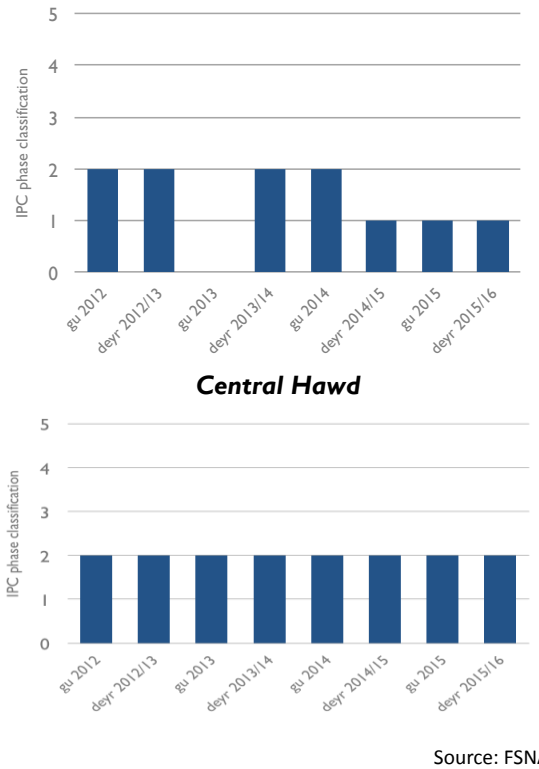
Loans are mostly taken from livestock traders and shopkeepers, especially in the long *jilaal* dry season that is the harshest and potentially the hungriest season. These loans may be in the form of staple and non-staple foods as well as non-food items whose value must be reimbursed during the next seasons. During crisis times the accent is on basic foods. However, even with goodwill, the propensity of creditors to lend relates to their expectation of repayment, and loans taken in the reference year, at the end of two years of economic stress, were small at around 2% of total annual income for the Poor.

Conflict

The Hawd Pastoral zone contains parts of seven regions and has a border of some 1000 kilometers with Ethiopia's Region 5. It has therefore been influenced over the years by conflict in a wide geography. Somalia has seen several periods of violence and political tension throughout its 55-year history as an independent country. These tensions exploded in 1991 when President Siyad Barre was forced to flee Mogadishu, first to Kismayu then to Nigeria. Shortly after the fall of Siyad Barre's government, Somaliland declared itself an independent state. In 1997, President Egal was re-elected for an additional 2-year term as head of Somaliland. Meanwhile, in the north east, regional leaders were joining forces in order to form the autonomous region of Puntland. In 1998, 7 years after the collapse of Somalia's central government, Puntland was officially formed.

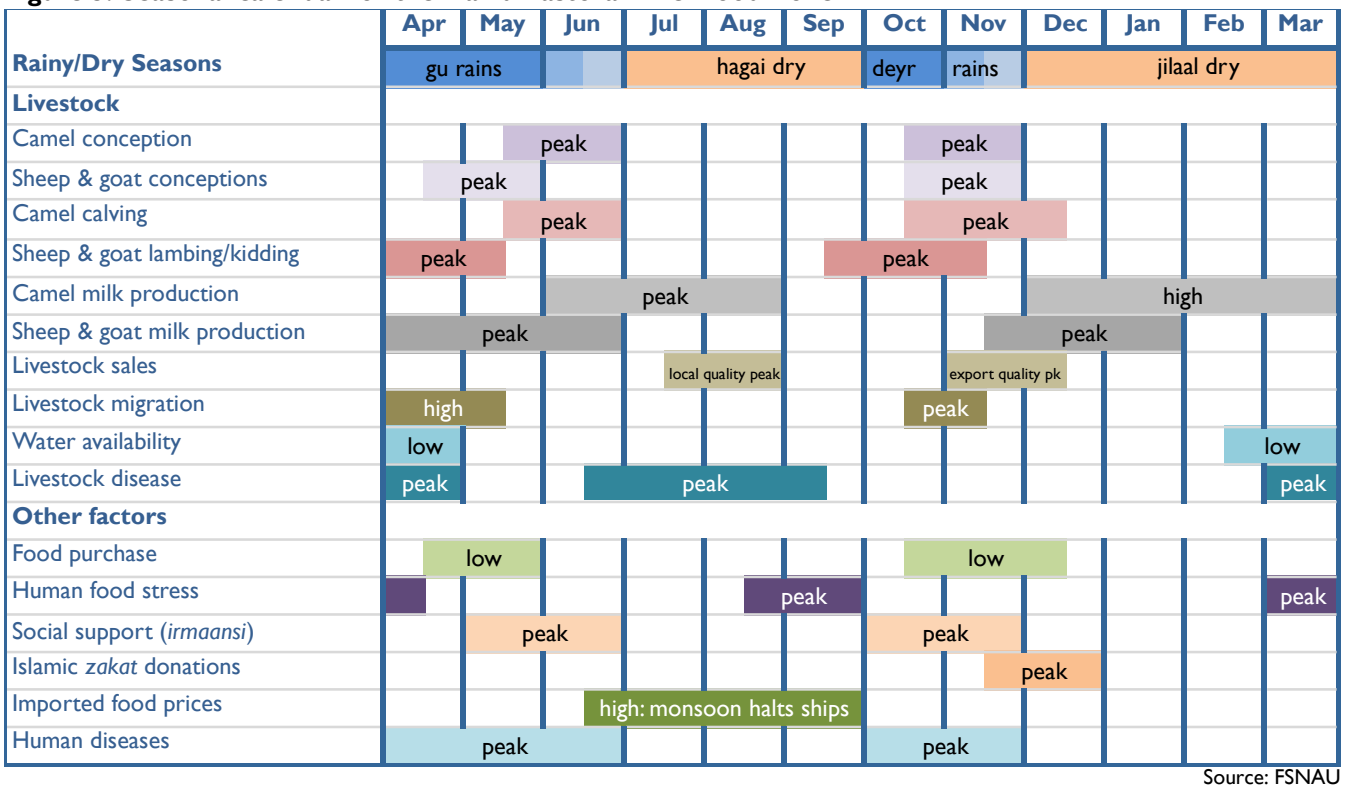
Since the establishment of self-declared autonomous authorities in Somaliland and Puntland, there has been more stability and peace than in war-torn south-central Somalia. However, both Sool and Sanaag Regions are contested by Somaliland and Puntland. This has led to continued armed clashes in these regions as well as population displacement as local villagers flee armed confrontations between the two political factions.

Figure 2: Recent trends in IPC phase classification, with 1 as best and 5 as worst



Source: FSNAU

Figure 3: Seasonal calendar for the Hawd Pastoral Livelihood Zone



Source: FSNAU

Seasonal calendar

The calendar represents an economic system that depends nearly absolutely on two rainy periods of not much more than two months each. The *gu* rains are heavier than in the *deyr*, and they come at the end of the longer and hotter jilaal dry season. The twin preoccupations of any herder are the availability of browse and pasture on the one hand and on the other hand the availability of water for livestock and humans together. The two items are connected: browse or pasture is only usable if there is a source of watering that is near enough to allow animals to drink enough within the frequency appropriate to species and season, frequencies that are different for camels, goats and sheep. As noted earlier, the rule in the Hawd ecology, with whatever exceptions, is that water cannot be got from wells (excluding boreholes) and so the rainwater run-off collection tank - the *berkad* – is the primary source. Therefore, one limiting factor in the pastoral economy is evidently the amount rainfall for vegetation regeneration; but the other limiting factor is the distribution of *berkads* and amount of water in them as the dry season commences. According to the records of mean monthly rainfall across the Hawd zone discussed above, beyond the April-May rains of the *gu* season and the variously spread September to November rains of the *deyr* season, in the other months there is precipitation of only maximum 10mm and most often 5mm or less: hardly enough, with the rapid evaporation on the ground, to either regenerate vegetation or replenish the *berkads*. Therefore, just the rainfall of the two months each of the *gu* and the *deyr* determines almost everything about conditions in the whole year, and whether pastoralists can survive by operating within the zone – indeed within quite a limited area of the zone – or whether and when they must go on unusually extensive migration with their animals to find pastures and water.

All the pastoral production activities and conditions in the calendar above are absolutely seasonal, and so are many of the market factors. In terms of food security, the 'low' food purchase periods, short as they are, relate mainly to the peak consumption of milk: even these periods will fade with poor rainfall, as happened in the reference year in both seasons. In favorable rainfall years it is possible that for a good number of weeks in the mid-and-late rainy seasons and a bit beyond, the Better-off and Middle, especially with their number of lactating female camels, may live nearly on milk alone. But for the rest of the year they, like the poor each and every day, are increasingly dependent on purchased food as the dry

seasons progress and milk output from each species diminishes, so that at least in the last half of the long jilaal dry season, even the wealthier pastoralists will not be able to maintain their preferred, heavily milk-based diet.

Wealth breakdown

Given the lack of any other substantial economic activity than livestock production, the single determinant of wealth must inevitably be the level of livestock holding. In this, it is possible to say that camels dominate for their prestige and economic worth combined. In the reference year as a whole all groups got three to five times more food calories during the year from milk from their camels than from milk from their goats. Export quality livestock fetch higher prices than those sold for the local market. The main exported animals are sheep, goats and cattle. Nevertheless, some camels are exported too, and export quality camels were priced at around seven times more than export quality goats or sheep, and local market quality camels at nine times goats or sheep. Theoretically, the few camels of the Poor were worth almost exactly the same as their goats and sheep combined, while for the Middle and Better-off their camels were worth two to three times more. But in reality camels are not sold like goats and sheep, even for export. The small stock are the currency of everyday income for regular purchases; the camels, almost always male, are sold for big purchases, whether of grain or other items, as well as to cover specific misfortunes or celebrations. But regardless of all these practical matters, a rich man is primarily considered rich in terms of his camels however many small stock he may possess.

Table 2: Wealth group characteristics in Hawd Pastoral Livelihood Zone

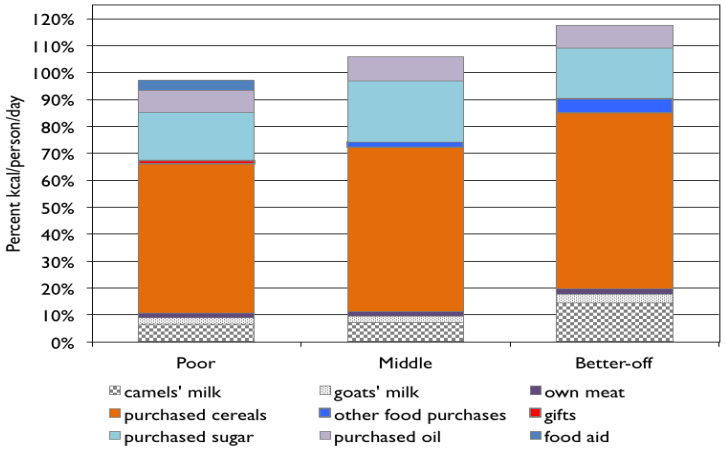
	Poor	Middle	Better-off
Households %	30	50	20
Typical Household size	7	8	10
Typical livestock holdings			
Sheep	18	16	42
Goats	47	80	135
Camels	9	22	55
Donkeys	1	1	1

Source: FSNAU
Note: The figures in the table are the mid-point of a range.

Sources of food and income and expenditure patterns

It needs to be remembered that the reference year in which the data for the above graph were taken was a very bad year for livestock production, following on previous unfavorable conditions. The upshot was that not only was milk production per animal much reduced in the reference year, but there had been fewer births, so fewer animals in milk from the start of the year at the gu season. People do not purchase milk. The level of milk consumption shown is very low for pure pastoralists, even for the Poor. By comparison, the data from the 2000 study shows the Poor obtaining some 30% of their calories from a similar number of animals, while the Middle got around 50% and the Better-off substantially more still. Even given a margin of error in these comparisons, with the different herd compositions, notably the cattle of the previous period, there is the starkest evidence here of the drastic effect of poor rains on the pastoral economy. And however many pastoralists these days' raise animals specifically for the market, in their own estimation, successful pastoralism still also means the copious consumption of milk.

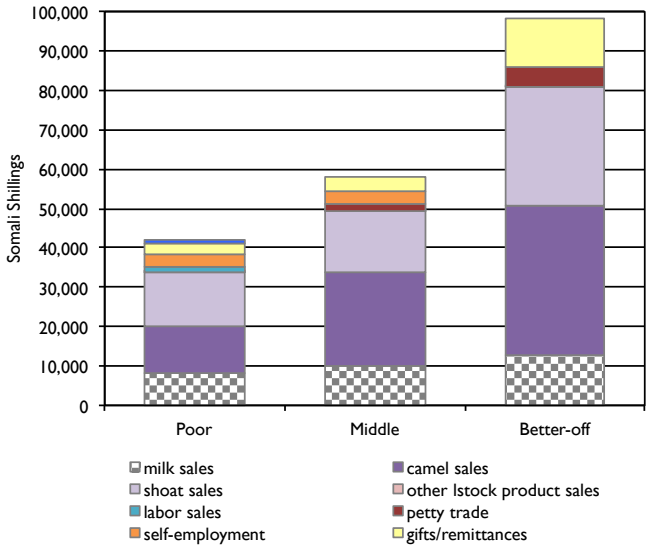
Figure 4: Food sources by wealth group, Togdheer Agro-pastoral Zone



Source: FSNAU

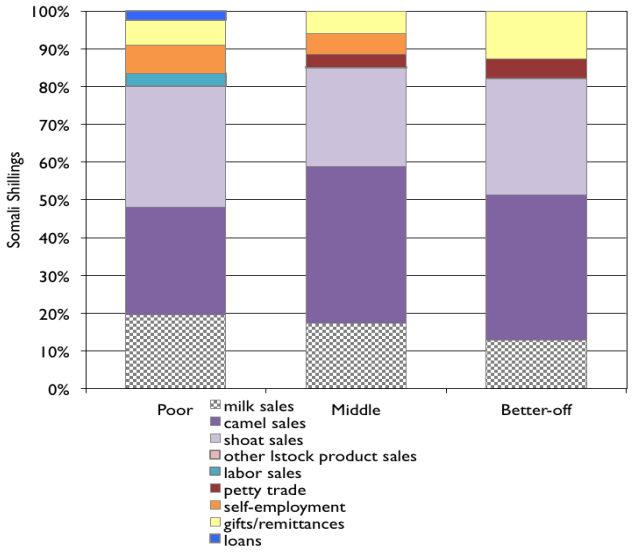
By the same token, the dependence on purchased food is certainly more than would normally be the case, and this is especially striking in relation to the Better-off, who do not stand out as very different from the rest in this regard. Having said that, there is evidence in front of us of very different food security outcomes. Even with food aid the Poor were unable to reach their minimum food requirement (they consumed only 97% of their minimum calorie requirement), which means that they were hungry – not just for milk, but plain hungry. The Middle households were reasonably above their minimum requirement at 106%, although in their case there was no food aid. But no doubt they were hungry for milk. The Better-off could afford to eat well above their minimum requirement, although none of what they bought was milk to make up for their production deficit: milk purchase within the community is not customary even when milk is available; dairy products are sold in the market. If we set aside milk, what is remarkable is that although the wealthier ate substantially more than the poorer, the content of their diet was not very different, considering their far greater wealth. Even the Poor got more of their calories from the preferred and more expensive rice and wheat-flour than from sorghum, and the graph shows that the contributions of sugar and oil were very similar (sugar 18-24% of calorie requirement, oil 8-9%). The one special item that the Middle and Better-off bought, but the Poor didn't, was cowpeas, which are somewhat more expensive per kilogram than either rice or wheat-flour and which gave the Middle and Better-off 2% and 5% of their minimum calorie requirement, respectively. With this minor exception, one can conclude that milk is the differentiating factor in the pastoral diet, and the other, purchased foods are consumed similarly by all the wealth groups, even though some are hungry and others well-fed.

Figure 5: Cash income sources (in absolute terms) by wealth group, Hawd Pastoral



Source: FSNAU

Figure 6: Cash income sources (in relative terms) by wealth group, Hawd Pastoral



Source: FSNAU

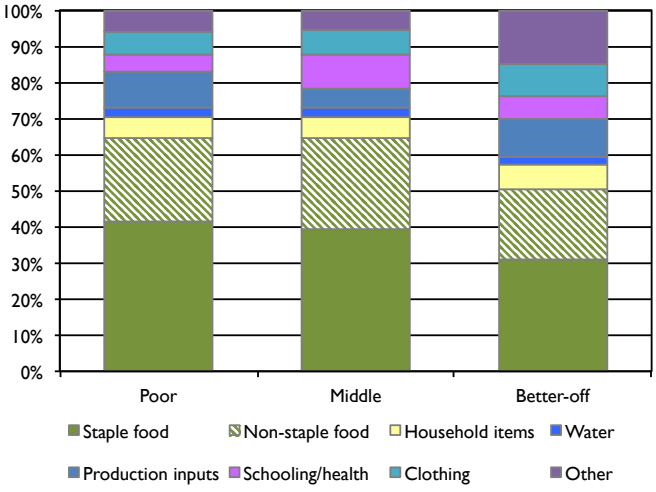
By comparison with the 2000 study, the proportion of dairy sales in the overall income was down in the reference year at least for the Middle (for whom the report shows clear evidence) from 30-35% to 20%. It is highly likely that the other wealth groups followed suit. It may be that this decline was actually worse than it looks if people sacrificed milk consumption in the reference year in order to sell more dairy so that they had the cash to buy more cereals etc. from the market. Even given this, it may seem a little surprising that the Poor in the reference year obtained a greater proportion of their income from dairy than the other groups, but this may be explained by the fact that they had fewer livestock that they could sell without jeopardizing the core of their herd. Even so, in the reference year as in any year, good or bad, livestock sales brought overwhelmingly the greater proportion of income, and it is interesting to note that for the Better-off and Middle it was camels sales that gave the bigger part as compared with goats and sheep; even the proportion of income of camel sales by the Poor is impressive: perhaps these levels are a result of the special pressures of the bad year and in better years camel sales would occupy a less prominent place compared with small stock.

As noted above, the 'labor sales' by the Poor were from construction work, and the 'self-employment' of the Poor and Middle was essentially charcoal sales. For 'gifts and remittances' there is a clear divide: for the Poor it was gifts, whether from the Islamic *zakat* donations or from other private social support; for the Middle and Better-off it was remittances.

The Middle are markedly closer to the Poor than to the Better-off in terms of total income. We do not have absolute figures (as opposed to proportions) from the previous studies, but we may suspect that the recent years of drought and loss had resulted in a skewing of wealth, meaning of course essentially livestock holdings, towards the Better-off, and that the Middle had lost enough animals to bring them closer than before to the Poor. Whatever the truth of this, a related observation shows something else: although the Better-off were many times wealthier than the Poor in terms of the prime asset, livestock holdings, they only obtained a little more than twice the cash income of the Poor. This may have been a peculiar feature of a bad year. But otherwise we may consider that the reason is that in pastoral life, people only materialize the cash value of their livestock – i.e. sell them – for living expenses, apart from the few periodic festivals or specific unforeseen requirements; and there is a limit to what even the wealthiest pastoral household will spend regularly on food or other things. Apart from selling animals for the money required by these expenditures, people keep their wealth in their living livestock. However, in the next section we will see that there were some differences in how the wealthier and poorer divided the money that they did spend.

Each wealth group spent in absolute terms just about the same as they earned. Figure 7 shows expenditure in proportionate terms, but it is necessary to appreciate that, for instance, while expenditure of the Better-off on staple food may look substantially less than that by the Poor, in fact it is somewhat over 40% more in absolute terms, and, given the different household sizes, 18% more *per capita*. As we have seen, this owes more to the amount of food bought than to different, more expensive types of food being bought. It is true that the Poor purchased proportionately more of the less-preferred sorghum than the others, giving them 17% of their calorie requirement as opposed to 14% for the others. But it is also clear that even in a bad year when they could not adequately feed themselves, the Poor would not, or could not, live by sorghum alone: they purchased rice to the tune of 21% of calories, and wheat-flour for 17% of calories – so equal to the sorghum. By comparison the Middle got 29% of calories from rice and 18% from wheat-flour, and the Better-off 28% and 24% respectively; and both groups bought a small amount of cowpeas. So the Better-off and Middle had a somewhat more expensive composition of diet than the Poor, but hardly to a spectacular degree: it is the overall level of calorie requirement satisfaction that shows the really significant differences.

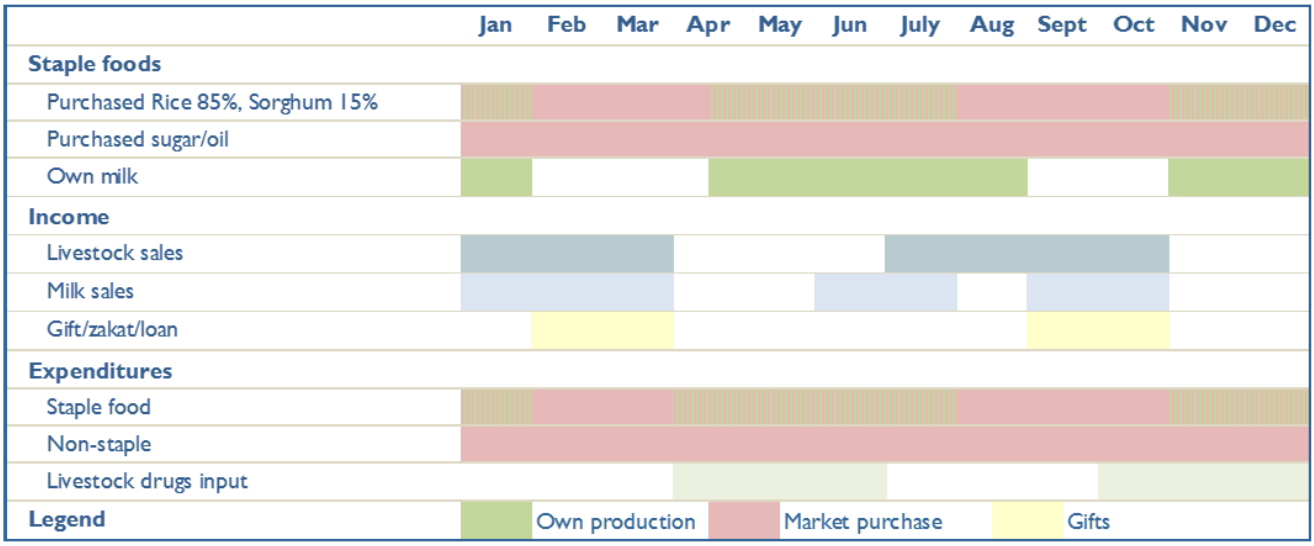
Figure 7: Allocation of annual expenditure by wealth group, Hawd Pastoral Zone



Source: FEWS NET/ FSNAU

Apart from the cowpeas and a very small amount of vegetables bought by the Better-off, the non-staple foods are exclusively sugar and vegetable oil. As is found also for pastoralists elsewhere in Africa, sugar forms a very big part of the diet, and oil is an essential element for preparing staples in a palatable way. The Poor and the Middle spent 23% of their total budget on these items together, and the Better-off 16%. This does not indicate that the Better-off consumed less of these items, rather they had more money to spend on other things than the Poor or Middle. Among the items constituting 'Other' in the graph was qat, which, probably with some tobacco, took up 5% of their total expenditure. But this is quite modest compared with some other zones: for instance, the Better-off agropastoralists of Togdheer spent 13% of their total on qat and tobacco, also in a bad year when money was tighter than usual; the difference is likely to be because of access, since pastoral nomads are for long periods distant from any source of qat (that has to reach them in a reasonably fresh state), if not of tobacco.

Figure 8: Consumption and income calendar for the Hawd Pastoral Livelihood Zone



Source: FSNAU

Apart from expenditure on water for animals, if not for humans, the other livestock production inputs were divided essentially between veterinary drugs and salt. The Poor and Middle spent four times as much on education than on health, the Better-off twice as much.

Calendar of major sources of food and income for poor households

When viewed in conjunction with the seasonal calendar shown in Figure 3, the calendar of consumption, income and expenditure flows shown in Figure 8 helps provide a fuller picture of how and when households obtained access to their main sources of food and cash throughout the reference year, and how these sources of food and cash related to their expenditure requirements. In particular, it can be seen that staple food purchase increases in intensity as milk availability fades seasonally, while non-staple food purchases are at a more or less regular pace throughout the year. Earnings from livestock peak and reduce seasonally according to animal condition and market demand.

Hazards, response, and monitoring variables

Drought is by far the worst hazard affecting the pastoralists, along with lesser degrees of rain failure. The most dangerous circumstance is when there are successive years of drought or at least rain failure, bringing both pasture failure and the sometimes critical shortage of water. On top of livestock mortality, births are reduced and the livestock cannot regenerate in number, so that there is a long-term impoverishment of households. This is what happened in the late 2000s up to the reference year: 2005/06 and 2006/07 were years with normal to good rains; but then the next three years up to the reference year 2009/10 were drought years. Another kind of shock to which pastoralists are sensitive, because they have to buy most of what they eat, is food price hikes due local, or more often global, market conditions, as discussed earlier. Conflict along the very extensive border areas of this zone can hamper migration options for pasturing the animals. Epidemic livestock disease seems rare and is not reported for the period in question.

The following table lists responses to production and price shocks that essentially and acutely increase the need for extra cash for food purchase, and that also prompt strategies to save livestock.

Table 3: Coping strategies in response to shocks in the Hawd Pastoral Livelihood Zone

Poor	Middle/Better off
Increased sale of animals	Increased sale of animals
Increase charcoal production and sale	Abnormal outmigration with livestock, sometimes by truck
Switch expenditure from non-food items to staples purchase	Emergency water trucking
Seek social support	Hand-feeding of animals with purchased fodder
Take loans	Appeal for extra remittances
	Take loans

Table 4: Key parameters to monitor in the Hawd Pastoral Livelihood Zone

Item	Key Parameter – Quantity	Key Parameter – Price
Animal production	gu and deyr reduction in births – goats, sheep, camels gu and deyr reduction in milk yields camels gu and deyr reduction in milk yields goats gu and deyr reduction in goat herd sizes gu and deyr reduction in sheep herd sizes gu and deyr reduction in camel herd sizes	price of export quality goats price of export quality sheep price of export quality camels price of goats for local purchase price of sheep for local purchase price of camels for local purchase price of camel milk price of ghee price of water
Other		consumer price of sorghum consumer price of rice consumer price of wheat-flour consumer price of sugar consumer price of vegetable oil

Source: FSNAU

Estimated Population for the Hawd Pastoral Livelihood Zone (SO05)

Zone	Region	District	Livelihood	Population 2014 UNFPA
North West	Woqooyi Galbeed	Hargeysa	Hawd Pastoral	100,453
North West	Togdheer	Burco	Hawd Pastoral	51,261
North West	Togdheer	Buuhoodle	Hawd Pastoral	33,768
North West	Togdheer	Owdweyne	Hawd Pastoral	64,419
North West	Sool	Laas Caanood	Hawd Pastoral	38,260
North West	Sool	Caynabo	Hawd Pastoral	2,668
North East	Nugaal	Garoowe	Hawd Pastoral	45,417
North East	Nugaal	Burtinle	Hawd Pastoral	33,770
North East	Nugaal	Eyl	Hawd Pastoral	16,193
North East	Mudug	Gaalkacyo	Hawd Pastoral	39,722
Central	Mudug	Gaalkacyo	Hawd Pastoral	
North East	Mudug	Galdogob	Hawd Pastoral	37,821
North East	Mudug	Jariiban	Hawd Pastoral	8,058
Central	Galgaduud	Dhuusamarreeb	Hawd Pastoral	3,712
Central	Galgaduud	Cabudwaaq	Hawd Pastoral	43,463
Central	Galgaduud	Cadaado	Hawd Pastoral	27,591
Central	Galgaduud	Ceel Buur	Hawd Pastoral	1,311
South	Hiraan	Belet Weyne	Hawd Pastoral	36,393
Population 2014 total				**584,279**

NORTHERN INLAND PASTORAL (SO06)

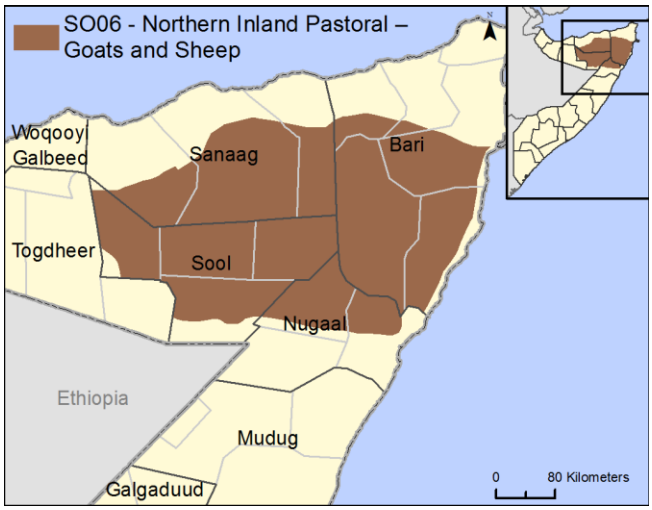
General livelihood zone description

Table 1: Summary of data supporting the Northern Inland Pastoral livelihood profile

Field data collection	Oct, 2010
Consumption year	Oct – Sept
Reference year	2009/10
Initial estimated validity	2014/15

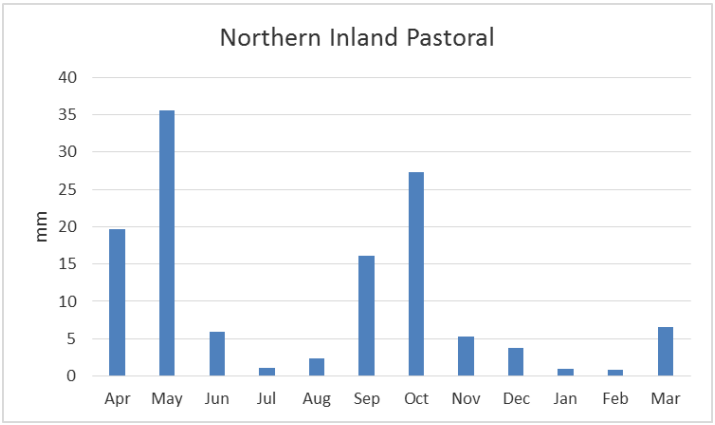
Source: FSNAU

The Northern Inland Pastoral Livelihood Zone (SO06) covers much of northern Somalia (incorporating both Puntland and Somaliland) and includes parts of 4 different regions (Sool, Sanag, Bari and Nugal). It brings together three pastoral sub-zones: The Sool Plateau; Kakaar Dharoor; and the Nugal Valley. The most recent population estimate for this zone is 580 583 (UNFPA 2014).



The pastoral economies of all three sub-zones have been in transition for many decades but the changes arguably accelerated after 2000 due to the extended drought of 2001-2004 as well as because of recurrent water stress since then. There are roughly three underlying causes behind environmental decline and hence to economic change in this zone. First, uncontrolled high rates of charcoal production for export as well as firewood sales to regional urban centers have led to significant environmental destruction. Second, urbanization and the demand for timber to feed the construction industry have meant further damage to woodland areas especially on the Sool Plateau. Third, the construction of private *berkads* (water catchments) and the use of private water trucking (two events that paralleled the switch from subsistence pastoralism to export-driven livestock production) also accelerated environmental decline especially around water points. Environmental degradation has led to a new vulnerability to rain failure made evident by a recent history of food crises. The 'new' pastoral economy is now one that is centered primarily on sheep and goat production supported by small herds of camels and very few, if any, cattle.[21] Social support mechanisms remain strong in this area which has allowed the poor to meet their basic needs despite declining livestock assets. In the past, credit-seeking and mobility were the key coping mechanisms and although these two strategies are still essential, they are supplemented by additional income sources such as charcoal production and a little casual labor. The most common hazards faced by the pastoral population are erratic rainfall and recurrent drought, as well as livestock disease (especially tick-borne diseases) and export bans. The zone covers a large territory where the population density is extremely low (an estimated 2-3 people/km²). In the north-west, the zone includes parts of two regions, namely Ceel Afweyne, Ceel Gaabo and Las Qoray Districts in Sanag Region; and Laas Caanood, Caynabo, Taleex and

Figure 1: Estimated average monthly rainfall in mm in the Northern Inland Pastoral Livelihood Zone



Source: USGS CHIRPS Data, FEWS NET GeoCLIM

[21] The 200-2004 drought took an extreme toll on all livestock species. Sheep and goat herds recovered more quickly and in 2008 it was estimated that they were back to pre-drought levels. However, camel herds were significantly smaller in 2008 than before the drought, meaning a loss of female camels for milk production and a loss of male pack animals for migration.

Xudun in Sool Region. In the north east, the zone covers Garoowe, Dan Gorayo and Eyl Districts in Nugaal Region; and Bossaso, Bandarbayla, Iskushuban, Qardho and Qandala districts in Bari Region. The local pastoral people are of Somali ethnicity mainly belonging to Warsangeli, Dulbuhante, Haber Yunis, Haber J'alo, Isaaq and Mujarteen clans.

The topography of northern Somalia consists of sub-coastal mountainous areas, a high inland plateau and valleys (i.e. the Gebi Valley, Dharoor Valley and Nugaal Valley). The areas of higher elevation range from 900-2,100 meters above sea level but these highlands then slope gently downwards toward the Indian Ocean in the east where the land eventually flattens into delta plains along the coast[22] The climate is arid with rainfall typically in the range of 100-200 mm[23] spread out over two rainy seasons (the *gu* and the *deyr*). The plateau itself is in rain-shadow and hence rainfall is naturally very low in this area. Temperatures during the day are hot throughout the year with an average daily mean of 24-26°C. In the Nugaal Valley, humidity is fairly high (60-70%) with mist falling during the northeast winter monsoon from December-February. Strong winds are also associated with the monsoons and these winds are particularly strong during the dry season months. The strong winds as well as rain storms aggravate soil erosion and have created gullies in some areas especially where soils are shallow. In general, there is a mix of soil types including sandy soils near the coast with increasing calcium carbonate and/or gypsum inland. On the whole, soils are not suitable for cultivation but support mainly scrub bush and Acacia trees. On the plateau, sparse woodland areas are found along seasonal streams. In the valleys there is savannah grassland. Diminishing tree cover has contributed significantly to the problem of soil erosion.

Prior to the 1950s, the Sool Plateau had areas of thick Acacia forest. However, much of the old forests have disappeared due to charcoal production and increasing urban demand for firewood and construction material. Charcoal exports rose to very high levels in 2000-2009 during the ban on livestock exports to the Middle East when households needed an alternative source of cash. There was also a high need for cash to buy fodder and water for herds weakened by the drought from 2000-2004. The environmental changes of the last 65 years were captured in a sobering study in 2006. The researchers looked at a fifteen-year period (1998-2003) and found that during this period, forest cover on the Sool Plateau had declined by 52%. Moreover, total shrub cover in the Gebi Valley and Hadeed Plateau had gone down by 20-65%. Likewise, in these areas, grassland had decreased by 40%. Most striking was the finding that on the Sool and Hadeed Plateaus and in the Gebi Valley, there had been a 370% increase in bare land over that fifteen-year period. [24]

Water is a very important resource in this arid zone. In the Nugal Valley, there is an extensive network of seasonal water courses. Moreover, in the valley, there are hand-dug shallow wells and boreholes along seasonal river beds where the water table is relatively high. In the mountains and in the high plateau of Sool, Sanaag and Bari regions, there are no wells. Instead, there are community-owned water catchments, a few boreholes, and private *berkads*. In the past, the scarcity of water points on the plateau meant that there was less settlement and herders moved their camels frequently in search of water and browse. Camels were often taken to distant rangelands for 30 days before returning to a water point where they could drink before moving to another rangeland for new browse. Since the 1950s, private *berkad*s (funded with cash earned from relatively high livestock exports to the Middle East) began to be built in increasing numbers. During this period, colonial authorities also built boreholes which encouraged herders to concentrate around water points and which subsequently led to localized environmental degradation. Today, 65 years later, the challenge remains of how best to respond to water scarcity and water need in context of maintaining the ecological balance in a fragile environment. Where once herders moved out of the Sool Plateau during the dry season, allowing the rangelands to recover, the construction of new water sources and water trucking means that the plateau is now used for all-season grazing. Time will tell whether this fragile environment can support this change.

Service and infrastructure in the zone are relatively sparse. There are all-weather feeder roads linking village markets with district towns. However, these roads get washed out during the rains and in general have been poorly maintained over the years. There is one primary paved road that links Bossaso port with Burao (Togdheer Region, Somaliland) and then to

[22] The Ogo Mountains (Galgodon Highlands) cross Bari, Sanaag and Togdheer Regions.
[23] Based on USGS CHIRPS data, a combination of satellite-based Rainfall Estimates (RFE) and station data, with data extending more than 30 years (1981-2014). Source, FEWS NET and USGS.
[24] Oduri, Alim, Gomes. 2006: Environmental Study of Degradation in the Sool Plateau and Gebi Valley: Sanaag Region of Northern Somalia. Horn Relief / Novib (Oxfam Netherlands), February 2006.

Garowe city (the administrative capital of Puntland). Services in this zone are minimal with the exception of telecommunication coverage which is good in district and regional towns and is about 50% coverage in villages. High frequency radios are the primary form of village-based communication. Otherwise, health and education facilities are few and those with access to such facilities generally find them poorly staffed and supplied. On the Sool Plateau, only 1 in 10 villages had access to a medical facility in 2009-2010. Moreover, in the Nugaal Valley, in the same reference year, 3 of the 10 sample villages had primary schools. Instead, most children attend m*adrassa* (*Quranic* school).

Livestock production is centered on sheep, goats and camels. Some households have donkeys as pack animals as well. Sheep predominate in the Nugaal Valley but on the Sool Plateau, herds are a mix of goats and sheep. Camels are fewer in number post the 2000-2004 drought than before 2000 but are still very important as pack animals and for milk production.[25] Poor households typically consume and sell goat milk only. Goats produce 0.25-0.5 Litres/goat/day over a milking season that usually lasts 90 days. Middle and better-off households consume and sell both goat and camel milk. This gives them access to much more milk as camels in this zone produce 2-3 Litres/camel/day over the course of a full 12 months. Of the total camel milk yield, about 39-46% of it was sold in the reference year. Similarly, about 50% of goat milk was sold. Peak production is during the *gu* and *deyr* rainy seasons. The exact timing of peak production varies according to range and water conditions in the previous year when conception occurred. Livestock diseases take a toll on milk production as well as on overall herd sizes. For instance, there were high camel mortalities from disease in 2007-2008 in the Sool Plateau. Endemic diseases include CCPP (*contagious caprine pleuropneumonia*), sheep and goat pox, and endo-parasites. Tick-borne diseases affecting camels are also very high in this zone. Use of DDT in the colonial era to control ticks has now given way to new chemicals and medication such as *chlorfenvinphos*. Weak veterinary services mean that these outbreaks often go untreated although some NGOs have tried to fill this gap.

Men and women together divide their labor in order take care of the household's herd. In general, men make decisions about migration; and women and men both make decisions about the sale of livestock and milk/ghee. Thus, men are responsible for trekking the camel herd to new rangelands during the dry season. Women typically care for the milk herd that stays close to the homestead. Women also care for sick animals that remain behind. In some households, men use the cash earned by the household through livestock, milk and ghee sales to purchase needed supplies for the household.

Pastoral households are on the move with their livestock throughout much of the year going between water points and dry and wet season grazing areas. During the long dry *jilaal* season (December-March) as well as during the *hagaa*, the herd is split into different species as well as into "dry" and "wet" animals. Families also split up with men taking the camels and "dry" shoats to dry season rangelands and women remaining with the milking animals. During particularly dry years, migration is extended out of the locality and toward water points in areas that received some rain whether on the plateau or in the Nugal Valley or toward the coast. Typically, even in dry years, herders in this zone do not go out of Nugal, Sool, Sanaag, Bari and Togdheer Regions. During the *gu* rains, livestock and families come back together in their wet season grazing areas where seasonal water sources are found. In a relatively normal year, herders on the Sool Plateau have access to surface water for 5 months of the year. For the other 7 months, they are on the move to secure water for their livestock.

Markets

Livestock markets

In this pure pastoral economy, livestock, milk/ghee and hides are sold for cash to buy needed cereals, sugar, oil and other basic goods. Markets are thus a vital part of the pastoral economy for the poor and better-off alike. The key markets for the *Northern Inland Pastoral Zone* are located both inside and outside of the zone. Garowe (capital of Nugaal Region) and Las Anod (capital of Sool Region) are important market hubs for their regions and for the zone itself. Burao (Togdheer Region), Engabo (Sanaag Region) and Bossaso (Bari Region) serve a broad area including this zone. District capitals within the zone are also important trading centers. Village markets are used more by poor households who cannot afford transport costs to

[25] By 2009 in Kakaar-Dharoor sub-zone, camel holdings had recovered to pre-drought levels although in the other sub-zones, camel holdings were still a little lower.

major market centers. In the dry season, all the market hubs are accessible although transport may be too costly for poor households. However, during the rains, roads from the interior to regional hubs are often impassable. Livestock dealers and middle men (*jeeble*) control the export trade through the main ports. Milk is sold at designated trading points where pastoralists gather to sell and buy goods before finding transport to the main market centers. There is a relatively high demand for milk and ghee in district and regional towns.

Livestock are exported to the Middle East (including Saudi Arabia, Oman, UAE, Dubai, and Yemen) transiting through the Berbera and Bossaso ports. Burao is an important feeder market to Berbera port for livestock coming from Sool and Sanaag Regions. Livestock coming from Nugaal Region feed into Garowe market and from there to Bossaso port. After Saudi Arabia imposed a ban on livestock exports from the Horn of Africa in 1998 due to disease, livestock holding grounds were established at Berbera and Bossaso ports. The holding grounds were used for medical clearance of export-quality livestock which facilitated trade once more with the Gulf Countries in 2009. The peak period of livestock exports coincides with annual religious events, such as the *Hajj* (October/November) and Ramadan (August/September). Local quality animals are in highest demand during the *deyr* and early *jilaal* (October-January). High demand for livestock at these times tends to ensure a relatively good price. However, in general, price trends go in the opposite direction as supply trends (i.e., when supply is low, prices rise but when supply is high, prices fall). These trends are particularly true for milk/ghee prices which peak during the *hagaa* and *jilaal* dry seasons then drop during the *gu* and *deyr* wet seasons.

Cereal markets

Excluding milk, ghee and meat, pastoral households buy most of their food from the market. Their staple grains are (red) rice and wheat flour which are imported from outside the zone. Sugar and vegetable oil are the two most important non-staple food items bought throughout the year. These key commodities are distributed by truck from port to regional market hubs and then to district and village markets. The monsoon season affects cereal prices as high winds and rough seas restrict imports. Thus, prices peak during the *hagaa* in July/August at the end of the monsoon season. Prices are usually lowest in February/March when traders return from exporting livestock by sea with imported cargo, such as wheat flour and sugar. Prices are often measured in as a terms of trade ratio, particularly rice to goat terms of trade. During the reference year, the terms of trade was 75 kg rice for a local quality goat. This was a little lower than the 5-year average (82 kg rice for one local quality goat). In terms of the labor rate, a day's labor was worth 4 kg of rice in the reference year, down from 7 kg (which was the 5-year average).

Casual Labor markets

Casual labor is not a main income source in this zone. Nonetheless, in certain areas, such as the Karkaar-Dharoor sub-zone, casual labor is a coping strategy in drought years. Main district and regional towns offer the best chance to find casual work such as portering. In bad years, there is also some labor migration to the *Coastal Deeh Livelihood Zone* where poor households look for casual work in the fishing communities there.

Credit

Access to credit is very important in the *Northern Inland Pastoral Zone*. Credit is not specific to a single wealth group but common to all household types. Notably, urban traders give credit but they also give *zaka*t annually to herders in need. Access to credit depends on how much debt a household has accumulated and whether they are in a position to re-pay at least some of their debt. For instance, as conditions worsened in the Sool Plateau in 2009-2010 and debts accumulated, the poor were no longer able to access credit. However, during the same period, many middle and better-off households who were town-based took monthly credit. In general, credit peaks in August/September and is also high during the *jilaal* (December-March). Repayment occurs during the wet seasons when milk sales are high or during the months when livestock sales peak (i.e., during the *Hajj* around October/November). Debts that accumulated during drought years are repaid once livestock and range conditions improve.

Conflict

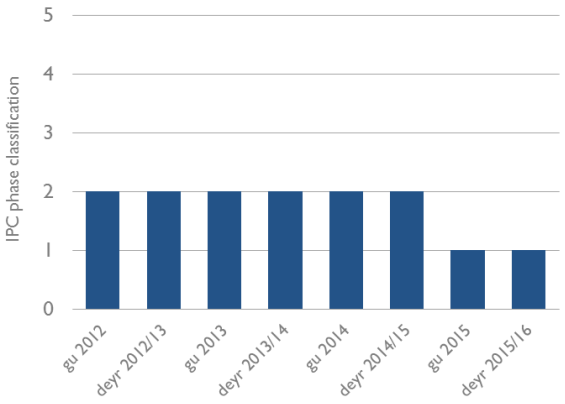
Somalia has seen several periods of violence and political tension throughout its 55-year history as an independent country. These tensions exploded in 1991 when President Siad Barre was forced to flee Mogadishu, first to Kismayu then to Nigeria. Shortly after the fall of Siyad Barre's government, Somaliland declared itself an independent state. In 1997, President Egal was re-elected for an additional 2-year term as head of Somaliland. Meanwhile, in the north east, regional leaders were joining forces in order to form the autonomous region of Puntland. In 1998, 7 years after the collapse of Somalia's central government, Puntland was officially formed.

Since the establishment of self-declared autonomous authorities in Somaliland and Puntland, there has been more stability and peace than in war-torn south-central Somalia. However, both Sool and Sanaag Regions are contested by Somaliland and Puntland. This has led to continued armed clashes in these regions as well as population displacement as local villagers flee armed confrontations between the two political factions.

Food access history

The 2000-2004 period was one of repeated rain failure that led to widespread hunger as well as high livestock mortalities in the zone. Humanitarian aid was provided to the affected population in the form of both food aid and cash transfers. The 2003 Horn Relief/Adeso Emergency Cash Relief Program was the first instance of cash transfer programming in the Sool and Sanaag Regions in particular and in Somalia in general. This largely successful intervention led to the development of a cash transfer working group in 2007 and to a much greater acceptance of cash transfers as a mechanism for humanitarian aid in future crises in northern Somalia.

Figure 2: Recent trends in IPC phase classification, with 1 as best and 5 as worst



Source: FSNAU

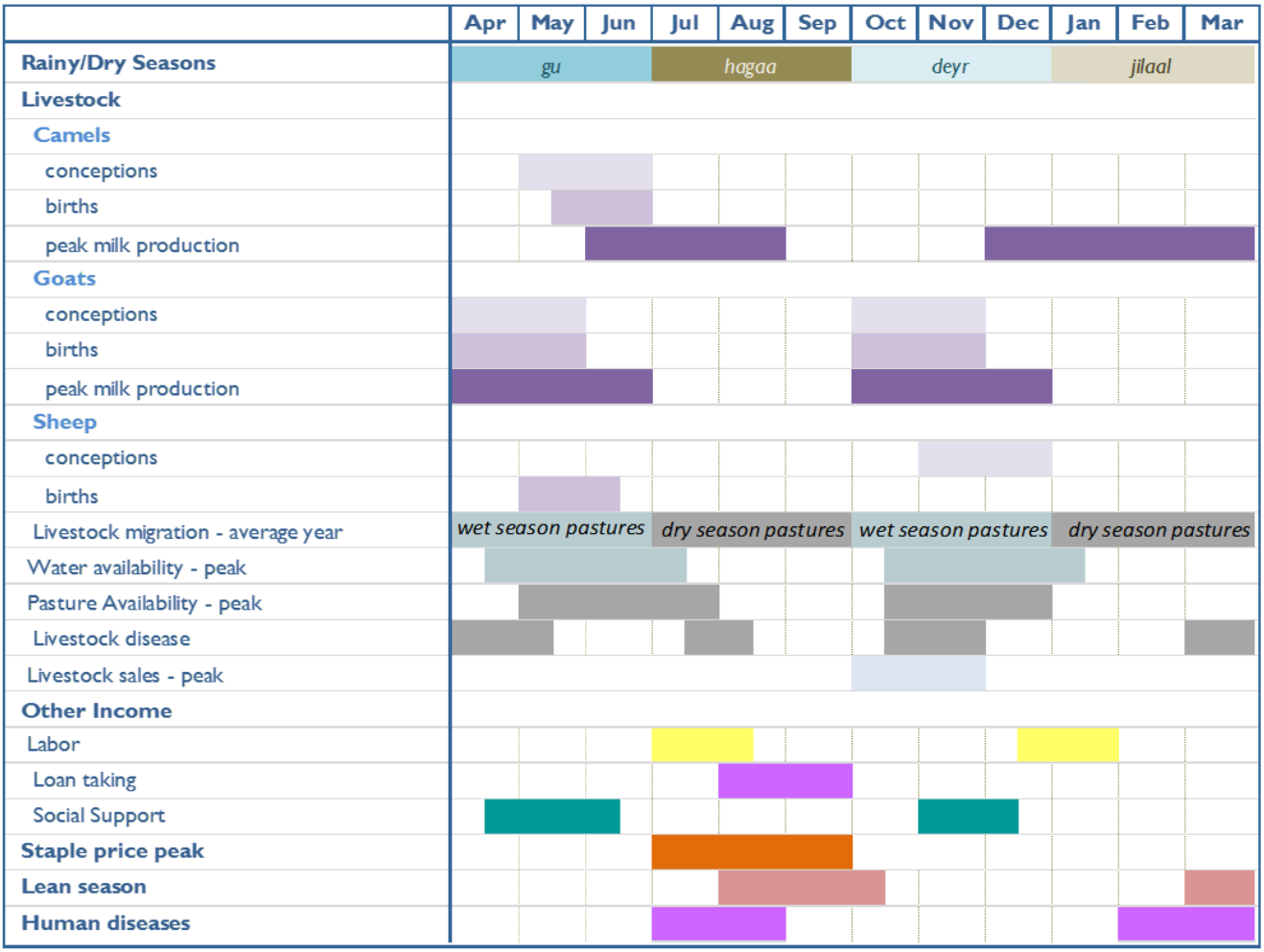
The years following (2005-2009) were reasonably good ones in terms of rainfall and rangeland conditions. Nonetheless, this post-drought period was also marked by high camel mortalities from an unknown disease. Moreover, conditions in the Nugal Valley were poor from 2007-2009. Following this brief period of relatively normal rainfall in much of the zone came a period of drought. In particular, 4 rainy seasons over the 2009-2011 period were characterized as poor to very poor in the Sool Plateau due to extremely low rainfall. Many herders migrated out of the zone and family splitting as well as water trucking to sustain the core herd were key coping strategies. Despite sufficient warnings of the looming crisis by FSNAU and FEWS NET, it was not until famine was officially declared in July 2011 that an emergency appeal was issued and a scaled up humanitarian intervention was planned. The Sool Plateau suffered water stress again in early 2014 leaving the affected pastoral population paying high fees for water trucked into the area. The pastoral population in Bari Region was identified as being in crisis due to very poor pasture and water conditions there.

Seasonal calendar

In this livelihood zone, as in many other parts of Somalia, there are two distinct rainy seasons followed by two dry seasons. The first rainy season, called the *gu*, usually starts in April (although, as shown in the rainfall graph above, it can start in March as well) and lasts through June. The second, called the *deyr*, occurs in September/October and lasts through December, with most of this seasonal rainfall coming in September and October.

One month after the start of each of the two rainy seasons, water and pasture resources are replenished and livestock are brought from the dry season grazing areas to new-growth pastures. This is a time of relative plenty, when milk yields are

Figure 3: Seasonal calendar for the Northern Inland Pastoral Livelihood Zone



Source: FSNAU, Sool Plateau Pastoral Livelihood Zone Profile, 2011; Nugal Valley Pastoral Profile, 2011; Shoat Pastoral Livelihood Profile, 2013.

higher, and staple food prices tend to be lower. Most animals are born during the rainy seasons as well, timed so that the new mothers can have access to fresh pastures and plenty of water. Camels calve once a year, during the *gu* season. The lactation period for camels is quite long, lasting through much of the year. Goats, on the other hand, have short milking periods, but they kid twice a year – once in each rainy period. Thus, there are two distinct periods when goats' milk is available. Lambs are especially vulnerable to mortality in drought conditions, so mating is highly controlled by the pastoralist herders, who aim to ensure that lambing occurs only in the *gu* season. Lambs born in one of the dry seasons, or even in the *deyr* season, which is followed by the long, harsh *jilaal*, have a much higher rate of death.

The *gu* season is usually a time of relative ease, with fairly low levels of labor required to herd and care for livestock. However, the flip side of this is that poor household members find it difficult to earn money from local casual herding labor in this season, and are forced to seek jobs in urban centers, usually on construction projects. During the dry seasons, the demand for herding labor increases and members of poor households return from town centers to take on these jobs.

Livestock sales peak during the *deyr* season when, in anticipation of the coming long dry season (the *jilaal*), people de-stock and put together the cash they will need for increased staple grain purchases. Demand for sheep and goats is especially high during Ramadan and the Hajj, which spurs on a confluence of peak prices and high sales. The *jilaal* season is another time when livestock sales can be high because many livestock are gathered around water points close to market centers, making it a convenient time to sell. However, because of the high supplies on the market, livestock prices tend to be low at

this time. Livestock mortality rates are highest during the jilaal, due to lack of pasture and water, and because the high concentration of animals around common watering and grazing points leads to the increased spread of diseases. However, depending on the disease, there are other times of year with livestock diseases peak – with worms (*helminthosis*) especially problematic during the wet seasons, and pneumonia most prevalent during the dry season, when malnutrition helps create the conditions for this disease to emerge.

During both dry seasons, and especially the *jilaal*, water is hard to come by and people either need to walk long distances to find it or to come up with the cash to purchase it. Women and children are responsible for collecting water throughout the year, and their burden is especially heavy at this time. This is also a time when Acute Respiratory Infection (ARI) is highest among children and malnutrition rates are higher due to a lack of milk and constraints on access to clean water. It is notable that the two lean seasons marked on the seasonal calendar coincide with peak occurrences of human diseases.

Wealth breakdown

The number of livestock owned by a household is what determines its wealth. Camels are an especially valuable productive asset, and significant numbers of these indicate wealth at the upper end of the spectrum. However, the real foundation of this livelihood zone's economy rests on the back of goats and sheep, and households attempt to acquire and maintain large herds of these small ruminants.

Table 2: Wealth group characteristicsin Northern Inland Pastoral Livelihood Zone

	Poor	Middle	Better-off
Household percentage (%)	30	50	20
Household size (#)	6	8	10
Typical livestock holding (#)			
Camels	0	7	15
Goats	27	60	100
Sheep	30	60	100
Donkeys	1	1	1 - 2

Source: FSNAU Northern Inland Pastoral_4Nov15 Note: The figures in the table are the mid-point of a range.

As you move up the wealth spectrum you see an increase in the number of livestock owned, and the household size. Poor households comprise around 30% of the households, although these households are also the smallest in size (typically around 6 people per household) whereas better off households have the most people (around 10 people per household) and they are also likely to contain more than one wife. Better off households make up around 20% of the households in this livelihood zone, and those in the middle wealth group make up around 50% of households. Given the increasing household size as you move up the wealth continuum, it is important to keep in mind that the percent of the population falling into each wealth group will not be the same as the percent of households represented by each wealth group.

Sources of food and income and expenditure patterns

As in the other pastoral zones of Somalia, households here eat a diet rich in milk, grain, sugar and oil, with a fair amount of meat added to the mix at certain times of year. The milk and meat comes from households' own livestock, primarily from goats for poor households, and from goats and camels for middle and better off households. The grains, sugar and oil all come from the market. In years of adequate rainfall, and at times of year when pasture and browse are plentiful, milk supplies are abundant, and people consume milk as part of every meal. During the dry season, and in years of drought, milk consumption decreases, replaced by an increased reliance on staple grain and oil consumption. The reference year, which is illustrated in the graphs below, was an average year, with sufficient rainfall for milk production.

Staple grains, which in this livelihood zone consist of mainly rice and wheat flour, are purchased throughout the year, but the dry seasons see a spike in market reliance, as this is a time when there is almost no milk available to balance out the household calorie intake. Added up over an average year, poor households typically buy around 630 kg of rice and wheat, middle households buy around 925 kg of rice and wheat and better off households, who have the largest families, buy around 1,160 kg of rice and wheat as well as a small amount of pasta. When factoring in the differences in household size, this purchased grain covers approximately 50 to 57% of household food calorie requirements over the year. Middle and

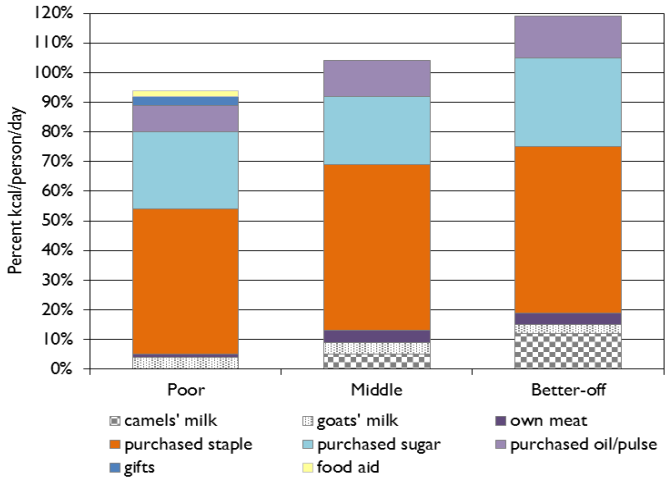
better off households also buy a small amount of pulses, usually cowpeas, which accounts for an additional 2 – 3% of required calories.

Sugar is central to the Somali diet, and all households buy copious amounts of it to mix in with their tea. The average better off household in this livelihood zone consumes 1.6 kg of sugar a day, whereas poor households consume around .80 kg a day. Because sugar is a high-calorie food, this amount of consumption contributes a large proportion of the annual energy requirements here, meeting 23 – 30% of minimum calorie needs for all households in the reference year. Purchased oil, which makes an especially important contribution during the dry seasons, made up around 10% of minimum calorie requirements.

The other main food source – milk – depends on the productivity of a household's herds. Camels offer the most reliable and copious source of milk, with yields of around 3 liters per camel in the *gu* season and 2 liters per camel in the *deyr* season and a much longer lactation period than goats. However, only better off and middle households own camels, and even then, most have only 1 – 3 camels milking at any one time of year. Nevertheless, with 3 camels milking, a better off household is able to generate around 2,700 liters of camels' milk in an average year. Around 40% of this is sold, and what remains is consumed, bringing in around 12% of these households' minimum annual food needs for the year. Middle households get around half this amount from their camels. Poor households have only goats to rely on for milk production. Goat milk yields are low – around ½ liter per goat in the *gu* season and ¼ liter in the *deyr*. After kidding, goats give milk for around two months in the *gu* season, and for half that long in the *deyr*, when water and browse are much more limited. Poor households, with approximately 12 milking goats, can expect to produce just under 400 liters of milk over the year, with the vast majority of this coming in the *gu* season. Up to half of this is sold; the remaining amount is consumed, covering just under 5% of the calories needed by the household in a year.

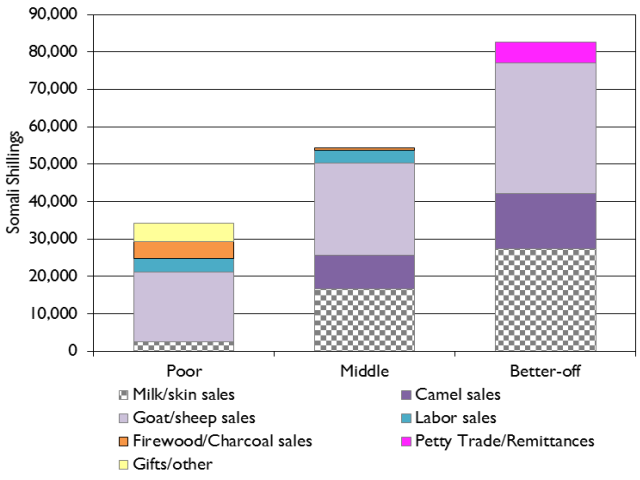
Meat is more important in this livelihood zone than many others, providing up to 4% of calories for middle and better off households. While this does not sound like much, it represents the slaughter of 10 – 12 goats and this provides a meaningful source of protein. Poor households slaughter fewer goats every year, but they often receive meat from relatives or neighbors during festivals like *Eid*.

Figure 3: Food sources by wealth group, Northern Inland Pastoral Zone



Source: FSNAU, Northern Inland Pastoral_4 Nov15 BSS

Figure 4: Cash income sources by wealth group, Northern Inland Pastoral Zone



Source: FSNAU, Northern Inland Pastoral_4 Nov15 BSS

Two additional sources of food contributed to poor households' annual needs in the reference year – gifts and food aid. *Zakat*, an obligatory 10% tax paid by those households that can afford it is typically distributed to the poorest of families. Poor households receive food in kind and food loans, and some poor households received lactating animals from relatives in the middle and better-off wealth groups. In the reference year these gifts helped cover 3% of poor households' annual food needs. Food aid provided an additional 2% of calorie needs.

Food is only one of the crucial requirements for living; people also need cash to purchase essential goods and services. The cash income graph above highlights again the main driver of the local economy: livestock. The vast majority of all cash is earned through livestock sales and milk/skin sales. Small amounts of cash are also generated through labor sales (for poor and middle households) and firewood sales. It is also common for better off households, especially, to receive remittances from relatives who have left Somalia and are working in a neighboring country or abroad. Due to the strong connections to the Diaspora and a vibrant network of money transfer agencies, remittance levels in this livelihood zone can be high for these households.

Goats and sheep are sold by all households and the large volume of sales in these ruminants is what distinguishes this zone from other pastoral areas in Somalia. Goat and sheep herds are large, and off-take rates for sheep and goats are around 60 – 65% in a typical year, which explains the high level of cash income derived from these animals. A typical poor household sold, on average, 18 sheep and goats in the reference year, a typical middle household sold 23, and a typical better off household sold 32. Better off households sell more export-quality goats and sheep, whereas poor households sell a more equal number of export and local-quality animals. The price difference can be quite large, with an export-quality sheep worth 1,200 SoSh in the reference year and a local-quality sheep worth 850 SoSh. The value of camels is obvious here as well; an export-quality camel could be sold for 10,300 SoSh in the reference year and better off households typically sold at least one of these. In all, better off households were able to generate over 2½ times more cash from livestock sales than poor households were able to earn.

Camels are also crucial because of their milk production, which brings in needed calories as well as a substantial source of cash income. As mentioned above, around 40 – 46% of camels' milk was sold by middle and better off household in the reference year. Goats' milk was also sold, but much less of this was available. For the upper two wealth groups, sales of camels' milk accounted for approximately one-quarter of their total cash income. Goat milk sales, on the other hand, accounted for no more than 7-8% of the total cash income earned by any of the wealth groups in the reference year. Poor households, with only goats' milk to sell, earned over 10 times less from milk sales than better off households. Given the importance of milk sales, keeping track of camel and goat conception rates, birth rates and grazing potential is important in order to monitor household welfare in this zone.

With less income from livestock and milk sales, poor households need to make up their cash gap through other means. As a result, poor households depend on cash income earned from casual labor and from self-employment activities. Around 10% of poor households' cash income in the reference year came from working on construction projects or – in areas near the coast, as laborers in fishing activities. But the degree to which people can depend on this source of cash is related to proximity to towns or the coast and the ability to spare a productive household member, whose labor may also be needed to care for the herd. Poor households also earn a small amount of cash from self-employment activities, which include mainly firewood and charcoal sales, sustained by the demand from towns like Bossaso, Erigavo, Garowe, Xudun, Talex and others. However, the widespread decimation of local forest resources is creating a growing environmental crisis around deforestation, continuing to produce charcoal and firewood in this manner is unsustainable.

Gifts of cash from better off neighbors and relatives and loans made up the remaining cash income source for poor households. Loans are a common means of covering seasonal cash flow gaps. Middle and better off households typically take out loans just before the peak of the livestock export period, such as Ramadan and *Eid*, or the *Hajj*, and repays the loans right after this period, when they are paid for the livestock they sell. These loans tend not to carry over into the next year, filling a short intra-annual cash need. Another type of loan is more common for poorer households, taken out in the dry seasons, when cash needs are high. Repayments of these loans are made after the onset of the rains, and depending on timing, may occur in the next consumption year, when livestock body conditions improve. The loanee and loaner in this case tend to be tightly bound by kinship or clan.

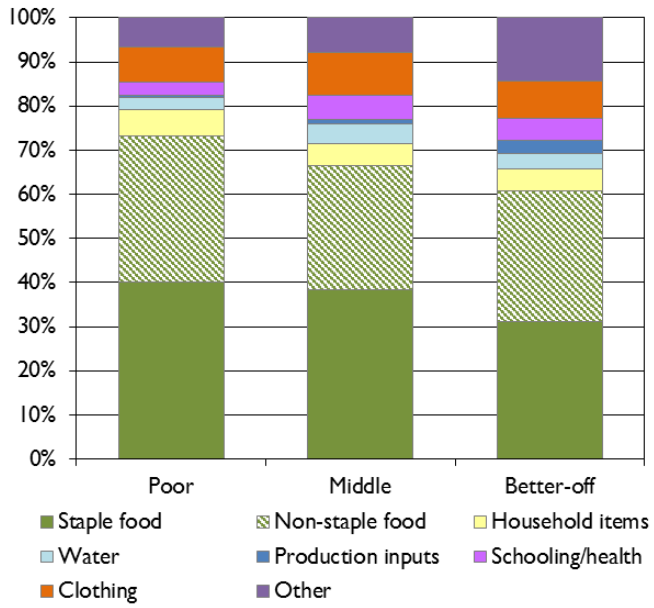
These last three sources – labor, self-employment and gifts – accounted for 35 - 40% of cash income for poor households in the reference year, representing the 'gap' these households face because of their lower numbers of livestock. If these households can accumulate more animals, they will be able to reduce their reliance on these alternative income sources.

As a final point about cash income, in the reference year, the absolute cash income for better off households was 2.4 times higher than that of poor households. Herd sizes for these better off households in the reference year were four to five times higher than poor households' herd sizes, which suggests that much of households' wealth is retained 'on the hoof', and converted into cash only as needed.

As seen above, the pastoralists in this zone are highly dependent on the market for food, but they also need to spend money on a range of other expenses throughout the year, including salt, soap, tea, water, veterinary goods, school, health services, clothing and other items. The proportion of income that needs to be devoted to each of these categories tells us something about differences in absolute cash income levels among the three wealth groups as well as their various priorities and needs.

As shown in the expenditure graph, all wealth groups devoted the majority of their annual budgets to covering food costs. In relative terms, the share of income that went to food was highest for poor households, exceeding 70% of annual expenditure in the reference year. However, in absolute terms, better off households spent almost twice as much as poor households on staple grains, and more than twice as much on non-staple food (sugar and oil), in part because their households are larger, and in part because they simply buy more calories per person than poor households.

Figure 5: Allocation of expenditures by wealth group, Northern Inland Pastoral Zone



Source: FSNAU, Northern Inland Pastoral_4 Nov15 BSS

Non-staple expenditures are especially taxing. All households spend a large amount on sugar and oil, but better off households spend the most, with the majority of this money allocated to acquiring sugar. Sugar acts as a substitute for milk during the dry season, particularly for children. Oil is used to prepare *canjeera* – a local flatbread - and to cook rice. Better off households in the reference year bought enough sugar to consume, on average, 1.6 kg of sugar a day. For middle and poor households this figure was 1 kg/day and .80kg/day, respectively. At 30 SoSh per kg (compared to 21 SoSh/kg for wheat flour) it is easy to see how this level of spending on sugar helps to make the non-staple budget so large.

The category called 'household items' (in yellow) includes household expenditure on tea, salt, soap, and utensils over the year. Of these, tea takes the most money by far. All wealth groups spend around the same in relative terms on these items, accounting for under 10% of annual expenditure in the reference year.

This livelihood zone experiences chronic water shortages. Free water is available only five months of the year – 2 ½ months in the *gu* and 2 ½ months in the *deyr*. During the remainder of the year, water is trucked into the zone. People purchase water in drums starting as early as the last month of the wet season and continuing until the onset of the next rains. This expenditure is captured in the 'water' bar in the graph above.

Water is also purchased for animals. This expenditure is included in the 'production inputs' bar. Water for livestock is purchased for around 7 months of the year, including all three months of both dry seasons and the last fifteen days of each rainy season. A poor household needs to buy 50 – 60 drums of water a year to meet the needs of its herd. Middle and better off households need to buy significantly more, although their requirements are somewhat reduced by the fact that they tend to own *berkads* – concrete cisterns for storing water. Expenditure on production inputs (both in relative and absolute terms) increases directly with wealth. Better off and middle households, who have more livestock than poor households, try to invest in their herds to keep their livestock healthy so that they can ensure better returns on sales and

higher reproduction rates. In the reference year all wealth groups spent money on water for their livestock as well as animal drugs. Adding up all of these expenditures over the year, better off households spent over 3 ½ times more than poor households on livestock-related inputs.

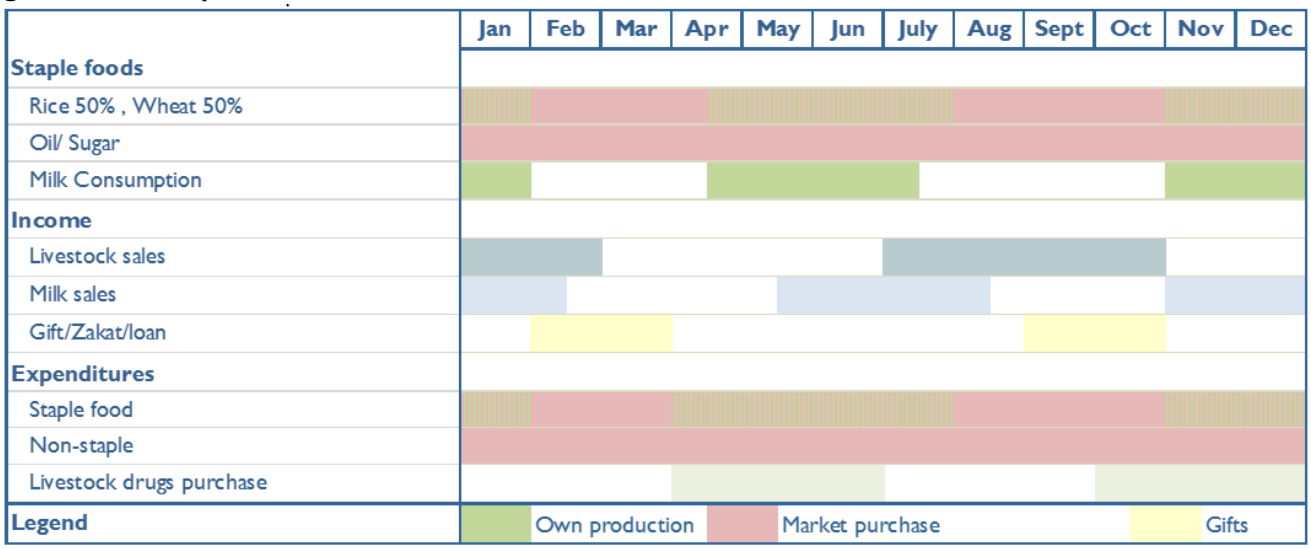
Spending on services, such as school and medicine, is also shown in the graph. Fewer than half of villages in much of this livelihood zone have schools, and only around 10% of villages have an operational medical facility[26]. Access to health care requires long treks to district towns or zonal centers. Better off households tend to have more members, which means their spending in absolute terms is higher than poor households, but in addition they appeared to invest more on a per capita basis than poor households on schooling during the reference year, sometimes sending their children to secondary schools in town. Better off households also spent more on medical care than poor households in the reference year, equivalent to around 1.7 times what poor households spent on a per capita basis.

The 'other' category on the graph above includes items like taxes, gifts, clan contributions, transportation and other non-essential expenditures that could potentially be reduced in a bad year to help cover food and essential livelihood-related items. This expenditure, both in absolute and relative terms, increases with wealth.

Calendar of major sources of food and income for poor households

When viewed in conjunction with the seasonal calendar shown in Figure 2, the calendar of consumption, income and expenditure flows shown in Figure 6 helps provide a fuller picture of how and when households obtained access to their main sources of food and cash throughout the reference year, and how these sources of food and cash related to their expenditure requirements.

Figure 6: Consumption and income calendar for the Northern Inland Pastoral Livelihood Zone



Source: FSNAU

For example, in this zone, households purchase food throughout the year, but staple food purchases are particularly high from February and March, which is when milk is less available for consumption. In April, camel and goats' milk from newly lactating animals helps households reduce their reliance on staple grain purchases. In November, households' 'own production' of milk and meat combines with purchased grain to round out the diet. Cash income from livestock sales peaks from July to October and then again in January and February. This is supplemented by income from milk sales, peaking

[26] Nugal Pastoral Livelihood Zone Baseline Report, Technical Series Report No VI. 40, FSNAU, September 2011, pg. 12; Sool Plateau Pastoral Livelihood Zone Report, Technical Series Report No VI. 39, pg. 9

twice a year: from November to February and May to August. These sales help to fund the purchase of livestock drugs, which occur around the same time.

Hazards, response, and monitoring variables

Drought and **water shortages** are two of the most common hazards in this zone. In the last 15 years, two extended droughts affected this area. The Sool Plateau was particularly hard hit by the two droughts of 2000-2004 and then again in 2009-2011. The Nugal Valley by comparison suffered drought conditions from 2007-2009. Droughts lead quickly to water shortages on the plateau which is prone to water scarcity in general. The knock-on effects of drought include poor range conditions, weakened animals, reduced milk production, low prices for livestock, and high terms of trade. Thus, declining livestock production and high food prices during droughts both create conditions of widespread food shortage.

Environmental degradation has, in part, been associated with the problems of drought and water scarcity. Coping with these hazards has become a vicious circle as one problem leads to an interim solution that in turn has negative consequences and additional hazards. For instance, the spread of private *berkads* in a fragile environment opened up certain rangelands to all-season grazing but in turn this has contributed to long-term environmental degradation especially around water points. Similarly, water trucking across arid soils has had consequences on the land such as gully erosion. Finally, the proliferation of charcoal production for sale to cope with reduced income from livestock during droughts, disease and market bans, has further accelerated the problems of environmental degradation, especially on the Sool Plateau.

Livestock disease is another major hazard in this area. CCPP, sheep and goat pox and endo-parasites are some of the most critical diseases. Not all diseases are identified. For instance, during the 2007 deyr, the Sool Plateau was hit with an unidentified camel disease. Disease outbreaks may lead to significant rises in livestock mortalities. In addition, disease outbreaks affect **price** and **market access**. The most notorious example was the ban placed by Saudi Arabia on livestock exports from the Horn of Africa due to an outbreak of Rift Valley Fever which began in 1998 and was not lifted until 2009.

High staple grain prices are also a hazard in this zone. Herders buy much of their food through sales of livestock, milk and ghee. This makes them highly dependent on market conditions for food access. In 2007-2009, inflation hurt poor consumers hard on the Sool Plateau.

Insecurity and **clan conflicts** were a significant problem after the collapse of Somalia's central government. Although some stability has returned to the northeast and northwest regions encompassing the self-declared autonomous regions of Somaliland and Puntland, clan conflict continues to erupt at different time in various parts of the zone. This conflict affects market access and prices as well as the lives and safety of the local population.

Table 3: Coping strategies in response to shocks in the Northern Inland Pastoral Livelihood Zone

Poor	*Middle/better off*
Migrate far with the herd and family splitting	Migrate far with the herd and family splitting
Share pack animals to facilitate a long migration	Truck weak animals to distant pasture
Leave small *shoat* herd with a relative in order to migrate to distant pasture	Purchase water from water trucks
Purchase water from water trucks	Sell more milk and sell more livestock
Search for casual work	Seek remittances from relatives living away
Request social support	Search for credit
Kill newborn animals so the mother will survive	Kill newborn animals so the mother will survive
Burn and sell more charcoal	Burn and sell charcoal
Migrate to town or IDP camps	Increase trade activities

Source: FSNAU and FEWS NET reports.

There are several ways that pastoral households cope with economic shocks. A number of these strategies concern **migration** and **family splitting**. For instance, men may trek with the herd to more distant rangelands less affected by drought. Long migrations may involve sharing pack animals or even trucking weak animals to new rangelands. Depending on a household's assets, long migration may also entail leaving a small *shoat* herd with another relative. Decisions about migration during a drought also involve evaluating the situation of the milk herd. Often herders decide to kill newborns in order to protect the health of the lactating mother, thus helping to protect their core breeding animals for the long-term sustainability of the herd.

During a dry spell or a single failed rainy season, herders will increase their **sale of available milk** to ensure their supply of staple grain. They will also try to increase income by **selling more livestock,** and by burning and **selling charcoal**. They may also send a family member to town in search of **casual labor**. Securing additional revenue is important at these times because expenditures typically increase, especially water expenses as water is purchased from water trucks at private expense.

Seeking **gifts, remittances** and/or **credit** are also common coping strategies. However, in an extended drought, these strategies become less effective because of sustained high demand for aid from better-off households as well as, in the case of credit, unresolved debt carried over from year to year. Consequently, at the point of limited credit access and social support, affected households will leave their remaining *shoats* with a relative and move to an urban area in desperate search of food and income.

Table 4: Key parameters to monitor in the Northern Inland Pastoral Livelihood Zone

Item	Key Parameter – Quantity	Key Parameter – Price
Animal production	Camels' milk – yields (season 1 & 2) Goats' milk – yields (season 1) Camels – herd size Goats – herd size Sheep – herd size	Camels' milk – producer price Goats milk – producer price Camels – export & local price Cattle – export & local price Goats – export & local price Sheep – export & local price
Other	Construction labor – availability of construction jobs Firewood & charcoal – amount sold Petty trade - volume Gifts – amount given	Construction labor – wage rates Firewood & charcoal – prices Petty trade – returns on trade
Expenditure		Rice – consumer price Wheat flour – consumer price Sugar – consumer price Oil – consumer price

Source: FSNAU, BABLP BSS, 2009.

Estimated population in the Northern Inland Pastoral Livelihood Zone (SO06)

Zone	Region	District	Livelihood	Population 2012 UNFPA
North West	Sool	Laas Caanood	Northern Inland Pastoral (Goats and Sheep)	38,260
North West	Sool	Caynabo	Northern Inland Pastoral (Goats and Sheep)	34,297
North West	Sool	Taleex	Northern Inland Pastoral (Goats and Sheep)	59,950
North West	Sool	Xudun	Northern Inland Pastoral (Goats and Sheep)	27,036
North West	Sanaag	Ceerigaabo	Northern Inland Pastoral (Goats and Sheep)	58,991
North West	Sanaag	Ceel Afweyn	Northern Inland Pastoral (Goats and Sheep)	36,954
North West	Sanaag	Laasqoray/Badhan	Northern Inland Pastoral (Goats and Sheep)	144,118
North East	Bari	Bossaso	Northern Inland Pastoral (Goats and Sheep)	3,860
North East	Bari	Bandarbayla	Northern Inland Pastoral (Goats and Sheep)	9,453
North East	Bari	Iskushuban	Northern Inland Pastoral (Goats and Sheep)	24,660

North East	Bari	Qandala	Northern Inland Pastoral (Goats and Sheep)	4,532
North East	Bari	Qardho	Northern Inland Pastoral (Goats and Sheep)	21,966
North East	Nugaal	Garoowe	Northern Inland Pastoral (Goats and Sheep)	92,209
North East	Nugaal	Eyl	Northern Inland Pastoral (Goats and Sheep)	24,297
SO06 Population 2014 total				**580,583**

EAST GOLIS FRANKINCENSE, GOATS & FISHING (ZONE SO07)

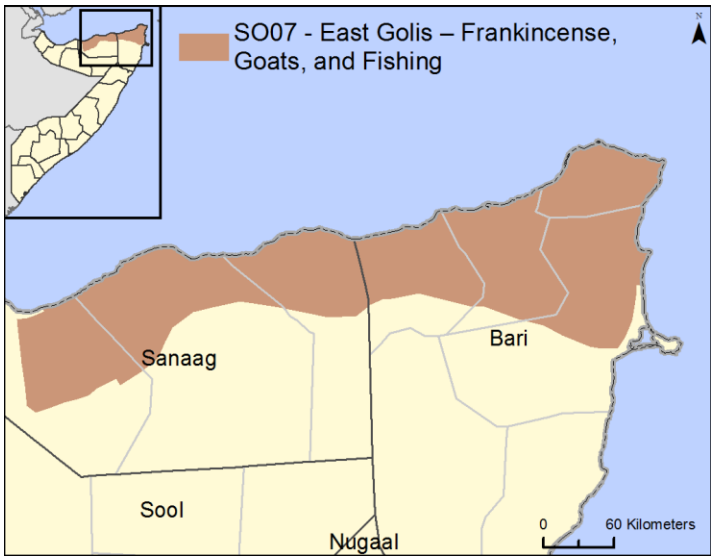
General Livelihood Zone Description

Table 9: Summary of data supporting the East Golis livelihood profile

Field data collection	Oct 2012 to Nov 2013
Consumption year	October – September
Reference year	2011/12
Initial estimated validity	2017

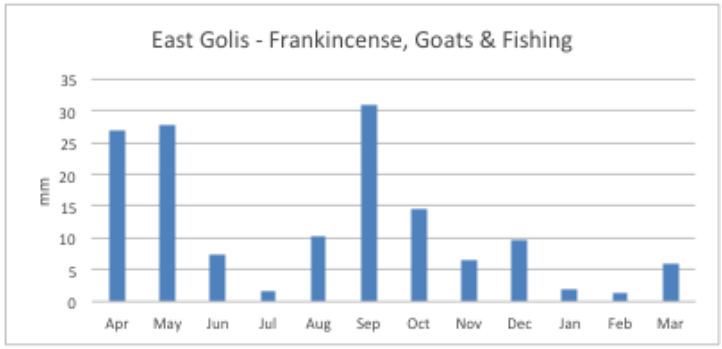
Source: FEWS NET/FSNAU

The *East Golis Frankincense, Goats and Fishing Zone* covers an area which includes the districts of Calula, Iskushuban, Qandala and Bosasso in northern Bari region, and Las Qorey, Ceerigaabo and Ceel Afweyne districts in northern Sanaag region. The zone is characterized by rugged terrain as it contains the central and eastern sections of the Golis mountain range, a succession of barren mountain peaks incised by valleys and dry seasonal rivers and ravines. The topography gently slopes towards Calula, before flattening towards the Gulf of Aden. The morphology is characteristic of hills and mountain ridges with alluvial plains to the west of Bosasso and Qandala and deltas and coastal plains in Calula. The ecology of the zone is semi-desert and the basis of the economy is frankincense trade and livestock rearing. The total estimated population for the livelihood zone is 225,750 (UNFPA 2014).



The zone enjoys a more hospitable climate than most Somali regions and features thick forests, especially on the steeper northern slope of the Golis mountain range, which receives considerable rainfall from the monsoon weather systems, which move south of the Gulf. The average temperatures range between 25 and 35°C in the coastal areas, but become colder in the mountainous areas.

Figure 1: Estimated average rainfall in mm in East Golis



Source: USGS CHIRPS Data, FEWS NET GeoCLIM[27]

Rainfall levels average 130-150 mm per year (although less in the coastal areas), divided into two rainy seasons, like is the case for the majority of the country. Both rainy seasons contribute significantly to the renovation of pasturelands, especially in the mountain areas. The *gu* rains are most significant in April and May (see Figure 2), while September is usually the month with the highest *deyr* rainfall levels.

East Africa suffered a severe drought between 2011 and 2012. In Somalia the drought affected farmers in the south especially, although the effects of the drought were also visible among pastoral communities in the north. The reference year for the baseline data (October 2011-September 2012) was a normal to below average year. While the *deyr* 2011 season was poor, the *gu* rains were good. However, insecurity restricted livestock migration and increased livestock concentration to certain areas. Due to the limited availability of water and pastures, livestock body conditions deteriorated, lowering their value, and milk yields declined specially for camels (an

[27] Based on USGS CHIRPS data, a combination of satellite-based Rainfall Estimates (RFE) and station data, with data extending more than 30 years (1981-2014). Source, FEWS NET and USGS.

average of 1-1.5 liters per day compared to normal yields of 2-3 liters per day). As a result, pastoralists resorted to abnormal migration, water trucking and seeking social support as a way of coping with the poor performance of the season. Nevertheless, frankincense production was normal and availability of loans from traders continued, which, overall, made the reference year an average year in terms of livelihoods and food security.

The vegetation cover in the zone comprises evergreen trees (*angeel, hambaruur, gob, quud*), shrubs and acacia species, which mainly grow along the banks of the seasonal streams (*wadis*). This area is one of the few along the Gulf of Eden where frankincense is produced. The boswellia tree is the species used for the extraction of the resin. Additionally, different varieties of grasses, locally known as *dureme*, *taaug* and *sifaar*, are commonly found in areas where frankincense trees are less dominant. These types of grasses have been used by pastoralists for a long time to graze livestock mainly sheep and goats.

Permanent water sources are found mainly along the coastal areas as the highlands areas have fewer permanent water sources. The main water sources available to the local population and livestock include shallow wells and boreholes, seasonal springs, berkads and seasonal catchment areas, although the latter become depleted during times of prolonged droughts.

Frankincense production is the key economic activity for households in the livelihood zone, it provides income through sale but also creates employment opportunities for men and women in the tapping, harvesting and sorting of resins. Frankincense trees grow in the wild and are not subject to any management practices. Traditionally the ownership of frankincense fields is clan-based and each family has a right to directly work in the fields where the trees grow to collect the incense, to rent out the land for exploitation by someone else or to engage in sharecropping.

The trees that produce frankincense and myrrh products brought fame and wealth to the northern costs of the Somali peninsula for thousands of years. Today, close to 90% of the worlds production of frankincense comes from Puntland. Focusing exclusively on Somalia, there are two frankincense-producing species: the *Boswellia sacra*, with the Somali name *moxor*, yields the *beeyo* type of incense. This incense is known as “Somali type olibanum” in the international trade market. The second species, *Boswellia frereana*, with the Somali name *yagcar*, yields the prized *meydi* incense. *Meydi* frankincense is exclusive to Somalia, while *beeyo* frankincense is produced more widely, in countries such as Ethiopia (Somali region), Eritrea, Oman and India

The young trees supply the most valuable gum, while the older ones produce a clear, glutinous fluid that resembles varnish. Today’s use of frankincense is mainly limited to making incense, as the traditional medicinal use has become less common. To obtain frankincense sap, scratches are made in the trunk of the tree with a sharp tool locally called *mangaf*. As the harvest season progresses the initial scratches become deeper incisions. When the sap is exposed to air it turns hard. After a few days the collectors return to gather the coagulated resin and make new incisions to continue the harvesting process. The harvest season for each species is slightly different and, together, tapping and harvesting take place nearly year-round.

Livestock is second to frankincense in terms of the economic importance in the livelihood zone. The mountain goat is the dominant livestock species, a highly adaptable animal to the topography of the zone, but sheep and camels are also reared. The species of sheep and goats kept in the zone are low in meat and milk production and they mature later than species kept in other zones.

During the current livelihood zoning revision, the boundaries of this livelihood zone have undergone some changes, spurred by the findings from the fieldwork conducted to establish a livelihoods baseline for the “Coastal Deeh, Sheep and Fishing Livelihood zone” (presently named Coastal Deeh Pastoral and Fishing, SO08) - a zone which used to cover virtually the whole of the Somali coast line in the 2002 National livelihood zones map. Half of the northern section of the Coastal Deeh Sheep and Fishing zone, which stretched along the northeastern shores of Somalia, was combined with the East Golis Frankincense Zone and renamed to its current denomination. The fieldwork to produce this profile was collected in 2012, prior to the zoning revision. The importance of fishing as part of the local livelihoods is not apparent from the primary data and as a result does not feature as an economic activity in this profile. The importance of fishing as a source of income in

the zone will need to be revised with future baselines, after which the name of the livelihood zone will perhaps be modified.

The main market for the zone is the coastal city of Bosasso, the third largest city in the country after Mogadishu and Hargeisa and the main commercial center in Puntland thanks to its seaport. Bosasso has experienced a period of rapid economic growth since the end of the Somali civil war and its population has increased in tandem, further enlarged with the arrival of IDPs from the southern regions. There are a number of large companies present in Bosasso (telecommunications, fishing, tannery and commercial banking), as well as the Bender Qassim international airport and a new commercial market close to the port, which opened at the end of 2011.

While there are no major roads that traverse the livelihood zone from east to west, Bosasso has good links towards the center of the country thanks to the Bosasso-Garowe main highway. There are plans to construct new roads connecting coastal towns in the region to the highway. Other more distant markets include Qardho (further south along the highway) and Erigabo, the capital of Sanaag region

Markets

Frankincense markets

Trade in frankincense, livestock and livestock products are the fundamental economic activities for the communities living in the East Golis livelihood zone. Frankincense is processed into different commercial grades, of which the best are exported. Frankincense is channeled into Bosasso where much of the sorting takes place, providing local employment opportunities. The city of Erigabo is also an important hub for gathering, sorting and storing resins.

The frankincense trade route starts with the pastoral harvesters, who sell to local traders or directly to sorting houses. These sell to distributers inside Somalia, who forward the produce to wholesalers in Saudi Arabia and other Gulf States. From there, a portion of the exported goods continues to more distant markets. Saudi Arabia imports the vast majority of the produce. *Meydi* is a prestige product in Saudi Arabia, used by women during social gatherings. Other significant markets are Egypt and Yemen; however, nations in other continents are also included as end markets, such as the EU's perfume and cosmetics industry and China, where it is used in alternative medicine. Frankincense harvesters are largely ignorant of what the end use is for the resin they collect and the prices it fetches outside of Somalia.

Livestock markets

With regards to livestock trade, local and export quality goats and sheep are the main species traded in the zone. The major market is, again, Bosasso. This urban center serves as livestock trading points, as supply centers for essential food and non-food items and as sources of labor opportunities during bad years. Export quality livestock are concentrated in Bosasso to be shipped out of the country to Yemen, Saudi Arabia, Egypt and other Gulf states. In the past several decades, Gulf exports have been disrupted by a series of trade bans due to fear of the spread of livestock diseases, mainly Rift Valley Fever and Rinderpest. The last such ban was imposed in 2000 and was not lifted until 2009. Livestock can also be trekked to Burao market on the *Haud* plateau, which is the largest assembly market for livestock because of its central location and proximity to the Ethiopian-Somali region as well as to Central Somalia.

Livestock markets are generally in poor conditions and need upgrades in basic infrastructure such as water provision, fencing, feedlots, holding grounds, loading ramps and veterinary services. Animals can spend a number of days or weeks in intermediary markets waiting for onward transport and livestock condition can deteriorate during this period lowering the value of the animal.

Livestock prices are influenced by a number of factors, first of which are the animal's age, sex and breed and, especially, body condition, which is linked to rainfall and water and pasture availability. Other factors affecting export quality animals include exchange rates (Somali shillings against American Dollars) and the level of external demand in Gulf markets, which

increases during the main Islamic festivals (*Eid* and *Hajj*). The *Hajj* pilgrimage is the most important season for small stock sales and around half of all goats and sheep are exported during this period and the preparations leading to the *Eid* celebrations.

The major road inside the zone connects Bosasso to Garowe, the capital of Puntland. This 750 km north–south highway connects major cities in the northern part of the country with towns in the south. This highway is Puntland's lifeline, since most of the region's imported and exported goods, heading to or from Garowe or Galkayo pass through Bosasso. In early 2012, al Shabaab struck a central part of the city and temporarily blocked the main road. All weather roads link the villages inside the East Golis zone, although most are in very poor conditions owing to the rugged terrain and lack of maintenance. Most access routes used by pastoralists in the livelihood zone are footpaths and animal tracks. The area is physically vulnerable, particularly during times of extreme shocks that require delivery of relief.

Cereal markets

The main market for staple food in the region is Bosasso, while more distant markets include the urban centers of Garowe and Burao. Poor households typically purchase staple foods, such as rice and wheat flour, from frankincense traders who travel to production areas and processing centers. The availability of traders makes access to staple foods easier and, often, households are given the option to purchase food on credit. Such arrangements, however, can lock households into obligations to sell their frankincense harvest to particular traders at lower prices than in the open market.

Casual labor markets

Casual labor is a source of income for poor households in this livelihood zone. Most of the employment is found locally in the frankincense trade, either employed as tappers and collectors (mainly male workers) or cleaning and sorting the final produce (mainly female workers). Labor opportunities can also be found in the main towns, inside the zone.

Credit

Access to credit is an integral part of livelihoods in this zone. Most households purchase food and essential household items on credit from merchants who deal in the frankincense export trade. Debts are normally non-conditional and are paid back after the harvesting and sale of frankincense or when livestock body conditions improve and livestock fetch better sale prices.

Conflict

A number of conflicts affect this livelihood zone, first of which is the Somaliland-Puntland conflict. The dispute between Somaliland and Puntland stems from 1998, when Puntland formed and declared the region as part of its territory. The regions most affected by the dispute are the provinces of Sool, Sanaag and Cayn, which are located on the border of the two semi-autonomous regions, however, only the northern section of Sanaag actually falls within the East Golis livelihood zone. Puntland claims the regions of Sool, Sanaag and Cayn due to kinship ties with the regions' dominant Darod clans, while Somaliland claims the territory as part of the original bounds of the former British Somaliland protectorate, which the self-declared country regards itself as the successor to. Oil explorations in the Nugaal Block (along the Nugaal Basin) and recent offshore oil explorations (which began in 2015) are new points of contention between the two regions.

A second conflict, which indirectly affects the livelihood zone, is that related to the Galgala militias and Al-Shabaab. Galgala is a small town in the Bari region, 40 km south of the port town of Bosasso, and close to the smuggling ports of Ceelayo and Qaw. It is also gateway in to the Galgala hills (also known as the Al Madow Mountains) and the Golis mountain range. The thick vegetation and rugged terrain have made the mountains of Puntland highly useful for various militias throughout history. Since 2011-2012, fighters fleeing southern Somalia in skiffs have traveled from town to town along the Somali coast, reaching the northern coast of Puntland and concentrating in Bosasso. Smugglers operating between Somalia and Yemen through the gulf provide weapons and supplies to the area. The mountains provide refuge and a launching spot for

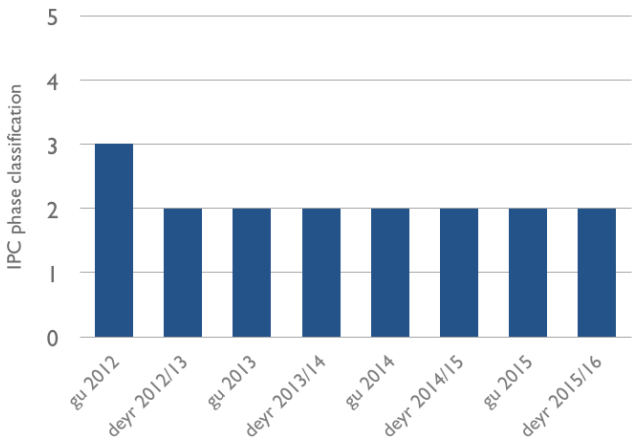
attacks for both militia groups. Additionally, local conflicts among groups like the Warsangali and Majeerteen clans over resources have provided additional opportunities to al Shabaab. Its wing in the Al Madow Mountains has been strengthened by local recruits from among the marginalized Warsangalis and has received on and off support from the Galgala militias.

A more recent source of conflict and destabilization in the zone derives from the piracy activities taking place off the coast of the Gulf of Aden. Although the economic impact of piracy is both positive and negative, the increase in the availability of weapons in the local area and the international vested interests in the continuation of these activities have increased insecurity. Some urban centers, like Bosasso, have benefited economically from piracy-related investments as a proportion of pirate ransoms are converted into Somali shillings and spent locally - even if a significant proportion of the proceeds is invested in foreign goods or channeled to foreign financiers. The injections of cash into the local economy have caused local inflation for certain goods. For example, livestock prices have risen with the development of the pirate industry, which has been positive for pastoralists.

Food access history

The baseline reference year (October 2011-September 2012) followed a year of drought and critical food insecurity in the region. Since then, as is visible in Figure 2, food and livelihood security has improved somewhat and has remained stable up to the present - consistently at IPC level 2 (borderline food insecurity). Nerveless, the situation of East Golis is feeling the impact of the recent Yemen conflict, which has reduced export demand for livestock and frankincense.

Figure 2: Recent trends in IPC phase classification, with 1 as worst and 5 as best



Source: FSNAU

Further explanation is necessary with regards to the reference year situation. The livelihoods in this zone are dependent on two complementary activities: frankincense tapping and livestock rearing, which are affected differently by rainfall patterns. While the impacts of the drought were visible during the reference year (for example the high concentration of livestock in certain areas), frankincense production and access to loans from the traders were normal, allowing for a stabilization of livelihoods. Poor and middle-income households received food aid during the reference year, yet this is a regular occurrence.

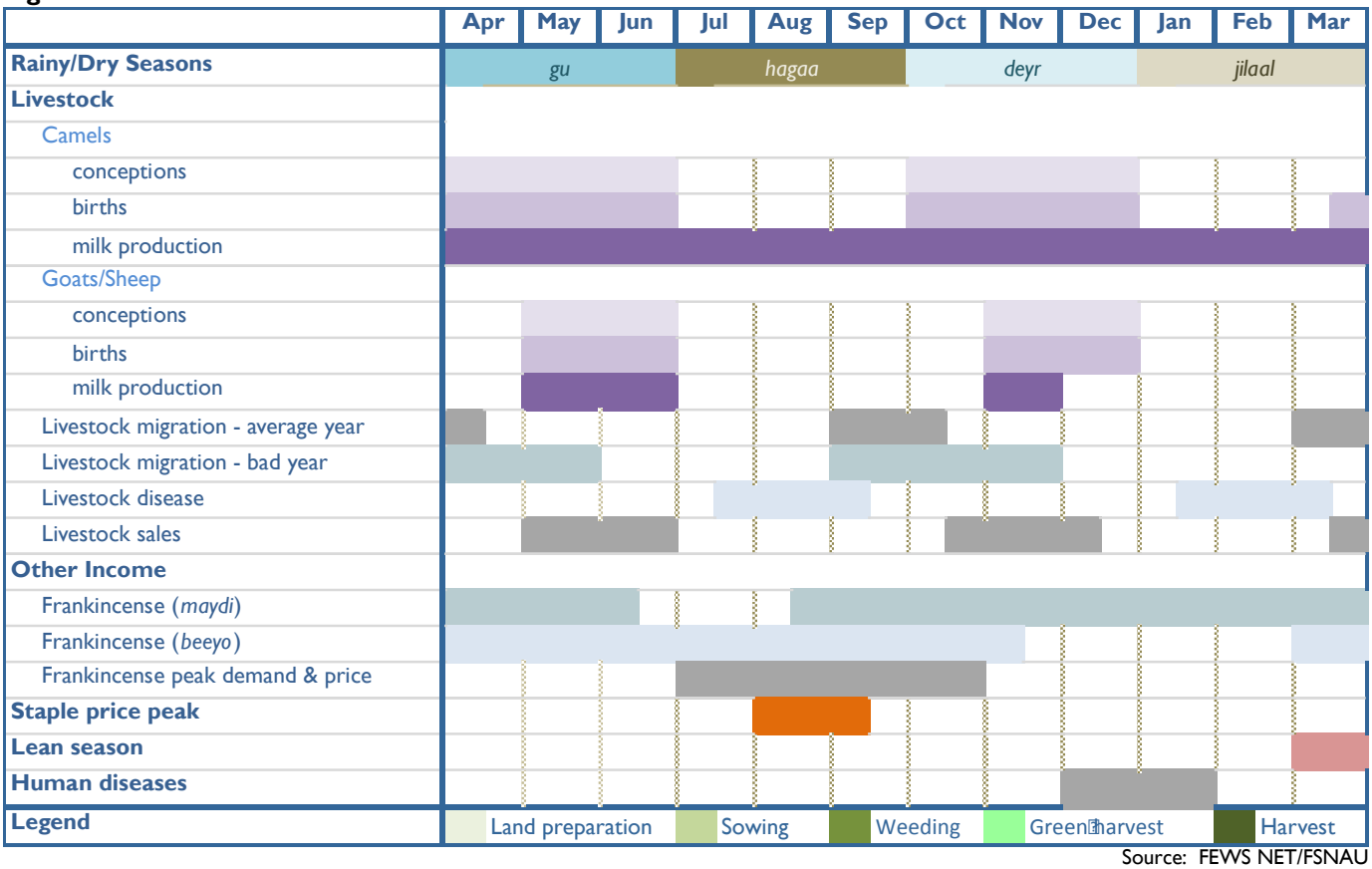
Seasonal calendar

Like the majority of zones in Somalia, the East Golis zone receives two seasonal rainfalls alternating with two dry seasons. The long rainy season named *gu* (April-June) is followed by dry *hagaa* season (July-Sept) and the second, shorter *deyr* rainy season (October-December) is followed by the harsher *jilaal* dry season (January-March).

Animal husbandry follows the two wet seasons. Livestock conceptions, kidding, lambing and calving peak in tandem with water and pasture availability in the *gu* and *deyr*. These periods also coincide with increased milk availability, which contributes to improved household diets and additional income from the sale of milk. On the contrary, milk availability falls during the *jilaal* and *hagaa* seasons, when the availability of water and pastures in the zone drops. Livestock sales usually peak in May-June and October-November, when livestock condition is at its best. Livestock sales also peak during the *Eid* and *Hajj* festivities, when demand for sheep and goats is high locally and abroad.

Livestock migration is high towards the middle/end of the dry seasons and at the start of the rainy seasons. Migration during normal years is confined within the Golis. In particularly bad years, however, animals migrate to Sool region in the *gu* and *hagaa* seasons and to Guban coastal areas in the *deyr* and *jilaal* seasons. During these longer migration movements, the men and boys move with the camels, while the women and children migrate with the small stock.

Figure 3: Seasonal calendar for the East Golis Zone



Source: FEWS NET/FSNAU

The frankincense production calendar is almost yearlong. The two types of frankincense tapped in this zone are: *meydi* and *beeyo*. In a year with good production levels, *yagcar* trees (which produce the prized *meydi* frankincense) can be exploited for a period of about ten months, starting from the end of August or early September until June of the following year. During this period, the trees can be tapped 12-13 times. *Moxor* trees (which produce the lower quality *beeyo* frankincense) are harvested for about eight months, from around March to October, which allows for 9 or 10 tapping cycles. The hot season (*hagaa*) is favorable for abundant production. It takes a between 25 and 30 days for the *meydi* incense to be ready for collection, for *beeyo* incense the process is a little shorter, between 15 and 20 days. The regulation of tapping cycles is extremely important and not respecting the rhythm of extraction can reduce production severely.

Food prices can increase towards the end of the monsoon season (August) if rough navigation conditions reduce shipping activities and limit food imports, especially the staple cereals. The major pastoral lean season falls between the months of February and March at the end of the harsh *jilaal* season, a secondary less intense lean season can occur between September and October, until the first *deyr* rains. However, because August is the peak season for frankincense demand and sale prices, the secondary lean season is less noticeable in this zone.

Wealth breakdown

The determinants of wealth in this zone are livestock holdings and access to frankincense trees for extraction and sale. In general, the poorer the household, the smaller the size of the field of frankincense trees. There are three traditional categories of frankincense producing land: *kob*, *jaan* and *jaan weyn*, which differ mainly in size and accessibility. The smallest viable field is known as *kob,* which means "miniscule field" and often refers to sections of land with more difficult conditions: rough and rugged terrain, distant water points and relatively inferior resin quality. Larger fields are called *jaan,* which roughly translates into "fecund and large fields". They are located in more accessible areas, within shorter distances to a water hole. *Jaan weyn* are even larger fields, with easier access and the most productive trees. The majority of poor households only have access to *kob* land, middle households have access to *jaan* plots and better-off households to *jaan weyn* fields. Access to land is assured through hereditary ownership and rental - all households rented frankincense fields in the reference year, usually from absentee pastoral landowners.

Table 2: Wealth group characteristics in East Golis

	Poor	Middle	Better-off
Household percentage (%)	30-40	45-50	10-20
Household size (#)	6-7	7-9	9-11
Land holding (ha)			
Land area - frankincense	*kob*	*jaan*	*jaan weyn*
Land area cultivated	0	0	0
Typical livestock holding (#)			
Sheep	5-15	10-20	20-40
Goats	15-45	45-85	85-180
Cattle	0	0	0
Camels	0	0-5	0-15
Donkeys	0	0-1	0-2

Source: FEWS NET/FSNAU

There is no precise measurement of the size of the field nor the number of trees per field and productivity is measured by the number of kilos of frankincense that can be tapped per year. *Kob* fields can be expected to provide around 150 kg of frankincense, *jaan* fields between 150 and 250 kg and *jaan weyn* fields up to 300 kg per year. Colleting frankincense can be a difficult task, especially from the hillside groves and steep rocky outcrops without proper tools (climbing equipment or ladders), which are not commonly used. Every field has a station where men working in the frankincense harvest can reside, store food and harvested incense. Stations are connected by earth tracks, normally frequented by pack camels and donkeys carrying incense and food provisions between rural villages and frankincense collection areas.

The second determinant of wealth in the livelihood zone is the ownership of livestock, although here ownership trends are less clearly defined. Poor households do not commonly own large livestock; instead they keep flocks of between 20 and 60 shoats, among which goats are the dominant species. Middle households own up to 5 camels, however not all middle households own camels. Their flocks consist of between 50 and 100 shoats. Better off households own up to 15 camels and 100 to 200 small stock. The ownership of large livestock varies across the livelihood zone and is more abundant in those villages with better access to water and pastures, camels are no longer kept in a number of villages in the zone. Households in this livelihood are more sedentary than their pastoral neighbors, as frankincense harvesting requires tending trees for 9 to 10 months of the year, even if this does not represent a daily activity. The compromise with the land means that migration with the herds is more difficult, which results in the smaller herd sizes and the lower number of camels compared to pastoral zones.

Household sizes do not vary greatly with wealth. Poor and middle households consist of 7 or 8 people, usually a husband and wife with their children. Better-off households are slightly larger and may include polygamous households, which are more frequent among wealthier families.

Community support is an important characteristic of this livelihood zone. The middle and better-off wealth groups give obligatory *zakat* to more vulnerable households in the form of live animals. Additionally, poor households receive *zakat fitr* in the form of cereals as well as other gifts of milk, for example, throughout the year. *Zakat* in cash is received from wealthier relatives and friends based in urban centers, such as Bosasso, as well as from members of the Diaspora. Monetary assistance from the Diaspora and better-off relatives is a key form of remittances that benefits households across all wealth groups in the zone.

Sources of food and income and expenditures

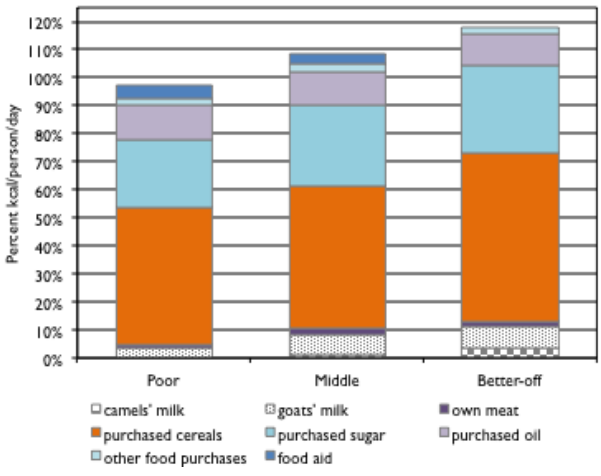
There is no agriculture in the zone and livestock production, especially milk, is lower compared to other pastoral areas because herd sizes are smaller and include fewer camels, the animals with the best milk production. As a result, market purchases provide the main source of food for all households in this livelihood zone, covering upwards from 90% of minimum annual energy needs (based on 2100 kcal per person per day), as is shown in the figure below. The staple foods are rice and wheat flour, complemented with wheat pasta on occasions. Wheat flour is used to make *injera*, commonly eaten for breakfast. Combined, staple food purchases cover between 50 and 60% of annual energy requirements. Purchases of sugar provide an extra 25 to 30% and vegetable oil an additional 10-12%. Other noteworthy food purchases of the otherwise relatively simple pastoral diet include dates, which are consumed almost year round. Dependency on markets for food security is very high and so is vulnerability to market price fluctuations.

Households have access to some meat and milk from their own herds. During the reference year, middle and better-off households were more likely to own camels and therefore have access to camel milk. Milk yields were particularly low this year (between 0.75 and 1.5 liters per day), however camels continued to be milked for the 12 months and production was sufficient to allow for the sale of roughly one third of the production. Sheep are not commonly milked in this livelihood zone. Goats were milked for around 90 days, split between the two rainy seasons. Poor households had access to around 10 milking goats, a number that doubled for middle households and tripled for better-off households. In the months with higher milk yields (0.4 liters per day), poor and middle households sold some of their goats' milk and even had sufficient to donate some of it too. Better-off households did not sell any goat milk and gave away a larger amount (10% of their production). The number of animals milked is lower when milk yields fall, during this period all of the milk output is reserved for household consumption.

In terms of meat, poor households slaughtered on average 4 small animals (sheep or goats), while middle households slaughtered up to 8 animals and better-off households slaughter up to 10 animals. When animals are slaughtered, it is common to split the meat three ways: one part for poor families, one part for family and friends and one part of the household.

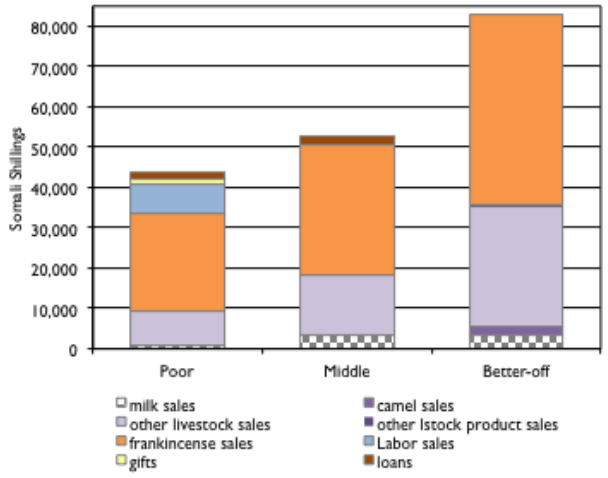
Food aid was recorded during the reference year (2011-2012), a year when a severe drought affected the entire region of East Africa. In Somalia the food crisis affected the farmers of the central and southern regions more than the pastoralists of the north and the UN officially declared famine in two southern regions (Bakool and Lower Shabelle). In this livelihood zone, it was mostly poor and middle households who received food aid. On average, they received between 15 and 25 kg of cereals, 7 kg of pulses and 2 kg of oil. They received this food aid package two times during the reference year. This

Figure 4: Food sources by wealth group, East Golis Zone



Source: FEWS NET/FSNAU

Figure 5: Cash income sources by wealth group, East Golis Zone



Source: FEWS NET/FSNAU

livelihood zone has experienced a protracted food security crisis, which has affected poor households the most. These households produce lower quantities of frankincense and find themselves trapped in a cycle of food purchases on credit from frankincense traders who pay little for their produce. The relative stability in terms of security allows easier humanitarian access to the populations in need for food aid distributions.

With regards to household income patterns, frankincense sales provide just over half of the annual income (55-60%) across the three wealth groups. In absolute terms the difference is more notable, middle households generate 30% more income from the sale of frankincense than poor households, while better-off households gain twice as much as poor households. The quantities of *meydi* and *beeyo* incense produced per year are similar, however their sale price varies enormously with *meydi* incense fetching over 4 times higher prices per kilo. Households prioritize the sale of *meydi* when production allows it, but both species of trees grow together and produce similar amounts of sap.
There are two types of production system for frankincense in the region. Most commonly, members of the plantation (the owning family) cultivate and harvest the trees on a rotating basis. At the same time, individuals can pay rent to owning families to collect the production for the entire season. During the reference year all households rented frankincense fields. The cost of doing so represented between 8 and 9% of the annual profits derived from the sale of frankincense. No organized formal labor market as such exists in the zone, but some labor opportunities linked to the production of frankincense (tapping, harvesting and sifting) are available to the local population and also in the urban centers where frankincense is sorted and stocked before export. Poor households in the livelihood zone rely on casual labor for around 3 months of the year to supplement their annual incomes.

Livestock trade is an important secondary source of income in the zone. The sale of local and export quality sheep, goats and, occasionally, camels, as well as camel and goat's milk and animal hides together represent around 20% of annual income for poor households, 35% for middle households and close to 45% for better-off households. Goat sales are evenly divided into local quality and export quality, but the majority of sheep are sold for the local markets. During the reference year, the prices fetched by export quality goats were only slightly higher than local sale prices (on average 15% higher). Poor households sold an average of 8 animals during the year and middle households 13, while better-off households traded up to 25 animals therefore gaining larger amounts of income from this source. In the better-off wealth group, the larger household sizes allow for better herd management as the tasks of looking after the animals and participating in the frankincense harvest can be shared among a larger number of male members. Women and girls also take part in looking after the livestock, except in the cases where the herd includes a considerable number of camels. Women participate in the frankincense economy, especially in the sorting activities.

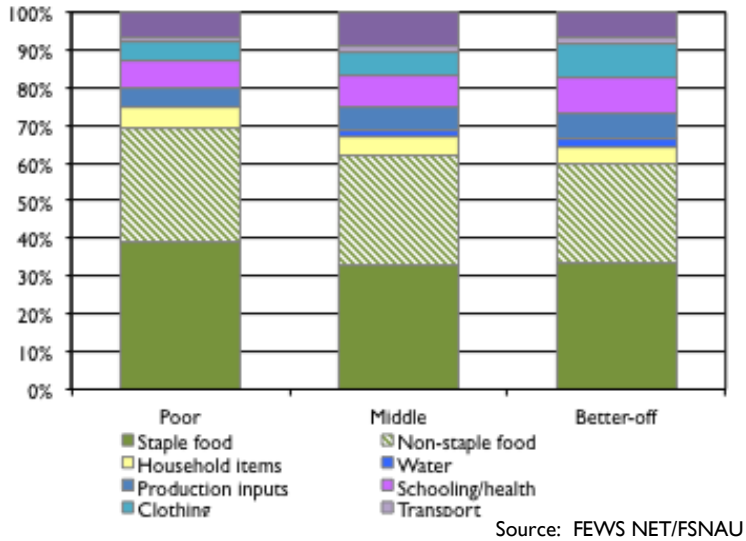
Male animals are the preferred type of animal to be exported. This can be a pre-requisite for exports to the Gulf – a policy that is more easily implemented at the seaports and is in place to prevent the export of breeding stock. The vast majority of exported animals are immature animals: camels between 4 and 6 years of age (referred to as *qaalimo* or *cujuul*) and goats between 3 and 5 years old. However, these trends are changing and selling younger shoats has been encouraged by the rising demand for younger, tenderer meat in the Gulf States. Export animals are brought to the seaport of Bosasso to be shipped to Egypt, Yemen, Saudi Arabia and other Gulf States.

Finally, another important source of income for households in this zone is credit. Loans are arranged with traders involved in the frankincense export business and repaid with the sale of the harvest, or when livestock are at the prime condition and can be sold for a better profit (during the rainy seasons or before the major Islamic celebrations). This source of income allows poor and middle households to buy food and other necessary items as well as being able to affront the payment for renting frankincense fields. In fact, the amounts borrowed coincide approximately with the amounts invested in land rental. Better-off households do not typically request loans; when they need to generate capital they have the possibility of selling a camel. Middle and better-off households distribute monetary *zakat* to poor households, which is included under the data category labeled as "gifts" in the figure below. No remittances were recorded during the reference year.

Overall, poor and middle households' annual incomes are relatively similar. Middle households gain 30% more income from the sale of frankincense and twice as much with the sale of livestock and livestock products, yet casual labor allows poor households to catch up on the income forgone from the sale of fewer animals. It is better-off households who excel above the rest; their annual income is roughly twice as high as that of poor households and 50% higher than middle households.

Turning to expenditure patterns, it is food that represents the largest expenditure category across the three wealth groups, which reiterates the high level of dependency on markets for food and the vulnerability to food price fluctuations of all households. The relative weight of this item is heaviest for poor households (approximately 75% of their annual income) but it is also an important expenditure category for middle and better-off households (absorbing over 60% of their annual incomes). Per capita expenditure is similar for the three wealth groups, but average household sizes among the better-off are larger.

Figure 6: Allocation of expenditures by wealth group, East Golis Zone



Source: FEWS NET/FSNAU

The remainder of the expense categories are more or less equal in importance. Household products include: tea, salt, soap, utensils, torches and batteries. Additionally, middle and better-off households purchase drinking water for their families, while poor households rely on freely available water sources. Production inputs refer to veterinary drugs and, especially, land rental - which has been discussed above. The low levels of service provision in the livelihood zone limit expenditure on health and education. Most poor and middle households access Quranic schools in the main villages inside the zone, as well as along the water points, while some better-off households send their children to the main towns or large villages in order to access formal education, however this option is relatively limited.

A small amount of annual income is spent on transporting incense to sorting centers. The last expenditure category labeled "other" includes loan repayments for poor and middle households, clan taxes paid by all households, money spent on festivals and other non-essential items which can be reduced or eliminated during poor seasons.

Calendar of major sources of food and income for poor households

Figure 7: Main components of the food access calendar for poor households in livelihood zone SO07 (East Golis Zone)

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Staple foods												
Rice/ wheat flour												
Oil/sugar												
Milk												
Income												
Frankincense sales												
Livestock sales												
Milk sales												
Expenditures												
Staple food												
Loan repayments/ land rental												
Legend	Own production				Market purchase			In-kind			Gathering	

Source: FEWS NET/FSNAU

Figure 7 provides additional details on how and when poor households in particular obtained access to the main types of food and cash throughout the reference year and how these sources of food and cash related to their expenditure requirements.

Frankincense tapping and sales are spread out throughout the year, providing a steady source of income with which to meet households' basic necessities. August is the month of peak sales. During the wet seasons additional income from the sale of goat milk and live animals is available. They are also the only times of the year when milk is available for household consumption, as poor households do not commonly own camels.
Staple food must be purchased throughout the year, often from frankincense traders operating inside the livelihood zone. These traders offer loans to poor households, which are paid back during the months of highest frankincense trade. It is also at this time that households renew their tenancy agreements with frankincense landowners.

Hazards, response, and monitoring variables

The main hazards that affect the local economy of the East Golis livelihood zone are listed below:

Drought/weather shocks – one of the main hazards is the lack of pasture and water due to reductions or delays in rainfall levels and drought situations, which lead to weakened animal body weight and value. Insufficient water and pasture also reduce milk production. Recurrent and persistent droughts affect livestock production and herd viability as miscarriages can occur alongside the death of young animals. The drying up of water sources can result in having to relying on water trucking (and increased household expenditure on water) and increased migration and family separation. Drops in rainfall levels and drought also have negative impacts on frankincense production.

Storms and strong winds, which sometimes lead to trees falling.

Termites and other parasites, which affect tree health.

Overexploitation of the trees due to over trapping and not respecting the intervals between harvests

High competition among local sellers drives prices down. Currency exchange variations can also have an impact on export prices and, as a result, on the prices paid to harvesters.

Livestock diseases - animal disease outbreaks follow in importance and are frequent especially during the dry season. The most common diseases in this area are endo-ectoparasits, Contagious Caprine Pleuropneumonia (CCPP) and Peste des Petits Ruminants (PPR) that affects goats.

Livestock bans or restrictions and border closures especially towards the Gulf States - an example is the aforementioned 2000-2009 livestock ban to contain the spread of livestock diseases into the Gulf peninsula.
Insecurity as a result of conflict among different clans within the livelihood zone as well as the added threat of terrorist groups from the south of the country.

High food prices – especially for rice, wheat flour, sugar and oil.

In order to cope with changes in weather patterns and other hazards, households resort to certain coping strategies. Many of these are used every year such as adjusting the timing of mating and birthing, migrating, hand feeding animals, selling older animals and/or exchanging them for younger ones, storing ghee for consumption during lean season, selling first quality goats to build up a reserve of cash or renting extra fields to increase frankincense production.
Listed below are the common strategies used during bad years, following a particularly bad season.

Table 3: Coping strategies in response to shocks in East Golis

Very poor/poor	Middle/better off
Reduction of expenditure on non-essential items and meal sizes	Reduction of expenditure on nonfood items and meal sizes
Seeking extra loans and gifts, especially during the onset of the frankincense production period	Seeking extra loans and remittances
Increasing livestock sales	Increasing livestock sales
Longer or more distant migration to areas with better water and pasture	Longer or more distant migration to areas with better water and pasture
Labor opportunities or share-cropping	Increased milk sales
Seeking extra loans and gifts	Seeking extra loans and remittances

Source: FEWS NET/FSNAU

Table 4: Key parameters to monitor in East Golis

Item	Key Parameter – Quantity	Key Parameter – Price
Frankincense production	Total kg of Maydi produce Total kgs of Beeyo produces Availability of labor from frankincense	Price of Maydi frankincense Price of Beeyo frankincense Labor rates Availability of market demand for Maydi & Beeyo
Animal production	Supply of camels Supply of goats Supply of sheep Supply of camel milk (season 1 especially) Supply of goat milk (season 1 especially)	Price of camels (local quality) Price of goats (local and export quality) Price of sheep (local quality)
Other	Casual labor availability	Labor rates – casual labor Price of red rice Price of wheat Price of sugar Price of vegetable oil

Source: FEWS NET/FSNAU

Estimated population of East Golis Frankincense, Goats and Fishing Zone (SO07)

Zone	Region	District	Livelihood	Population 2012 UNFPA
North West	Sanaag	Ceerigaabo	East Golis (Frankincense, Goats and Fishing)	60,398
North West	Sanaag	Ceel Afweyn	East Golis (Frankincense, Goats and Fishing)	22,172
North West	Sanaag	Laasqoray/Badhan	East Golis (Frankincense, Goats and Fishing)	46,082
North East	Bari	Bossaso	East Golis (Frankincense, Goats and Fishing)	21,875
North East	Bari	Caluula	East Golis (Frankincense, Goats and Fishing)	39,777
North East	Bari	Iskushuban	East Golis (Frankincense, Goats and Fishing)	24,660
North East	Bari	Qandala	East Golis (Frankincense, Goats and Fishing)	40,787
SO07 Population 2014 total				**225,750**

COASTAL DEEH (SO08)

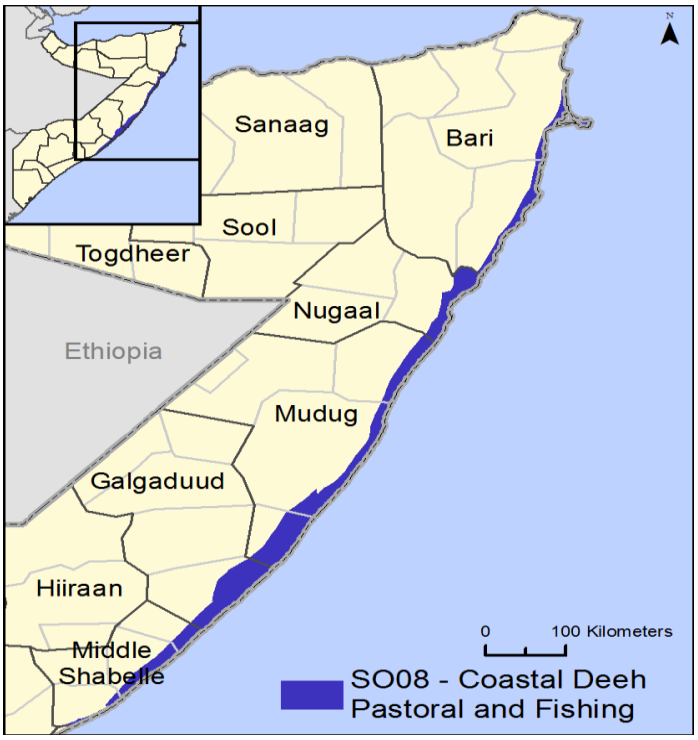
General Livelihood Zone Description

Table 1: Summary of data supporting the Coastal Deeh livelihood profile

Field data collection	Sept 2015
Consumption year	Apr – Mar
Reference year	2014/15
Initial estimated validity	2019/20

Source: FSNAU

The *Coastal Deeh Livelihood Zone* (SO08) is one long coastal strip that covers the length of Somalia's eastern Indian Ocean coastline from the northern tip of Puntland all the way to Mogadishu in southern Somalia.[28] The long coastline north of Mogadishu covers the autonomous region of Puntland in the north as well as the self-declared "Galmudug" region in south-central Somalia. The zone is located in 5 regions notably: Bari Region (Bandar Beyla and Iskushuban districts); Nugaal Region (Eyl/Nugaal District); Mudug Region (Jariiban, Hobyo and Haradheere districts); Galgaduud Region (Ceel Dheere District); Middle Shabelle Region (Adan Yabaal, Cadale and Balcad districts); and Lower Shabelle Region (Marka and Afgooye/Aw Dheegle). Based on 2005 UNDP figures, the total population in the zone is 169,785 (UNFPA 2014).



The coastal plain is mainly arid scrubland with some sand dunes found in the southern part of the zone. Soils are generally sandy and contain calcisols and gypsiols, neither of which are suitable for cultivation. Shrubs and saline tolerant vegetation (*salvator persica* known locally as *daran*) predominate. *Deeh* (as in the livelihood zone name, *Coastal Deeh*) means open grassland. However, grassland areas in the zone are very few, particularly in the northern parts of the zone. In the southern parts of the zone, grass clumps grow amidst low bushes. In Eyl District (Nugaal Region) layers of rock extend right to the sea shore. The climate is hot year round with a mean annual maximum day-time temperature of 20-30° C. The air is often humid although annual rainfall is low. The average number of rainy days during the year is typically only 30. As shown in the rainfall graphs below, these 30 days are spread out between the principal *gu* and *deyr* rainy seasons (of which the *deyr* is primary). Some rain falls as well during the *wajina* season (December-January). *Wajina* rains fall during the period of the northeast monsoon which usually brings more moderate temperatures in the north (although very hot temperatures in the south). The southwest monsoon is May-October and is associated with intensely hot temperatures in the north. Despite little rainfall, water is generally available throughout the year from communal shallow wells and from seasonal *ballis* (water catchments). Rainfall amounts are higher in the south, averaging 325 mm per year (based on the long-term average), whereas they reach only 120 mm per year in the north, and 208 mm a year in the central portion of the zone.

Fishing and livestock production are the twin pillars of the local economy. The northern villages in this zone were known for their marine resource, and fish sales used to account for around 90% of many households' annual income.[29] However, in current times, in both northern and southern parts of the zone, livestock production plays a greater role and fishing

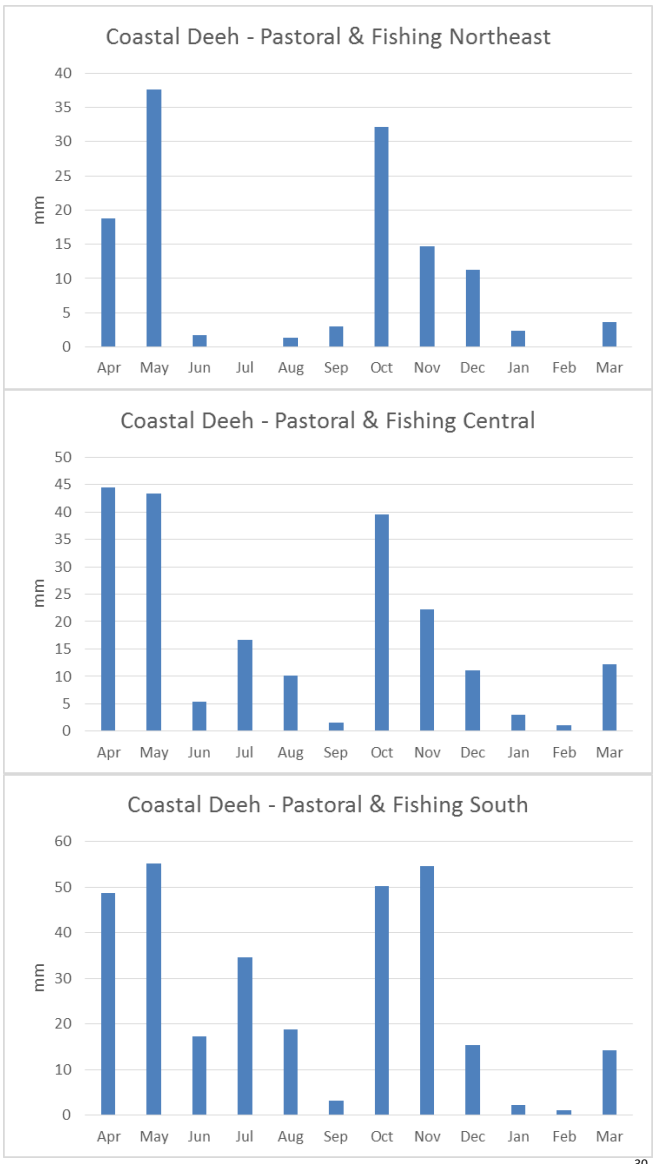
[28] The zone's boundaries were extended north into Puntland during the rezoning exercise.

[29] Scattered towns in the north (e.g. Baar gale, Hurdiya, Gumbax, Calula, etc.) are combined with East Golis Livelihood Zone since their economy is based on fishing and frankincense, livestock.

supplements the pastoral economy. Sheep and goats predominate and for the most part donkeys are used as pack animals. Typically, only better-off households own camels. Milk, ghee and fish are consumed in the wet season and in the *hagaa* dry season (July-August) livestock sales peak. Households in this zone are highly dependent on the market and in the reference year an estimated 80-100% of their annual food needs came from food purchases (especially rice, wheat flour and sugar). The coastal zone hit the international news in 2004 when, on 26 December, the destructive force of a massive tsunami reached from South Asia across the Indian Ocean to Somalia. A more pressing problem for the zone is the issue of piracy. Piracy has had both positive and negative consequences for the pastoral-fishing villages along the coast. Piracy emerged in response to declining fish income but became an international concern when it peaked at high levels in 2008-2009.[31] Thereafter, anti-piracy measures in Puntland as well as anti-piracy measures off-shore by the Indian navy led, by late 2012, to much reduced levels. Prior to piracy, predatory foreign fishing travelers reportedly led to major declines in the local fishing stock, as did toxic waste dumping off Somalia's coast by foreign vessels.[32] Unfortunately, these issues of foreign exploitation of marine resources are emerging once again as external vessels from Iran and Yemen have reportedly been over-fishing off Somalia's coast.

The current state of infrastructure and services in the zone is poor although reportedly improving in the north. 25 years of civil war and clan-based violence has meant that there has been little investment in new infrastructure or in education and health services. There are few primary schools and even fewer secondary schools. Most village children receive their education at *madrassa* (Koranic) schools. However, in recent years, particularly in the north, there are signs of some new investment in infrastructure. For example, in 2012, Puntland authorities announced a project to connect Eyl and other major towns on the coast with the main north-south artery that runs from Mogadishu through Belet Weyne to Galkayo in central Somalia and Bosasso and Garowe in Puntland in the north. Creating access to the northern ports on the Gulf of Aden is important to these coastal towns on the Indian Ocean but building the road networks will be difficult due to the hilly,

Figure 1: Estimated average rainfall in mm in Coastal Deeh Pastoral and Fishing



Source: USGS CHIRPS Data, FEWS NET GeoCLIM[30].

[30] Based on USGS CHIRPS data, a combination of satellite-based Rainfall Estimates (RFE) and station data, with data extending more than 30 years (1981-2014). Source, FEWS NET and USGS.

[31] Pirate attacks in the Gulf of Aden and the Indian Ocean off the coast of Somalia nearly doubled from 111 in 2008 to 217 in 2009 [International Maritime Bureau, 2009, 2010].

[32] Some argue that these were the reasons why piracy began and certainly was the reason why fishing villages were at first supportive of piracy.

rocky terrain inland from the coast. In another move to improve services, Puntland authorities also put more coast guards at sea to reduce piracy.

The fishing economy in the *Coastal Deeh Livelihood Zone* is based on artisanal fishing in small vessels both inshore and offshore.[33] If fishing from a small canoe, only hand lines are used. Fishers with motorized boats, use hand lines, gill nets and long lines. The gill nets are popular for catching sharks whereas to catch tuna or king mackerel the long line is used. Tuna, mackerel, sharks and tropical spiny lobsters are four of the more lucrative types of seafood caught off the Indian Ocean coast. Lobster catches are highest in the southern part of the zone where diving to catch lobster is more common than using nets. Shark fins are particularly in high demand in Hong Kong, Singapore and Dubai, and to large extent this fuels the local fishing industry. The coastal waters off Puntland are also rich fishing grounds for sea beam, snappers, groupers and bonito. There are two seasonal peaks during the year as local fish stocks rise and fall with seasonal migration patterns. November-December is one peak. This period of high fish stocks arrives at the tail-end of the southwest monsoon. However, for several months during the southwest monsoon (i.e., during the *hagaa* dry season from June-September) fishing stops as the fish have not yet migrated back into Somalia's coastal waters. The other seasonal peak is April-May. Prior to this peak, during the *jilaal* dry season from January-March, fishing declines to low levels as most fish have migrated out of the area with the change in seasonal tides.

A couple of decades ago, much of the local fishing industry was destroyed by foreign vessels over-fishing in Somalia's waters (i.e., within Somalia's 12 mile territorial waters). In turn this encouraged piracy as bands of armed men joined together to protect Somalia's marine industry from foreign exploitation.[34] Men are the pirates just as they are the fishermen. All along the coastline, fishing is the occupation of men, and women do not participate in either catching or selling fish. By contrast, women have an active role in selling milk and ghee. They are also active as petty traders, and this ensures that they have a say in how livestock income is spent.

In the *Coastal Deeh Livelihood Zone*, livestock production is centered primarily on sheep and goats. Camel herds are small and belong mainly to better-off households. Most households have donkeys as pack animals as well. Herders are often on the move with their animals in search of good rangeland. In this zone, after below-average rains (for instance in 2008-2009), herders usually migrate to rangelands in the interior such as to the Sool Plateau or to the Nugaal Valley or to the Mudug plains. Conversely, there is often an influx of herders from neighboring zones who migrate into the coastal area in search of pasture and water when their own range resources dry up from rain failure. This occurred, for instance, in 2006-2007 as well as in 2009-2010, creating pressure on local resources.

Milk production peaks during the rainy season, particularly the *deyr* (October-December). For most households, with only small stock (not camels), the milking season lasts just 60 days. Goats produce on average 0.5 L/goat/day which usually provides enough milk for tea for a couple of months for the poor. However, sheep and goats have important cash value and are sold locally as well as for export. In this zone, in the 2014-2015 reference year, cash income earned from the export of sheep and goats was higher than the income earned from local sales. However, export markets are not assured and most memorably the Horn of Africa suffered under an almost 10-year livestock export ban imposed by Saudi Arabia due to the perceived threat of Rift Valley Fever. Other endemic diseases in the area include CCPP (*contagious caprine pleuropneumonia*), sheep and goat pox, and endo-parasites. Cold winds (2007-2008) and freezing rain (2005-2006) can also cause a rise in livestock mortalities as occurred during those particular years.

Markets

Households produce fish, milk/ghee and livestock which are sold for cash to buy rice, wheat flour and sugar throughout much of the year. Bosasso is the key port for the northern section of the zone notwithstanding the long journey by truck

[33] This contrasts with industrial fishing. According to a FAO estimates, prior to the civil war during the 1980s, artisanal fishing comprised 60% of the fish haul whereas industrial fishing accounted for 40% of landings FAO. 2005: *FAO Fishery Country Profile, The Somali Republic*. FID/CP/SOM. 2005.

[34] It is argued by some that it was not impoverished fishermen who became pirates although fishing villages initially support piracy.

overland to reach the port city. Eyl, Jariiban, Garowe and Galkayo towns are the secondary markets for most commodities except fish. The southern part of the zone is served by Hobyo, Hardheere, Balcad and Cadale towns as well as by the two ports, Ceel Macaan and Ceel Cadde (Balcad District). Since 2011-2012 when Al-Shabaab was ousted from Mogadishu, much of the city's key infrastructure was re-built including its sea port and international airport. Thus, the city has again become a key destination market for local sales as well as a major transit hub for global trade.

Livestock markets

Pastoral-fishing households along the eastern coast depend on market involvement to purchase their staple food. However, their physical access to secondary markets in the interior – such as Garowe or Galkayo – or to Bosasso, the major northern port in Puntland, is very poor due to bad roads and rocky, hilly terrain. Nonetheless, traders come to the villages bringing goods to purchase and taking away livestock for re-sale. In particular, traders buy high numbers of export-quality livestock in July-August (the *hagaa* dry season) in advance of *Ramadan* and the *Hajj* when the demand for imported *shoats* in the Middle East peaks. The dry season is likewise the best time to travel on the roads as they often become impassable during rainy seasons.

Cereal markets

Pastoral-fishing households buy staple food (namely rice, wheat flour and sugar) throughout the year to supplement own-fish, milk/ghee and meat. Food purchases peak during the dry season when fish and milk are at their lowest point. Prices peak during the dry season too because of high demand in face of low supply. Roads are passable at this time but supply drops due to rough seas and low imports at Bosasso port which creates supply problems throughout northern Somalia. The port town of Bosasso is the primary transit market in the northeast for food imports. Large-scale traders control the import/export flow of goods. From the port city, mobile traders with their own trucks, transport goods to town and village markets, returning with livestock for re-sale locally or for export. Usually prices are measured in terms of trade (rice for *goat/sheep)*. In the reference year, the goat to rice terms of trade was 20 kg/goat in village markets. This compared to 53 kg/goat which was the 5-year average in Garowe and Galkayo markets. In recent years, the price has been 61-67 kg/goat (rice to goat terms of trade).

Fish markets

There are two types of fishing sectors in Somalia: industrial and artisanal. Artisanal fishing is carried out by village households for subsistence and for sale. Local traders come to the villages and purchase fish directly from the producers at "farm-gate" prices. Much of the local fish is destined for export particularly to markets in Yemen and other Gulf countries. Storage capacities in this zone are very poor. Traders and private fish companies provide commodities from the main towns (such as Bossaso) and distribute to their clients in the small towns and villages where there are no storage facilities at all. Dry goods are exchanged for fish and livestock which traders transport back for re-sale in the main markets. Seasonal price fluctuations are common in line with monsoon tide, poor road networks, and high transportation costs

Credit

Poor and middle households rely on access to loans during the dry seasons when there is very little fishing activity. Credit from local shopkeepers helps households to secure food when local production is low. Repayment of loans occurs once the fishing season gets underway in the wet season and when livestock are sold. During bad years, credit is vital to households as well. However, this puts stress on the traders and shopkeepers who provide the loans as repayment is unlikely during a drought crisis. For instance, after the 2011 drought, poor and middle households were reportedly taking on additional debt well into 2013.[35]

Labor

[35] FSNAU/FEWS NET. 2013*: Technical Release.* Sept 2013.

During the period of high monsoon tides when there is no fishing activity, some poor household members may migrate to main towns seeking casual work. Seasonal labor migration normally starts late April and continues until August. However, this pattern is not typical of all of the poor in a normal year.

Conflict

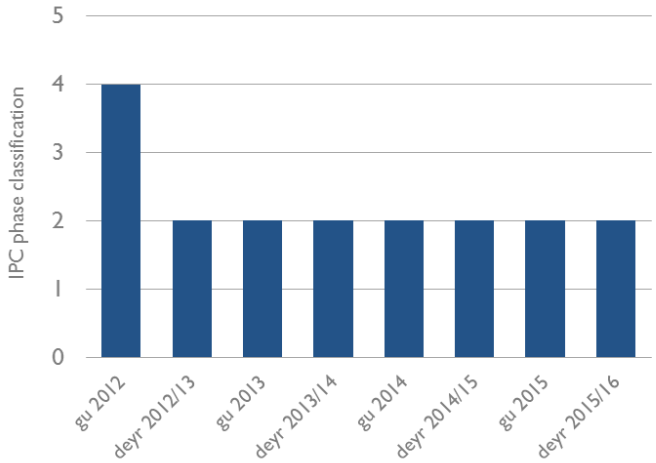
Somalia has been insecure for many decades and the instability that has affected the country since 1991 has also affected the coastal zone. In particular, with the collapse of the central government, there was no longer a national coast guard to patrol the seas. This led to illegal fishing in Somalia's coastal waters as well as to the illegal dumping of toxic waste.[36] As a response to this threat to local livelihoods, local fishers banded together to assert their authority on the water and to earn money through piracy. However, the success of the approach drew new gangs to the coast and piracy took on an increasingly criminal element that was funded internationally as well as locally. Notably, in the south, piracy was supported by Al-Shabaab. Hardheere and Eyl were major bases for pirate activity where the wealth earned from ransom money and hijacked goods trickled down to the local economy, gaining the pirates local support. Ransom money is typically divided up into several different payments. For instance, after taking their own cut, pirates pay their "sponsors", the financiers, ground militia and community officials. Pirate attacks increased steadily in the 2000s and by 2008-2009, attacks on foreign vessels had reached such high levels that it prompted a response from foreign governments as well as by the Puntland authorities. Owners of commercial vessels paid for military escorts to protect their ships (which often led to direct attacks on pirates). The US, Russia and India are three countries who currently field war ships and Navy Special Forces to protect their commercial vessels.

In recent years, conflict has emerged between local fishers and the large, well-equipped foreign vessels from Yemen and Iran that enter Somalia's coastal waters. The local fishing industry is at a disadvantage compared to foreign fishing production on large trawlers, and it is these large-scale operations which are responsible for the heavy exploitation of Somalia's marine resources and to the destruction of coral reefs. Hence, for local households, income from fish has declined relative to past decades due to restricted fishermen movement at sea as well as due to marketing issues brought on by conflict in Yemen. Efforts by the FAO and EU Naval Forces - who deployed 25 Fish-Aggregating Devices – may lead to a boost in local fishing income, improved nutrition and reduced piracy. However, overall, the coastal zone continues to struggle with problems of violence and conflict at sea.

Food access history

Households in the *Coastal Deeh Livelihood Zone* have suffered greatly in the last 10-20 years from repeated episodes of complex emergencies leading to widespread hunger. The situation in 2008 was a good example. An extended drought led to heavy losses of livestock with the consequent loss of food and income from livestock production. This weather-related shock was compounded by an influx of drought-affected households from the interior who flocked to the coastal area in search of social assistance and to work in the fishing sector. This stressed both social and natural resources. A further complicating factor was that fish stocks were low due to over-exploitation and waste dumping by foreign companies (from Yemen and Iran

Figure 2: Recent trend in IPC phase classification, with 1 as best and 5 as worst



Source: FSNAU

[36] The United Nations estimates that illegal fishing companies from Europe and Asia rob Somali coastlines of over $300 million a year, mostly in the pursuit of yellow tuna. In addition, a 2005 UN Environmental Report highlighted a long history of illegal dumping off the coast of Somalia, most notably from "'Ndrangheta", an Italian criminal organization

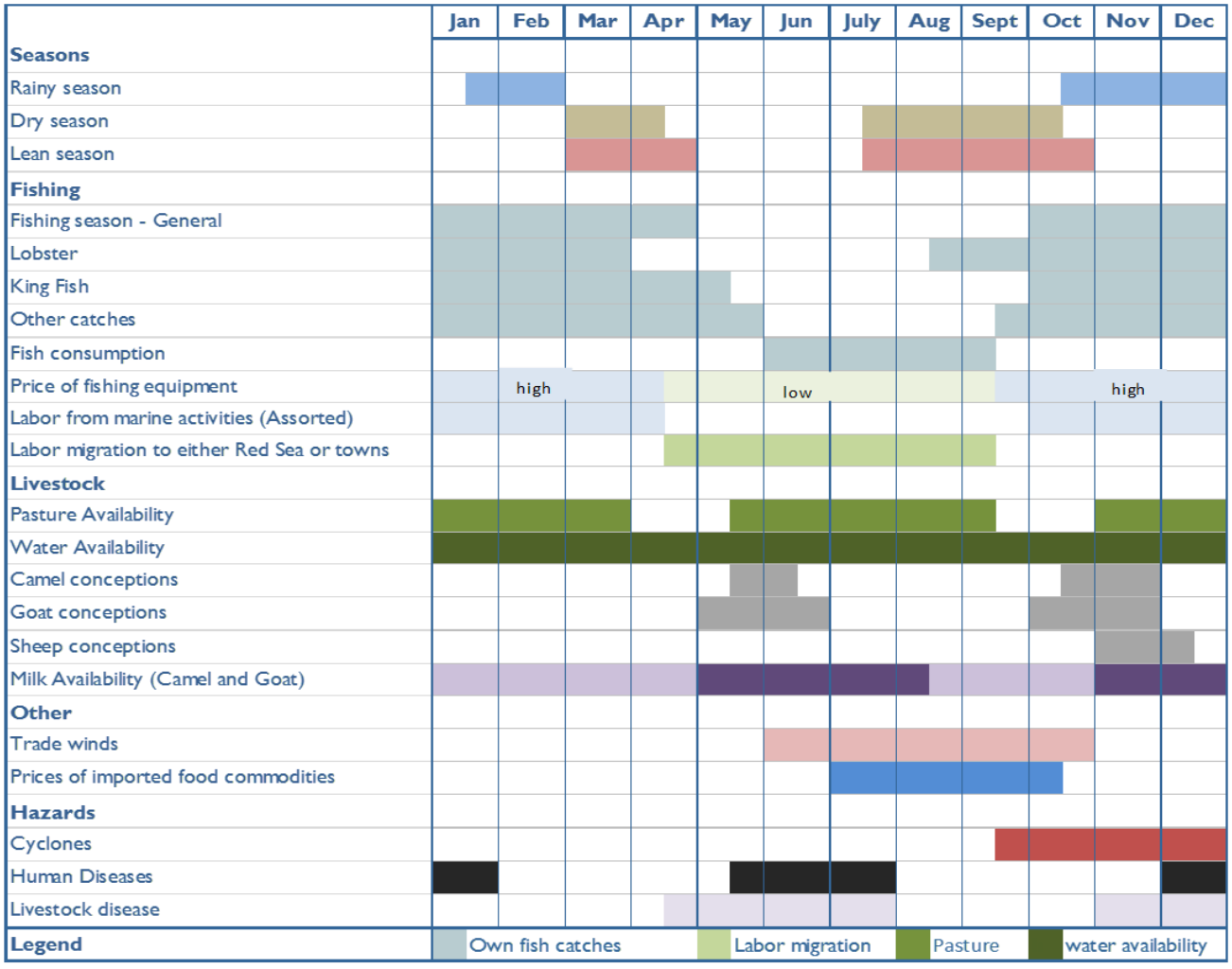
for instance). Finally, inflation led to extremely poor terms of trade for local villagers and displaced herders alike. Sadly, the period of severe hunger in 2008 was followed a few years later by the devastating drought of 2010-2013 which reached its apex in 2011 but had after-effects that lingered into 2013. Conditions have stabilized in recent years, however, as shown in Figure 2, which depicts the trend in IPC phase over the past eight seasons.

The loss of livelihoods and income due to the 2008 drought probably helped to fuel piracy both in Gulf of Aden as well as along Somalia's Indian Ocean coast as a replacement income source. One negative effect of the rise in piracy from 2000-2012 was that deliveries of food assistance to Somalia during the 2008 and 2011 food crisis were delayed or way-laid by pirate attacks. In late 2008, for example, over 40% of Somalis were reliant on food aid. Almost all of this food aid was shipped by sea. However, WFP vessels were often attacked by pirates. This led to food aid shortfalls and delays in food deliveries to affected people on the ground, intensifying the crisis.

Seasonal Calendar

There are two distinct rainy seasons, each followed by a period of dryness. The majority of rains fall in the *deyr* season (October to November) with some additional *hays* rains in December. The gu season is in April and May. As shown in the three rainfall graphs in Figure 1, however, this pattern changes as you move from north to south, with more rainfall occurring in the southern areas. In the center and south (but not the north) of the zone another period of rains occurs from

Figure 3: Seasonal calendar for the Coastal Deeh Livelihood Zone



Source: FSNAU

June through August, peaking in July. The *gu* season is followed by the *hagaa* dry season, and the *deyr* rainy season is followed by the *jilaal* dry season.

Fishing activity increases and declines in relation to seasonal migration patterns. In general, the fishing season is from October through April. Lobster yields are especially high starting as early as September and running through December, which corresponds to the tail end of the southwest monsoon. Kingfish stocks are high through April and into May. For several months during the southwest monsoon (i.e., during the *hagaa* dry season from June-September) fishing stops as the fish have not yet migrated back into Somalia's coastal waters. The price of fishing equipment is highest during the fishing seasons, dropping down in the slow season. Likewise, fishing-related labor expands and contracts with the peak and decline of the fishing season. In the off-season (from June to September) there is labor migration to the Red Sea area or to towns in search of casual employment opportunities.

Livestock are traded throughout the year, sold incrementally when households need infusions of cash. But there is also a peak in livestock trade every year just before the demand for sheep and goats rises in response to *Ramadan* and the *Hajj*. Livestock prices are usually highest in the wet seasons and lowest in the dry seasons because livestock body condition is better in the wet seasons, when pastures and water are replenished.

Milk supplies are determined by the number of animals that conceive and give birth and the quality of the pasture and water sources during the lactation period. Camels are in heat from mid-May to June and mid-October to November. They calve once a year and have long lactation periods. Camels' milk is, therefore, available throughout the year, but yields vary from season to season depending on pasture and water availability. Goats kid twice a year – once in each rainy period. Thus, there are two distinct periods when goats' milk is available: April – June and October - December. At the start of each of the two rainy seasons, water and pasture resources are replenished and livestock are brought from the dry season grazing areas to new-growth pastures. Water is typically available throughout the year. During the reference year, pasture availability was considered to be below normal in many parts of the zone because of a late start to the *gu* season and lower-than-normal precipitation. Consequently, livestock reproduction and milk levels were below normal in the reference year due to lower levels of conception in the previous seasons.

The dry seasons are when the zone's few roads are open and passable, and this is a time when food purchases increase to compensate for declines in milk production. In the reference year, food prices rose in the *hagaa* dry season (July-September) due to seasonal monsoon tides and rough seas that reduced imports. This coincided with the peak hunger period for poor households, triggering an increase in the number of loans taken and the amount of social support that was sought.

Human diseases can occur anytime throughout the year, but are especially problematic during the rainy seasons, when malaria is rampant, and when respiratory diseases peak. The rainy seasons are also when most livestock diseases occur, notably *pest de petit ruminants* (PPR) for both goats and sheep and *contagious caprine pleuropneumonia* (CCPP) for goats.

Wealth Breakdown

Control over fishing and livestock assets are the main determinants of wealth in this livelihood zone. Given the weighting of income towards livestock income, livestock ownership, and particularly the ownership of camels, goats and sheep are primary. Goats are the most numerous of the livestock owned, followed closely by sheep. Only better off households own camels, which are the most valuable of local livestock, both in terms of price per head and because they produce the largest supplies of milk, which is both consumed and sold. Goats are more valuable than sheep because they also provide milk, which – like camels' milk – is consumed by the household and sold. A typical poor household owns around 20 goats and 12 sheep along with 1 donkey. In the reference year middle households owned around 49 goats and 28 sheep with 1 donkey and 1 pack camel; better off households owned approximately 96 goats and 97 sheep and 12 camels as well as 2 donkeys and 2 pack camels.

Productive assets that enable households to fish are the second most important determinant of wealth here. Only middle and better off households have boats and lobster traps. Poor households typically do not have fishing lines and hooks
either. Poorer households work as laborers for middle and better off households, paid with part of the catch which they sell for income.

Table 2: Wealth group characteristics in Coastal Deeh

	Poor	Middle	Better-off
Household percentage (%)	30%	50%	20%
Household size (#)	6	7 - 8	10
Camels	0	0	12
Goats	20	49	96
Sheep	12	28	97
Donkeys	1	1	2
Pack camels	0	1	2
Lobster net/boat	0	1	1
Lobster trap (Gargoor)	0	13	10
Fish lines/hooks	0	8	5

Source: FSNAU 08 Coastal Deeh_6Nov15 BSS
Note: All single values represent the mid-point of a range.

As in other parts of Somalia, wealth is also related to household size. Livestock herding and fishing are both labor-intensive endeavors. Larger herds require more people for herding and fishing requires boats full of strong men; therefore, in order to be a better off household, you also need to have more people. In addition, the better off you are, the more people you can take care of. Poorer households tend to be monogamous, but those in the middle and better off wealth groups might have more than one wife.

Sources of food and income and expenditure patterns

Below is a description of how households in this livelihood zone obtain access to food and cash income and how they need to spend this money over the year. This description is grounded in a specific consumption year for which this information was gathered called the 'reference year'. The reference year for this livelihood zone was April 2014 to March 2015. Gu 2014 rainfall was below average, however terms of trade were relatively good, with goat prices average and rice prices slightly lower than the five-year average. The deyr season milk production was also below average, but again terms of trade were good. At the same time, although fishing activities were disrupted by foreign vessels illegally fishing off the Somalia coast, most households managed to obtain normal levels of income from fishing. Overall, therefore, the picture below is one of an average year, with both positive and negative factors at play.

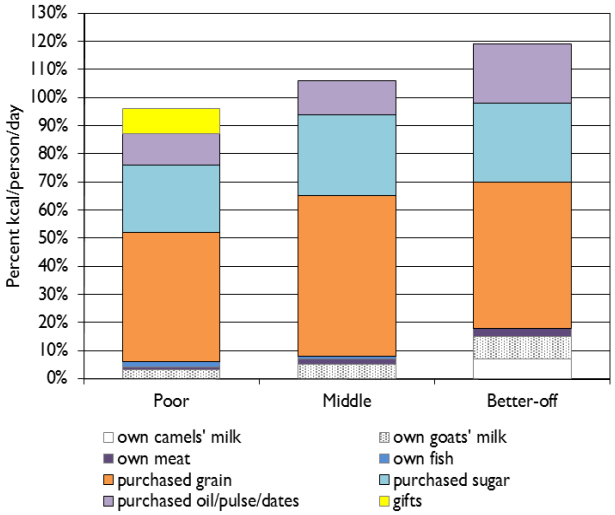
Although much of the local economy depends in large part on fishing, people do not rely on own-caught fish to cover much (if any) of their annual food needs. Purchased food is the main source of calories every year in this livelihood zone, and in the reference year this source covered 80 – 101% of the minimum calorie requirements for all households, with the relative contribution increasing with wealth. Two main staple grains were purchased – rice and wheat flour – along with small amounts of pasta. Households bought almost equal amounts of the two main grains throughout the year, with poor, middle and better off households purchasing around 50 kg, 78 kg, and 95 kg, respectively, of grains/pasta per month. After taking account of differing household sizes, this accounted for 45%, 58%, and 52% of households' minimum calorie requirements for the year. A small amount of pulses (cowpeas) were purchased by middle and poor households, and slightly more buy better off households, covering 1 – 7% of annual needs. The remainder of the calories purchased came in the form of sugar and oil. As in the rest of Somalia, sugar features largely in the local diet, and even poor households spend heavily on this expensive good. Poor households buy enough to consume ¾ of a kg per day and better off households buy enough to consume 1.5 kg a day. Overall, sugar provided a fifth to a third of the calories households needed to survive in the reference year. Purchased oil made up the remainder of this category, covering 7 – 10% of minimum energy requirements in the reference year.

Milk/meat, fish and gifts are the three remaining sources of food. Milk comes from households' own animals, especially camels and goats. Camels provide the most consistent and abundant source of milk, but only better off households have camels. These households, who had on average 2 – 3 camels milking throughout the year, brought in around 1,350 liters of milk and consumed over 65% of it. This amounted to just around 7% of households' annual calorie requirements in the reference year. Poor households had no camels, relying entirely on goats to generate milk. A typical poor household had

around 6 goats milking and a typical middle household had 18 goats milking; better off households had as many as 30 goats milking. The lactation period for goats in the first season was around 60 days; middle households also had some goats milking in the second season for around 30 days. Yields were around 0.5 liters per day in the first season and .025 liters per day in the second season. Poor households did not sell any of their milk, keeping it all for household consumption. Middle households sold around a third of their goats' milk and better off households sold around 15% of it. Goats' milk, therefore, contributed 3 - 8% of minimum calories for local households, increasing with wealth. Goats also provided a source of meat, although in calorie terms this was quite minimal over the year, adding up to no more than 3% of minimum requirements for any of the wealth groups. A similar portion of calories was generated from consuming the seafood caught by the household, with fish, sharks and lobster covering 1-2% of minimum calories needed. This was a more important source of food for poor and middle households than it was for better off households, for whom it did not factor at all.

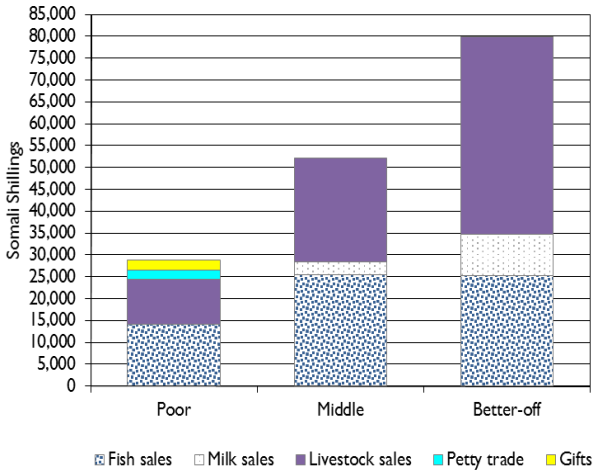
Finally, gifts of sugar and cereals provided a significant source of calories for poor households in the reference year. As in other parts of Somalia, annual distributions of gifts, called *zakat*, are given by better off households to poor households. This religiously/culturally-mandated practice provided poor households with enough calories to meet almost 10% of their required calories.

Figure 4: Food sources by wealth group, Coastal Deeh



Source: FSNAU 08 Coastal Deeh_6Nov15 BSS

Figure 5: Cash income sources by wealth group, Coastal Deeh



Source: FSNAU 08 Coastal Deeh_6Nov15 BSS

In the cash income graph one can see the role that fishing plays in this economy, covering almost 50% of annual cash income for poor and middle households and around 1/3 of cash income for better off households. The balance between fishing and livestock income changes from north to south, with fishing more important in the northern areas and livestock more important in the southern regions. Therefore, one would expect to see fishing comprise a higher proportion of this total in northern areas and a lower proportion in southern areas. Sharks bring in the most money per kg and fish were sold off the boat directly to traders from Yemen. Poor households typically sold around 117 kg of fish for approximately 120 SoSh per kg, but there was a big range, depending on location, with some selling next to nothing, and others selling over 300 kg. The average amount of fish sold for middle households was closer to 170 kg for the year and 160 kg for better off households. However, better off households sold higher-value commodities, such as shark, at an average of 156 SoSh per kg, whereas middle households sold fish products that averaged 150 SoSh per kg. Better off households have the advantage in that they own the boats and fishing equipment that allow them to make the most of the natural resources the sea has to offer. Poorer households typically work for better off households, earning in payment a share of the take, but usually the less valuable species.

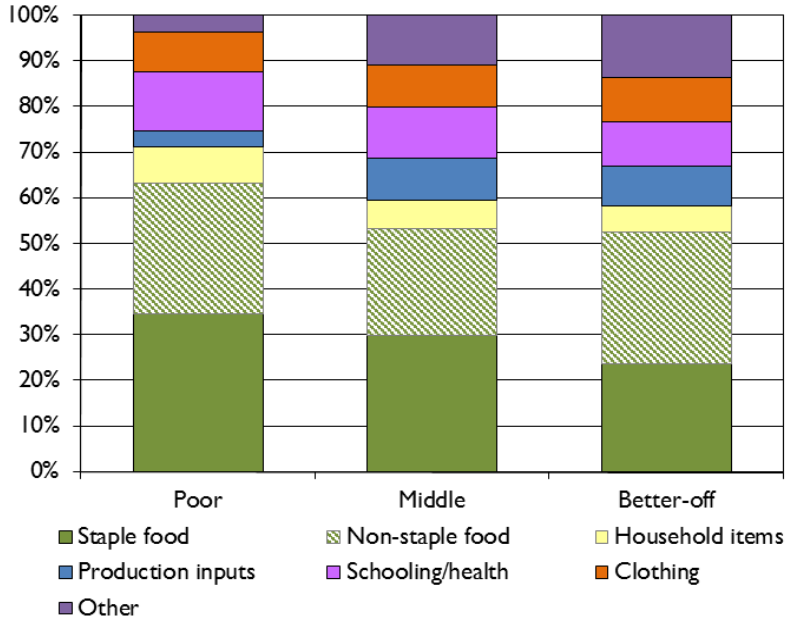
Livestock provide the remainder of the cash income for middle and better off households, and they are especially important in the southern parts of the zone. Livestock income comes in two forms: sales of livestock on the hoof provide the major

part of this component, but milk sales provide measurable income for middle and better off households as well, accounting for 6% and 11% of annual cash income for these households, respectively. The sale of live goats and sheep provides the vast majority of cash income in this category, with better off households also benefitting from the sale of camels every other year or so. A typical poor household sells 6 goats a year and 4 sheep, half at local prices and half at export prices (which are around 15% higher). Middle households sell over twice this number of goats and 1½ times as many sheep; while better off households concentrate most of their sales on the export market, selling around 13 goats for export (at 1,200 SoSh per head) and 7 goats for the local market (at 1,000 SoSh per year), and 10 sheep for export and 6 for the local market in the reference year (same prices as goats). Combined, the sales of goats and sheep made up 36%, 45% and 50% of the annual reference year cash income for poor, middle and better off households in this zone. In absolute terms, the better off households earned more than four times the amount that poor households earned from livestock sales. This is because they have bigger herds, but also because they get a better price per head, making sure their animals are in good condition before sale and negotiating hard with traders to get the most out of their transactions.

The remaining two income sources for poor households are gifts and petty trade, which includes activities such as selling processed foods and re-selling vegetables undertaken during the dry season. As with food, gifts of cash are a common form of social support and these provided around 7% of the cash income earned by poor households in the reference year. This may not sound like much, but it was more than enough to cover the costs of their production inputs, or just about enough to cover their basic household expenditures, such as salt, soap, tea and other domestic necessities. In addition, poor and middle households take out loans continuously during low fishing months and repay them during peak fishing income months. Remittances reportedly flow into the zone for middle and better off households, but these were not captured in the baseline work.

Turning to expenditure, one might expect to see a larger proportion of cash income devoted to food given that all households rely so heavily on purchased food to cover their annual food needs. However, the reference year was not a bad year, and relative to other areas, this zone has fairly high cash incomes because of revenue from both livestock and fishing. Thus, in relation to annual total budget, expenditure on food is substantial, especially for poor households, but not excessive.

Figure 5: Allocation of expenditures by wealth group, Coastal Deeh



Source: FSNAU 08 Coastal Deeh_6Nov15 BSS

In the reference year better off households spent twice as much on staple food as poor households, mostly because they have larger household sizes, and also in part because they consume more calories. On non-staple food better off households spent almost three times as much as poor households, again because of their larger household sizes, but in this case also because they buy significantly more sugar per capita, as discussed in the section on sources of food, above. In addition, sugar and oil (the two components of this category) are more expensive than staple grains, and therefore eat up more of households' annual budgets.

Expenditure on basic household items, like tea, salt, red pepper, soap, kerosene and utensils are included in the 'household items' category of the graph. Of these, soap and tea consume the greatest portion of this budget on an annual basis. Roads

are poor in this zone and most households live far away from central markets. This pushes up the price of basic commodities, which partly helps to explain the expenditure on soap. Tea consumption is central to the Somali culture and people drink throughout the day and in all seasons.

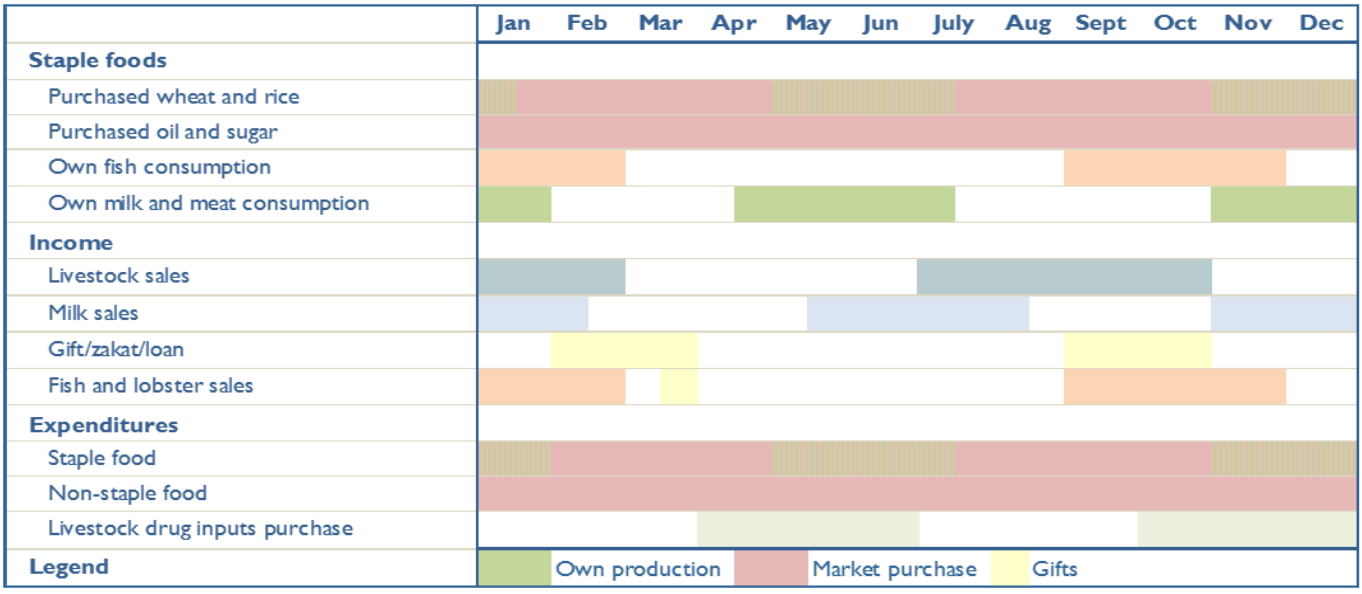
Production inputs comprise another important component of expenditure. Included here are veterinary drugs and fishing inputs, like boat repairs, nets and traps. Better off households spent over 6½ times more on inputs than poor households and 1.4 times more than middle households. Fishing is expensive, taking up around 80% of the productive inputs budget for middle households, 60-65% for better off households and 75% for poor households. The upper two wealth groups also spent a good deal more on animal health. For example, better off households devoted around 2,500 SoSh to veterinary drugs in the reference year compared to 300 SoSh for poor households.

Expenditure on schooling and health also increased in relation to wealth. Access to formal education is severely limited by a lack of schools and the cost of school fees, stationery and transportation. There are no formal education and health facilities in the rural areas of the zone. Koranic schools are widely available at a small cost. Very few girls are in school, kept at home to help their mothers with the burdensome domestic workload. Better off and middle households send their children to schools in the urban centers. In order to attend these schools, households need to find a way to transport their children to the school, pay the school feels, stationery costs, and bear the opportunity cost of the lost labor from the child. They also take advantage of the health facilities available in main towns. As a result, better off households spent more in the reference year on medicine, devoting 170 SoSh per capita to annual health costs compared to the 160 SoSh, and 89 SoSh per capita spent by middle, and poor households, respectively.

Clothingand non-essential items (shown in the 'other' category) are the two additional categories of expenditure captured in this graph. Spending on clothing was very high in the reference year; in fact, all households spent significantly more on clothing than they did on productive inputs and more than they spent on school. The 'other' category includes spending on loan repayment, taxes, gifts, festivals, tobacco, chat and other miscellaneous items, including – for middle and better off households, gifts given to poor households. Some of these items can potentially be eliminated or at least delayed in a bad year. The fact that better off households have the largest proportion of 'other' expenditure means they also have the largest buffer in the event of a bad year.

Calendar of major sources of food and income for poor households

Figure 7: Consumption and income calendar for the Coastal Deeh Livelihood Zone



Source: FSNAU

The calendar below provides an illustration of households' seasonal access to food and cash income, and their time-specific requirements to spend money. When combined with the more general seasonal calendar shown in Figure 3, the patterns below provide a fuller picture of fluctuations in household access to food and cash income. As discussed above, households in this zone survive on a combination of food they purchase from the market, milk from their own herds and the fish they catch themselves. Households purchase staple grains (mainly wheat and rice) throughout the year, but they can reduce their grain purchases during the periods when milk production is high, typically during the rainy seasons, from April to July (the *gu* seasons) and from November through January (the *deyr* season). Fish caught by the household is available for consumption from September through November and again in January and February. Cash from fish and lobster sales is also highest at this time. Cash income from livestock sales is generated in January and February and again from July through October, more or less during the dry seasons. Households use the cash from livestock sales to fund their expenditures on livestock inputs, which take place around these same times. Milk income is available from May to August and then from November to February. Poorer households also depend on gifts/zakat in February/March and in September/October. Peak expenditure requirements for livestock drugs are during the wet seasons, when livestock diseases increase.

Hazards, Response and Monitoring Variables

The main hazard that threatens the livelihood system of this coastal zone is drought. Drought affects both marine and livestock productivity and often brings an influx of other households into the zone, straining local resources. The 2011 Horn of Africa drought was the most recent extended drought crisis which to some degree affected the entire region and which led to severe food shortages in southern and central Somalia (including the southern part of the *Coastal Deeh Zone*). Prior to the 2011 drought, there was drought in 2008 (which extended into 2009-2010 in the northern sub-zone). As the coastal area is semi-arid, irregular rainfall is considered normal. However, drought events compounded by political insecurity have worsened drought impacts by preventing mobility, disrupting trade and reducing access to food.

While drought is the most common hazard, there are several other hazards that occur periodically in the zone. Tropical storms, such as Tropical Cyclone 3 that hit parts of Somalia in November 2013 including the *Coastal Deeh* zone, lead to flash floods and the loss of fishing equipment, livestock and other property. Floods and torrential rain is usually associated with an El Nino event that in turn follows a dry El Nina year. The tsunami of 2004 was another example of an extreme event that occurs only rarely but which causes massive destruction at the time. Certain disease outbreaks, such as Rift Valley Fever are also a periodic hazard.

In addition to these events that happen now and again, there are chronic problems affecting livestock production and fishing year in and year out. There are chronic livestock diseases (such as CCPP) as well as chronic market access problems due to poor road infrastructure. Human diseases are also a chronic issue due in part to the lack of medical (and other) services in the zone. Finally, illegal (over)fishing by foreign trawlers and toxic waste dumping by foreign companies are additional chronic problems affecting livelihoods in this zone.

Table 3: Coping strategies in response to shocks in Coastal Deeh Pastoral

Very poor/poor	Middle/better off
• Migrate with livestock to the Sool Plateau, Karkaar/Dharoor and/or Nugaal Valley • Seek social support (gifts and loans)	• Migrate with livestock to the Sool Plateau, Karkaar/Dharoor and/or Nugaal Valley • Seek social support (remittances and loans)

Source: FSNAU.

In order to cope with drought, disease outbreaks, flood, market shocks and declining fish stocks, there is a fairly limited menu of options available to the local population. The main option for herders is to migrate with their livestock to the interior in search of water and better range conditions. Typically, for households on the central and northern coast, migration is toward the Nugaal Valley and the Sool Plateau. The only other option is to seek social support from relatives or friends (gifts or remittances) as well as to appeal for cash loans or food credit from shopkeepers, traders or better-off households. Finally, some have argued that piracy, at least in its early years, was a response to illegal over-exploitation of marine resources in Somalia's 12 mile territorial waters and hence offered a way of coping with lost fishing income.

Table 4: Key parameters to monitor in the Coastal Deeh Livelihood Zone

Item	Key Parameter – Quantity	Key Parameter – Price
Animal production	Fish – yields Camels' milk – yields (season 1 & 2) Goats' milk – yields (season 1) Camels – herd size Goats – herd size Sheep – herd size	Fish – producer price Camels' milk – price Goats' milk - price Camels – export price Goats – export & local price Sheep – export & local price
Other	Petty trade opportunities Gifts/social support – frequency received	Petty trade – income earned Gifts/social support – amount received
Expenditure		Rice – consumer price Wheat – consumer price Sugar – consumer price

Source: FSNAU 08 Coastal Deeh_6Nov15 BSS.

Estimated population of Coastal Deeh Pastoral/Fishing Livelihood Zone (SO 08)

Zone	Region	District	Livelihood	Population 2014 UNFPA
Northeast	Bari	Bandarbayla	Coastal Deeh Pastoral and Fishing	1,668
Northeast	Bari	Iskushuban	Coastal Deeh Pastoral and Fishing	5,480
Northeast	Nugaal	Eyl	Coastal Deeh Pastoral and Fishing	20,238
Central	Mudug	Hobyo	Coastal Deeh Pastoral and Fishing	21,504
Northeast	Mudug	Jariiban	Coastal Deeh Pastoral and Fishing	9,210
Central	Mudug	Xarardheere	Coastal Deeh Pastoral and Fishing	2,680
Central	Galgaduud	Ceel Dheer	Coastal Deeh Pastoral and Fishing	18,346
South	Shabelle Dhexe (Middle)	Adan Yabaal	Coastal Deeh Pastoral and Fishing	15,605
South	Shabelle Dhexe (Middle)	Balcad	Coastal Deeh Pastoral and Fishing	32,949
South	Shabelle Dhexe (Middle)	Cadale	Coastal Deeh Pastoral and Fishing	36,258
South	Shabelle Hoose (Lower)	Marka	Coastal Deeh Pastoral and Fishing	2,802
South	Shabelle Hoose (Lower)	Afgooye	Coastal Deeh Pastoral and Fishing	3,045
Population 2014 total				**169,785**

ADDUN PASTORAL (SO09)

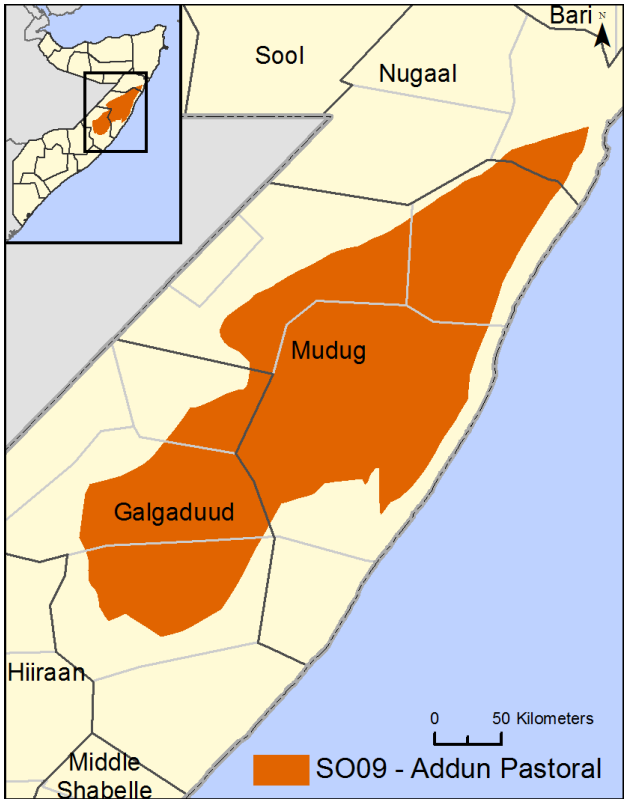
General livelihood zone description

Table 1: Summary of data supporting the Addun Pastoral livelihood profile

Field data collection	Oct/Nov 2010
Consumption year	October - September
Reference year	October 2009 – September 2010
Initial estimated validity	Through 2015

Source: FSNAU

The *Addun Pastoral Livelihood Zone* (SO09) is located in parts of Somalia's North East and Central zone and includes some of the most important grazing areas of Somalia. It is one of the largest livelihood zones in terms of land size, encompassing around 50-60% of Galgadud and Mudug regions as well as a small portion of the Nugaal Region. It includes parts or all of Eyl, Gaalkacyo, Jariban, Dhuusamarreeb, and Ceel Buur districts. The livelihood zone is bordered to the east by the *Coastal Deeh Livelihood Zone,* to the west by the *Hawd Pastoral Livelihood Zone*, and the *Southern Inland Pastoral* and *Cowpea Belt Livelihood Zones* to the south. The population density here is low, and the most recent population estimate is 250,509 (UNFPA 2014).



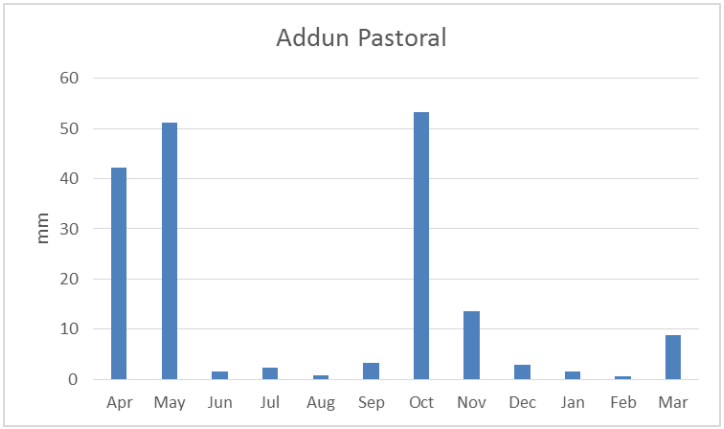
The topography of this livelihood zone consists of an arid plateau that gradually slopes toward the Indian Ocean and includes the large flat Mudug Plain as well as the Nugaal Valley. The soils are predominantly sandy with isolated concentrations of loam soil, with stones and gravel scattered throughout the zone. The sandy soils let water seep through quickly, which means high water filtration and low retention capacity. The main ground cover consists of scattered low trees, including various acacias and widely scattered patches of grass.[37] Short, hardy bushes, locally known as *jilab* and *qaroone*, are scattered throughout the zone, providing browse for the many goats. Repeated droughts, combined with overgrazing and charcoal burning in southern Mudug, have led to a steady deterioration of the rangeland.

Rainfall is quite low, unreliable and characterized by large inter-annual variability. This variability is influenced by the zone's location on the leeward side of the Kenyan and Ethiopian highlands. Rainfall in the zone ranges from 100-200 mm annually, and the long-term (over 30-year) average is 183 mm[38]. As shown in Figure 1, there are two rainy seasons, one concentrated in April and May (the *gu*) and the other in October and November (the *deyr*). Severe water shortages are common, particularly during the long dry season (the *jilaal*) from January through March. The *gu* rains replenish pastures and refill aquifers and ground water. The *deyr* rains are crucial as they help people to consolidate any gains they have made during the *gu* season. People obtain water for drinking and washing from bore holes as well as shallow wells and individually-owned small concrete catchments (*berkads*). On average boreholes are located 30 – 50 km from most households. Pastoralists depend on water trucking during dry seasons. Most open water sources are untreated and not potable. During the reference year most berkads and many bore-holes were in a state of disrepair and required rehabilitation.[39]

[37] R. Lee Hadden, The Geology of Somalia: A Selected Bibliography of Somalian Geology, Geography and Earth Science, Topographic Engineering Center, Virginia, 2007, pg. 13.
[38] Based on USGS CHIRPS data, a combination of satellite-based Rainfall Estimates (RFE) and station data, with data extending more than 30 years (1981-2014). Source, FEWS NET and USGS.
[39] FSNAU, Livelihood Baseline Analysis, Addun Pastoral, Technical Series Report No VI.38, pg 14

The local economy is based on pastoralism, and the population is nomadic. Most of the zone is remote, dotted with small trading centers that are surrounded by vast grazing plains. People here rely heavily on goats and sheep to meet their food and cash needs, with camels a key productive asset of those on the upper end of the wealth spectrum. Cattle do not feature in the local economy because there is not enough water and pasture to maintain cattle herds. Camels are the most valuable livestock in the herd, and greater numbers signify greater wealth. These drought-tolerant animals provide milk for consumption and sale, and they also bring in the highest price of all animals sold on the hoof. Goats and sheep are also sold in large numbers and are also slaughtered during religious festivities for household needs and to serve important guests. The number and proportion of sheep in the shoat flock increases as you move towards the eastern fringes of the zone that border the Coastal Deeh Livelihood Zone. The population in this livelihood zone is highly mobile and permanent settlements are not common. Animals are moved throughout the year to find pasture and water. In a normal year, this migration tends to remain within the livelihood zone boundaries. Men are responsible for moving the camels in the dry season. Women stay with the children and smaller animals around temporary homesteads; women are responsible for milking the goats and taking care of the children; they also manage daily water collection activities. During bad droughts, people from this zone move their animals to distant water sources and pasture to the neighboring livelihood zones of Hawd, Nugaal and even across the border to Ethiopia.

Figure 1: Estimated average monthly rainfall in mm in the Addun Pastoral Livelihood Zone



Source: USGS CHIRPS Data, FEWS NET GeoCLIM

Somali culture is patriarchal and men control most of the valuable productive assets and the decision-making at community and household levels. Men own the camels as a general rule, although women can own them in certain circumstances. Some women own goats and sheep. Women control the sales of milk and milk products, and both men and women are both likely to be involved in decision-making on the sale of goats and sheep, although amongst the poorer wealth groups these decisions can just as well be taken by women. In years when relief food is provided, women have taken on the responsibility of collecting and selling excess relief food.

All households meet their food needs by purchasing grain, oil and sugar from the market, and supplementing this with milk and meat from their own animals. The cash needed to buy food and other essential items is generated through the sale of livestock, with livestock products (milk, ghee, meat) sales bringing in much of the cash income earned by middle and better-off households in good years. In bad years, sales of livestock increase to compensate for the loss of milk. Food aid is often provided in bad years as well.

Basic social services are very limited in this livelihood zone, and road infrastructure is poorly developed. Access to central markets and wage labor opportunities is minimal, although some areas near the eastern border of the zone attempt to find work in the fishing areas. Veterinary services in Addun Pastoral Livelihood Zone are patchy, with some of the international NGOs including Veterinarian Sans Frontier (VSF) and local NGOs such as Puntland Professional Association (PULPA); Nomadic Animal Health Association; and Ministry of Livestock (MOL) providing livestock treatments and vaccination programs in some areas, but coverage is not universal. For the most part, pastoralists here rely on traditional approaches for treating animal diseases. Drought is a recurrent hazard in this zone and when it occurs, it creates a catalogue of hardships. The depletion of rangeland and water resources causes a decline in livestock body conditions, and increases the risk of disease in both livestock and humans. Pastoralists lose income from reduced milk sales and the prices of livestock are lower because of a loss in body condition. In response, this mobile population migrates with their livestock to areas where pasture and water can be found. Poorer pastoralists try to increase self-employment activities, such as selling firewood and charcoal; they also look to support from better off neighbors and relatives. But both of these options are limited in terms of their capacity to cover significant food and income deficits, especially in bad years when competition for self-employment

contracts that market, and better off households have less surplus food/cash to give as gifts. Those with more livestock draw down on their herds to raise the cash needed to buy more food. Households in this livelihood zone live with a chronic shortage of access to safe water, poor human health and veterinary services and infrastructure, inadequate education, sanitation and hygiene services.

Markets

The main markets serving the *Addun Pastoral Livelihood Zone* are Galkayo and Bossaso, which function as the supply centers and trade hubs in central and north eastern Somalia. However, people in this zone live in remote areas, far from central markets; and the road infrastructure is not well-developed. Storage capacities in all rural zones are inadequate, and people rely on those available in the big towns and port locations. But this zone has a particular problem with road access and people have a difficult time reaching the main towns. Most of the northern parts of the zone rely on imported cereals from Bossaso Port, transported through Garowe and Galkacyo; while southern parts are highly dependent on imported cereals from the Mogadishu Port, transported through Dhusamareeb, Galkacyo and Beletweyn. Smaller supplies of locally produced cereals come from Hiran, Mogadishu (Bakaara), Bay, and Shabelle regions. Insecurity and rains, which cut off roads, are the main factors disrupting commodity flows and influencing prices.

Rural villages are linked to main towns by poorly maintained all weather roads, interspersed with rocky stretches, dry rivers and gullies. These roads are rough but passable in most parts of the year. But most households, even if road conditions were good, do not have their own means of transport (other than by foot) and their physical access to central markets is quite limited. As a result, very poor and poor households sell their livestock to traders at the 'farm gate', and purchase their grain at satellite village markets. Both of these trading points ensure that poorer households receive the most disadvantageous prices, selling low and buying high. Better off and middle households usually transport their livestock to central markets themselves, or they pay trekkers to take their animals for them. Here they are able to get better prices for their animals, and they can buy grain in bulk at discounted rates, using their pack camels to transport the grain and other goods back to their settlements. Terms of trade are better for those at the upper end of the wealth spectrum than for those at the lower end, therefore; seasonal fluctuations in terms of trade are the norm, waxing and waning with the wet and dry seasons. For example, households are usually able to get the most grain in exchange for their goat sales, around 70 kg per goat (based on a 5-year average) in January, just after the *deyr* season ends; the least grain, around 55 kg per goat, is garnered in the *hagaa* dry season, in July. However, depending on when Ramadan, Eid and the Hajj fall in the year, changes in demand can affect the timing of these peaks and troughs.

Livestock Markets

Livestock is the most important commodity sold in this livelihood zone, and people's welfare depends fundamentally on the income they generate from their livestock (and livestock product) sales. The main destination for camels, sold only by middle and better off households, is Mogadishu. Goats and sheep are sold in Galkayo, Garowe, Bossaso, Jerriban, Eyl and Hobyo towns. Small markets and water points are also found at village level, which act as temporary livestock collection centers from which livestock traders buy up truckloads of animals and transport them to the Bossaso and Berbera ports. Many of these small stock are exported to Saudi Arabia, Dubai, Yemen, and Oman, especially during Ramadan, Eid and the Hajj. The establishment of livestock holding grounds, to diagnose animal health before export, has significantly improved livestock marketing and exports, thus translating to increased incomes. Milk sales are also an important income generator in years of good pasture, especially for households living near to towns like Galkayo and Dhusamareeb. Those living far away from towns are less able to take advantage of this income source.

Cereal markets

Rice, wheat flour and sorghum are the most important staple grains in this livelihood zone. Sorghum may be sourced from the agro-pastoral and irrigated farming zones found to the south, but rice and wheat are imported from abroad. As such, these supplies, and corresponding prices, can be affected by the condition of the seas, the ports and the roads and price increases are not uncommon. For example, in the reference year rice and wheat flour prices were 240% and 160% higher

(respectively) than the 5-year average, and the price of sorghum was 76% higher than the 5-year average. Sugar, also considered an essential food item in Somalia, is imported as well and prices can be affected by a range of factors, including sugarcane yields in Brazil and the use of sugar in ethanol production, which has caused a spike in sugar prices around the world.

Credit

All households take out loans every year, and seasonal debt taken on during the dry seasons is a normal part of the annual cash flow cycle. Better off households typically pay back their debts within a consumption year, but poorer households often have debt carry over from year to year, and even better off households may carry debt from year to year depending on how many years of successive drought they are contending with. For example, in the reference year in *Addun Pastoral Livelihood Zone* the majority of pastoral households remained in debt despite good *gu* rains because the prolonged drought leading up to the reference year left people with more money to pay back than normal. Most debt repayments occur just after the rainy seasons, when conditions started to improve. Because of entrenched cultural and religious practices, pastoralists in this area are usually allowed to extend debt repayments until the full recovery of their herds or until other options for debt repayment become available.

Conflict

The collapse of the central government in 1991, when Siad Barre was ousted from Mogadishu by forces of the United Somali Congress (USC), began a period of conflict, instability, food crisis and famine that continues today. In the months following the collapse, the country was torn apart by clan-based warfare and factions competing for what remained of the state's assets and power. Four months of fighting in Mogadishu alone in 1991 and 1992 killed an estimated 25,000 people, 1.5 million people fled the country, and at least 2 million were internally displaced. At the same time a drought that year served to exacerbate the effects of the destruction of social and economy infrastructure, asset stripping, 'clan-cleansing' and market disruption and by the end of 1992 an estimated 250,000 people had died. The worst-affected came from areas of the south where waves of invasions by armed militias occurred.[40]

From 2006 to 2012 the country became engulfed in the 'global war on terror', as various factions tried to consolidate power in the vacuum of leadership while at the same time a growing influence from Islamist military groups prompted Ethiopia to invade Somalia, leading to increased radicalization of some members of the Union of Islamic Courts (ICU) and the emergence of *Al-Shabaab* as a major force in Somalia. This has caused increasing disruption throughout the country, and especially in southern Somalia. The three years from 2006-08 were catastrophic for Somalis. Military occupation, a violent insurgency, rising jihadism and massive population displacement reversed the incremental political and economic gains achieved by the late 1990s. During 2007 alone fighting between the Transitional Federal Government (TFG) and the insurgency resulted in the displacement of up to 700,000 people from Mogadishu. In 2011, the plight of the Somali people was exacerbated by the worst drought in six decades, which left millions of people on the verge of starvation and caused tens of thousands to flee to Kenya and Ethiopia in search of food.

The formation of a post-transition Federal Government brought back some stability to the country in 2012. However, fighting over territory in southern Somalia continues to this day as the National Armed Forces (with support from the African Union Mission in Somalia/AMISOM) try to regain strategic cities and towns from *Al Shabaab*. Frequent market disruptions have resulted from continued conflict as commercial supply routes are interrupted. In turn, supply shortages have led to price increases for local producers and consumers.

Throughout the conflict there have been ongoing contradictions between a centralized state authority, a fractious kinship system and the Somali pastoral culture in which power is diffused. This is borne out in different ways throughout the country. In this livelihood zone, conflict has centered on the tensions between Puntland and neighboring Somaliland. The regions of Bari, Nugaal, and northern Mudug now comprise the self-declared autonomous state of Puntland. Puntland is

[40] http://www.c-r.org/accord-article/endless-war-brief-history-somali-conflict, Sally Healy and Mark Bradbury

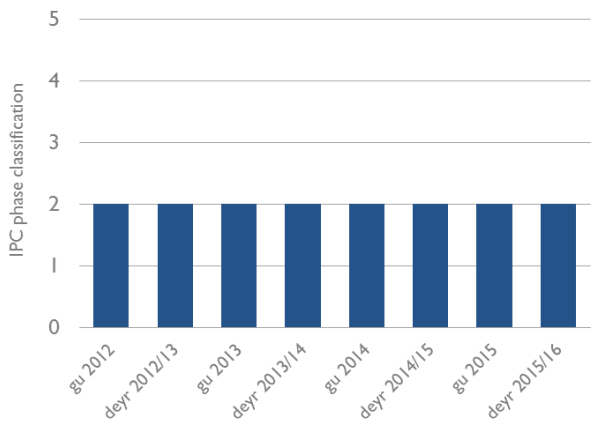
centered on the capital, Garowe, in the Nugaal Gobolka. Unlike neighboring Somaliland, Puntland does not seek outright independence from Somalia and has made strides toward reconstructing a legitimate, representative government, but there has been some civil strife along the way. Puntland disputes its border with Somaliland and also claims portions of eastern Sool and Sanaag.

Food access history

Of the pastoral areas of central and northern Somalia, *Addun Pastoral Livelihood Zone* is one of the zones that are most likely to face food insecurity, beset by recurrent droughts and suffering from chronic water shortages. For example, in the nine consecutive seasons from 2006 through 2010, seven reached the level of humanitarian crisis (Phase 3) according to the Integrated Phase Classification (IPC) scale. Erratic rains, droughts, hyperinflation and civil insecurity all played a role in the prolonged crisis. By 2009, more than 85% of the population in this livelihood zone were in need of assistance, with 18% deemed to be facing an Acute Food and Livelihood crisis, 69% facing a Humanitarian Emergency and about 13% on the edge, characterized as facing Borderline Food Insecurity (BFI)[41].

The reference year or consumption year that this profile is based on was October 2009 - September 2010. It is important to keep in mind that this period was below average, and so the food, income and expenditure graphs show us how people survive in a below average year. The *deyr* rains (Oct-Dec) 2009 were below average and these were preceded by a series of droughts. Nevertheless, the *gu* (Apr-Jun) 2010 season rains were average to good, resulting in improved livestock body condition and normal kidding rate for small ruminants, starting a slow path to recovery. Because of the successive drought years before the reference year, camels had failed to conceive in 2008-2009, which meant that the reference year saw almost no new camel calves and very low milk supplies, which depended almost entirely on goat production. Nevertheless, because of the good *gu* rains, near-average livestock prices, low cereal prices, and relatively good access to loans and other forms of social support helped pull households through.

Figure 2: Recent trend in IPC phase classification, with 1 as best and 5 as worst



Source: FSNAU

Throughout the conflict, timely and effective interventions have been severely constrained due to insecurity. A major international emergency effort ensued in response to the country-wide extreme droughts of 1991-1992, 2005-2006 and 2011, and in 2008 and 2009 the country received the largest amounts of international food aid since the crisis of 1992-93. Security in this livelihood zone has been better than in the southern zones, which has allowed food aid to be delivered in more timely ways.

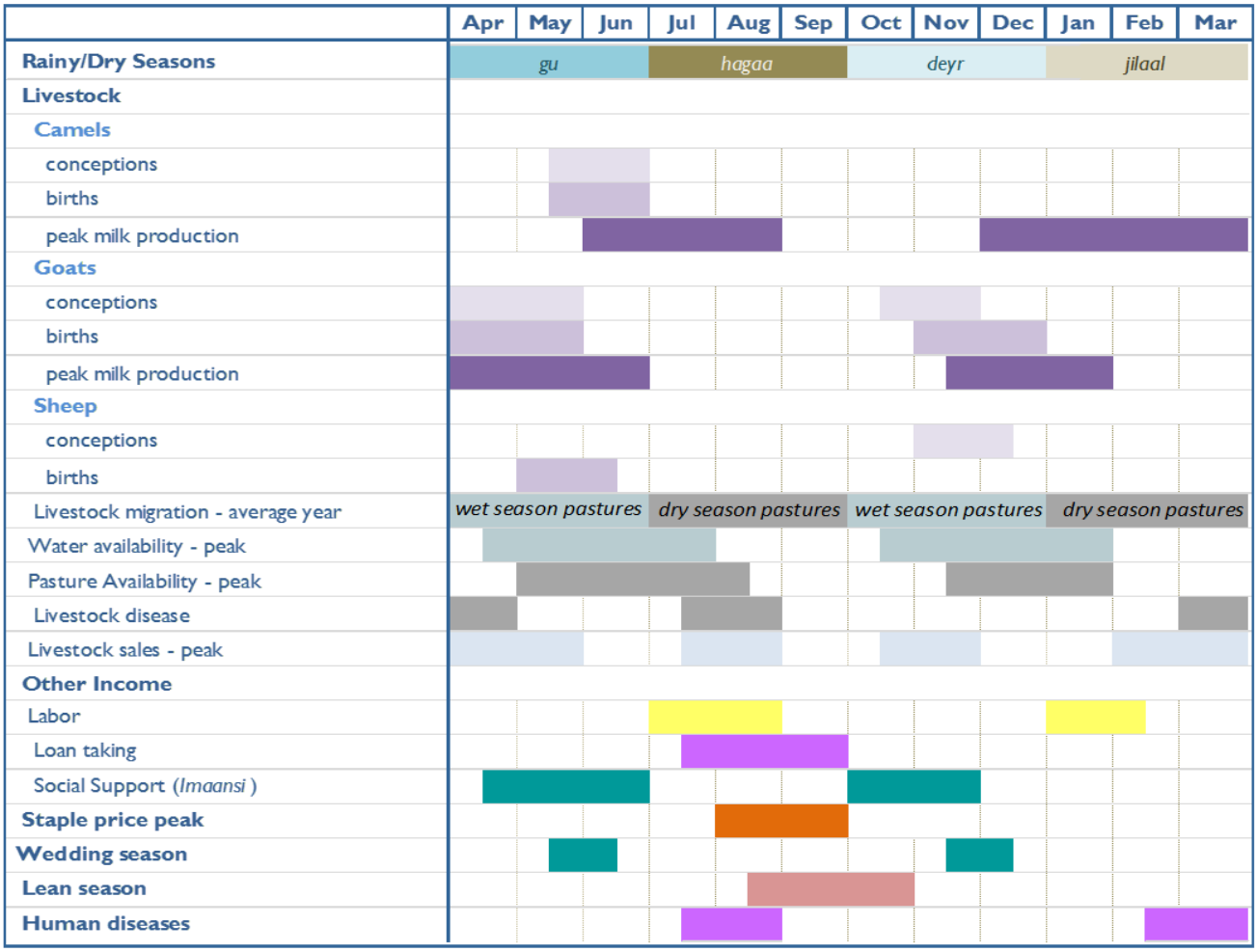
Seasonal Calendar

As in many other parts of Somalia, there are two distinct rainy seasons followed by two dry seasons in this livelihood zone. The first rainy season, called the *gu*, usually starts in April and lasts through June, although in this zone most rainfall is concentrated in April and May. The second, called the *deyr*, starts in October and is usually over by the end of November, although rainfall can extend through December.

At the start of each of the two rainy seasons, water and pasture resources are replenished and livestock are brought from the dry season grazing areas to new-growth pastures. This is a time of relative plenty, when milk yields are higher, and

[41] FSNAU, Livelihood Baseline Analysis, Addun Pastoral, Technical Series Report No VI.38, pg 1

Figure 3: Seasonal calendar for the Addun Pastoral Livelihood Zone



Source: FSNAU Livelihood Baseline Profile, Addun Pastoral, 2011.

staple food prices tend to be lower. Milk supplies are determined by the number of animals that conceive and give birth and the quality of the pasture and water sources during the lactation period. Most animals are born during the rainy seasons as well, timed so that the new mothers can have access to fresh pastures and plenty of water. Camels calve once a year, in the second part of the *gu* season. The lactation period for camels is quite long, lasting through much of the year. Goats, on the other hand, have short milking periods, but they kid twice a year – once in each rainy period. Thus, there are two distinct periods when goats' milk is available: April – June and November - January. Lambs are especially vulnerable to mortality in drought conditions, so mating is tightly controlled by the pastoralist herders, who aim to ensure that lambing occurs only in the *gu* season. Lambs born in one of the dry seasons, or even in the *deyr* season, which is followed by the long, harsh *jilaal*, have a much higher rate of death. In the Addun Pastoral Livelihood Zone strong social support networks exist in the form of food loans (*Qardo*), gifts of milking animals and gifts of other animals to help build herds. Most of these gifts are given during the rainy seasons, when better off households have extra supplies on hand.

Livestock sales normally peak during the *deyr* season when, in anticipation of the coming long dry season (the *jilaal*), people de-stock and put together the cash they will need for increased staple grain purchases. Demand for sheep and goats is especially high during Ramadan and the Hajj, which spurs on a confluence of peak prices and high sales. In the reference year livestock prices increased during the rainy seasons since pastoralists were less inclined to sell as they focused on fattening and herd rebuilding in anticipation of the Hajj and Ramadan (August-November 2010). Food prices rose in the hagaa dry season (July-September) due to seasonal monsoon tides and rough seas that reduced imports. This coincided

with the peak hunger period for poor households, triggering an increase in the number of loans taken and the amount of social support that was sought.

The *jilaal* season is another time when livestock sales can be high because many livestock are gathered around water points close to market centers, making it a convenient time to sell. However, because of the high supplies on the market, livestock prices tend to be low at this time. Livestock mortality rates are highest during the *jilaal*, due to lack of pasture and water, and because the high concentration of animals around common watering and grazing points leads to an increased spread of diseases. However, depending on the disease, there are other times of year with livestock diseases peak – with worms (*helminthosis*) especially problematic during the wet seasons, and pneumonia most prevalent during the dry season, when malnutrition helps create the perfect conditions for this disease to emerge.

Surface water peaks from May through July and again from October into January, increasing pasture and browse availability. During both dry seasons, and especially the *jilaal*, water is hard to come by and people need to find cash to purchase it from water-trucking ventures. The dry seasons are also when people need to purchase more food to supplement waning milk supplies. The main endemic disease is malaria. Although mosquito infestation is high in the rainy season, morbidity peaks in the dry periods. The dry season is also a time when Acute Respiratory Infection (ARI) is highest among children and malnutrition rates are higher due to a lack of milk and constraints on access to clean water. Thus, this is when the family budget is particularly stretched to meet food and medical needs.

Wealth Breakdown

Livestock ownership, and particularly the ownership of camels and goats, determines wealth in this livelihood zone. Goats are the most numerous of the livestock owned, giving the livelihood zone the name "Guri Ari" which means "the house of goats". Goats comprise 60-70% of the combined goat and sheep holdings, with sheep making up the remaining 30-40%. However, there is some spatial variability in this regard, with the eastern coastal areas having a higher concentration of sheep.

Table 2: Wealth group characteristics in Addun Pastoral

	Very Poor	Poor	Middle	Better-off
Household percentage (%)	5%	35%	45%	15%
Household size (#)	6 - 7	6 - 7	7 - 8	10 - 12
Typical livestock holding (#)				
Camels	0	3	12	25
Goats	14	37	60	135
Sheep	6	20	35	65
Donkeys	0	0-1	0-1	1

Source: 09 Addun Pastoral_5Nov 15 BSS
Note: All single values represent the mid-point of a range.

The wealthier you are, the more you depend entirely on your livestock to meet all of your food needs (either directly through milk and meat, or indirectly through selling milk or live animals to generate cash to buy food) and your cash needs. In the reference year a typical better off household owned around 25 camels, 135 goats and 65 sheep along with 1 donkey. These households typically own at least one *berkad* (concrete water catchment) as well. On the other side of the spectrum, a typical very poor household owned no camels, 14 goats and only 6 sheep. The other two wealth groups fell in between these two extremes.

The poorer you are, the more likely you are to have to find cash options outside of your herd, since you simply do not have enough animals to generate the milk and cash income you need to survive. These poorer households turn to things like charcoal sales, seasonal jobs in the coastal areas, and gifts from households that have some surplus. This means that poor households are often stretched, trying on the one hand to manage their herds, and on the other, forced to spend their time seeking alternative sources of cash and food.

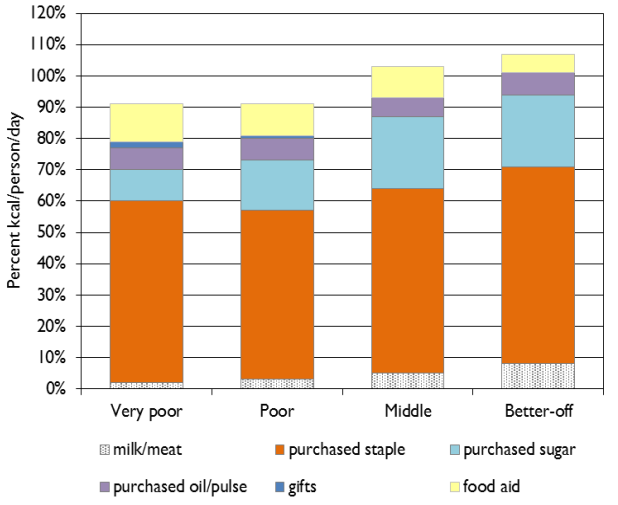
To a certain extent wealth is also related to household size. Larger herds require more people for herding and overall management; therefore, in order to be a better off household, you also need to have more people. The logic extends in the other direction as well: the better off you are, the more people you can take care of. Poorer households tend to be monogamous, but those in the middle and better off wealth groups tend to be composed of more than one wife.

Poorer households receive support from better off households in the form of *zakat* – gifts of live animals (usually goats and sheep) given during the first month of the Islamic calendar (January). These gifts are not a guarantee, however, and depend on better off households having surplus animals to offer. Thus, in years following a drought, when conception rates have been poor, gifts are reduced and sometimes eliminated. Remittances are only common for middle and better off households in this zone, and rarely received by poorer wealth groups.

Sources of food and income and expenditure patterns

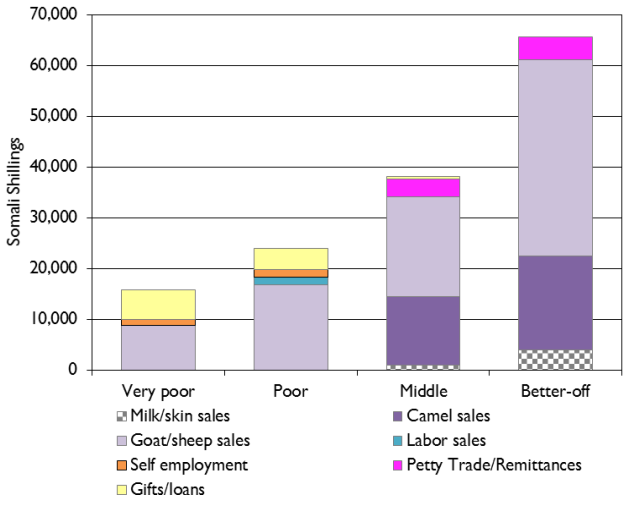
Pastoralists in this livelihood zone consume a diet of milk, meat, grain, oil and sugar. The source of these foods does not change from year to year – milk and meat comes from their own livestock and the rest comes from the market. However, the relative importance of each source varies from year to year and even season to season. Milk supplies peak and wane depending on a number of factors. The level of rainfall and pasture in the current season is important because it determines how much nutrition camels and goats (the main sources of milk) are able to obtain and therefore how much milk they will produce. In addition, the performance of previous seasons is also critical, because pasture conditions and water availability six or twelve months ago can determine whether animals conceived and whether or not their calves/kids were brought to term. If animals conceive successfully and carry their young to term, they usually give birth during or just before the rainy seasons which means that milk supplies are highest at this time of year. In years or seasons when milk is less available, households purchase more grain, sugar and oil to make up for the loss of milk. The food, income and expenditure graphs presented in this section need to be understood in light of the fact that the reference year they represent (October 2009 to September 2010) was a below average rainfall year, with especially poor *deyr* rains. Successive droughts in the years leading up to 2009 had translated into low camel conception rates, which – in turn – meant low calving rates and lower-than-average milk availability.

Figure 4: Food sources by wealth group, Addun Pastoral Zone



Source: 09 Addun Pastoral_5Nov 15 BSS

Figure 5: Cash income sources by wealth group, Addun Pastoral Zone



Source: 09 Addun Pastoral_5Nov 15 BSS

In this zone, camels normally provide the bulk of household milk for the upper two wealth groups and goats provide most milk for the lower two wealth groups. Camel milk yields per day are higher than goats and their lactation period can extend throughout most of the year, whereas goats lactate for only around two to four months. Very poor and poor households in the reference year had no camels. A typical middle and better off household had 12 and 25 camels, respectively, and of these, around half were adult females. In a normal year, yields from camels can be as high as 2 liters per day during the *gu* rainy season, and 1 liter a day in the *deyr* season. With even one camel milking, this would bring in approximately 550 liters a year and much of this would be consumed as either fresh milk or ghee. As such, middle and better off households in a typical year could depend on camels' milk to cover up to 15% of their annual calorie requirements. However, in the

reference year camels' milk brought in next to nothing because so few camels were lactating, having not been able to conceive during the previous year's drought. Goats did generate some milk in the reference year, but because yields were very low (0.25 – 0.5 liters/day in the *gu* and 0.2 – 0.3 liters/day in the *deyr*) and the lactation periods were so short (30 – 60 days), even better off households, with an average of 20 goats milking, could not generate enough milk to meet more than 5% of their annual calorie needs. Middle households and the poorer two wealth groups could only cover around 2% of their food needs with milk. Meat from animals in the herd that died naturally, or were slaughtered for festivals or celebrations, offered up a small contribution of additional calories, but this still did not add more than 3% of annual calorie needs. When combined, the contribution from households' own milk and meat in the reference year was between 2% and 8% of minimum calorie requirements, increasing with wealth. In a good year one would expect this to be two to three times this level.

Purchased food is the main source of calories every year in this livelihood zone, but in bad years, like the reference year, it plays an even more essential role, with households buying more than normal to fill the gaps left by reduced milk availability. Four staple grains are purchased – sorghum, wheat, rice and maize. Sorghum is the cheapest staple, and therefore the one most heavily consumed by very poor, poor and middle households in the reference year. Maize grain was also relatively cheap in the reference year, bought exclusively by the bottom three wealth groups. Better off households buy more of the preferred staples of wheat and rice in general, and the reference year was no exception. Staple grains covered 53 - 65% of the annual food needs of households during the reference year. Purchased oil and sugar also contributed significantly to the household diet for all wealth groups throughout the year. Sugar comprises a large component of the Somali diet in all years, but in years when milk production is low, sugar may – depending on cash reserves - be purchased in even higher quantities to 'fill in' for milk. In the reference year better off households bought enough sugar to consume, on average, 1.3 kg a day; very poor households were not able to afford nearly that much, but still consumed roughly 1/3 of a kg of sugar a day. In relation to annual calorie requirements, purchased sugar met 10 – 23% of minimum needs. Oil met an additional 6 – 7% of annual needs.

Food aid distributed by the World Food Programme contributed the remaining calories for most households, although very poor and poor households also relied to a very small degree on gifts from relatives and neighbors (which covered 1-2% of annual food requirements). Very poor and poor households received 14-15 kg of grain 8-9 months of the year, as well as small distributions of pulses and oil, providing them with 10 – 12% of their annual needs depending on the household size. Middle and better off households received 12 – 14 kg of grain 4 – 8 months of the year along with pulses and oil, making up 6 – 10% of their annual food requirements. In a year with good rainfall this food aid would have been unnecessary, met instead through the provision of camels' milk (for middle and better off households) and gifts of milk (for poorer households). Although gifts of grain and milk are a common form of social support, in bad years the ability of better off relatives and neighbors to provide this help is actually reduced, leading to the somewhat counter-intuitive result that poorer households can count on receiving more gifts in good years than bad. In the reference year, the amount of food received as gifts was quite limited, meeting only 1 – 2% of minimum needs.

Livestock are the primary source of cash income in this zone; camels' and goats' milk is normally sold in significant amounts, and camels, goats and sheep are all sold live. Middle and better off households are able – in a normal year – to depend entirely on cash generated from their own herds. In the reference year these households in the upper wealth groups also had to draw on remittances from family members living outside the zone. The poorer two wealth groups are never able to rely only on their own herds, supplementing their cash flows with seasonal jobs, self-employment and gifts. In the reference year, better off household cash income in the reference year was more than four times higher than poor household annual income.

The paucity of camels' milk in the reference year was a problem not just because of the calories it normally provides, but also because it created a shortfall in cash income. Households typically sell camels' milk for cash income and this income was greatly reduced in the reference year, forcing people to sell more of their livestock instead, drawing down on herds at a time when people were trying to build them back up. Better off households had around 13 adult female camels and middle households had 6 that could have been providing milk, but due to drought in preceding years had not conceived. With even half of these milking, better off households could have generated 1,650 – 3,300 liters of milk. A good deal of this would have been sold, bringing in a large portion of the upper two wealth groups' cash. For example, in the *Northern Inland*

Pastoral Livelihood Zone, where a similar pattern of livelihood is present, and where the reference year (2009-2010) was average, the cash income from selling the milk of just 3 camels was over 20,000 Somali Shillings and comprised 25% of annual cash income. In the *Addun Pastoral Livelihood Zone*, on the other hand, households were only able to sell ghee produced from their goats' milk in the reference year, which accounted for only 2 - 6% of annual cash income.

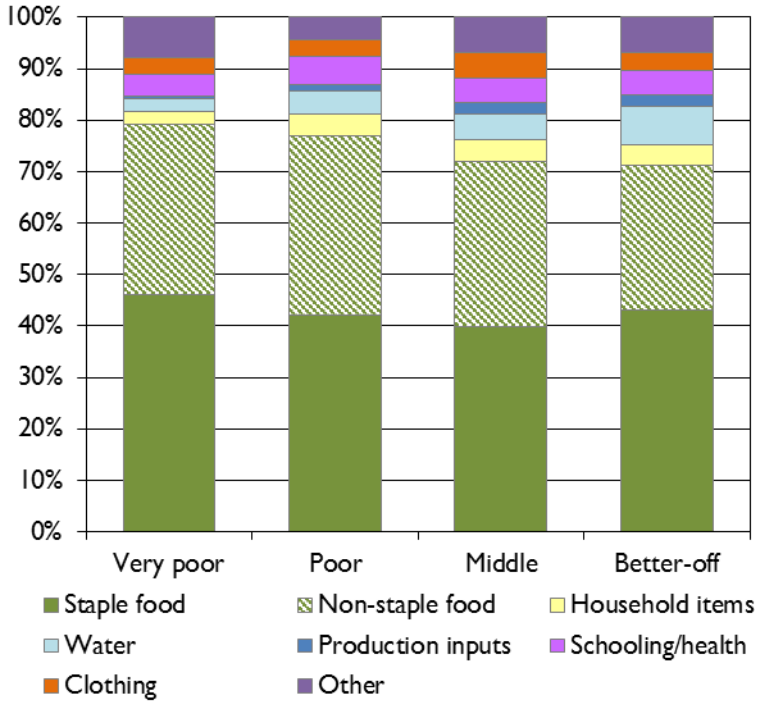
With milk sales not an option, households had to fall back on selling as many live animals as they could. While a single camel (local quality) was worth seven times the value of a goat or sheep (local quality), camels were not sold in large numbers; it was really the goats and sheep sales that people depended on most heavily throughout the year. Very poor and poor households sold, on average, 6 -11 goats and 2 - 4 sheep, with half being local quality (at around 900 SoSh/animal) and half export quality (at around 1,300 SoSh/animal). Goat and sheep sales (export and local combined) earned very poor and poor households 8,700 – 16,700 SoSh and middle and better off households 19,700 – 38,700 SoSh in the reference year. An additional 13,500 – 18,500 was generated by middle and better off households from the sale of 1 – 2 camels per household. The fact that one camel can bring in so much cash is a testament to the importance of camels in this economy, and in many ways the difference between being a middle household and a poor household rests on the ownership of camels.

The remainder of poor household income is made up through labor sales, self-employment activities and gifts. Young men are hired seasonally to work on construction projects in the main towns or in coastal fishing areas. Poor households have more productive labor to call on than very poor households, so they are better able to make use of this strategy. Self-employment could include a range of income generating activities, including collecting and selling poles for construction and firewood, but in the reference year these brought in only a small percentage of the year's cash. More important was the contribution made by gifts of cash from better off neighbors, which accounted for almost 30% of the annual cash that poorer households obtained. Loans were also important for these households. Loans are a common means of covering seasonal cash flow gaps and poorer households are especially dependent on this assistance in a bad year, and particularly during the dry seasons, when cash needs are high. Households try to repay these after the onset of the rains when livestock body conditions improve, but these often carry over into the next year, and households' ability to repay depends heavily on the performance of the season and the health of their herds.

Taking a look at expenditure, we see a high proportion of annual cash spent on food (both staple and non-staple) by all households, which reflects a common scenario in bad years. This high relative expenditure on food tells us two things: first, people were unable to generate very much of their own food (in this case milk) and second, their cash income levels that year were low. Because feeding the household is a top priority, what little cash is available gets spent on food, diverted away from other goods and services. When money is scarce, the proportion of annual cash devoted to food, therefore, looms large. In the reference year in this zone households devoted approximately 70 – 80% of their total cash to buying food, with around half of this spent on staple grains, and the other half on non-staple calories, specifically sugar and oil. This left little money for other essentials, like household items, school, health, productive inputs and clothes, among others.

The amount of money spent on food increased in absolute terms with wealth, in part because

Figure 6: Allocation of expenditures by wealth group, Addun Pastoral



Source: FEWS NET.

households on the upper end of the wealth spectrum have larger households, and in part because they can afford to consume more calories and more expensive staples. On a per capita basis better off households spent more than twice the amount spent by very poor households on staple foods, and two times more on non-staple foods. Better off households purchased mostly wheat flour and rice, whereas poorer households bought mostly sorghum and maize grain. In the reference year, when averaged across all seasons, wheat flour and rice cost 20 SoSh/kg and 23 SoSh/kg, respectively, while sorghum and maize cost only 8 SoSh/kg. This price difference alone accounts for the higher expenditure on staple food among better off and middle households. But in absolute terms middle and better off households also bought more grain; the poorer two wealth groups bought 800 – 810 kg of grain, whereas the top two groups bought 1,000 – 1525 kg of grain. This further increases the expenditure gap among the wealth groups.

Expenditure on basic household items like tea, salt, soap, kerosene and utensils is included in the 'household items' category of the graph. Of these, tea consumes the greatest portion of this budget on an annual basis. Drinking tea is central to the Somali culture and people drink it at all times of day, but especially at breakfast, in the late afternoon and evening. It is mixed with sugar and milk, when available.

People in this zone also need to buy water for home consumption. This area experiences critical water shortages during the dry seasons and people depend on water that is trucked in from outside the zone. Households buy 200 liter drums of water to take them through until the rains start again. This annual expenditure ranged from 60 SoSh per capita to 110 SoSh per capita during the reference year, with the higher figure associated with better off households, and the lower figure with very poor households. The 'water' category on the graph above represents this water for human consumption. Water for animals is included in the 'production inputs' category, discussed below.

Production inputs are another critical area of expenditure, and in the reference year, these increased in both absolute and relative terms in line with wealth. In this livelihood zone these inputs include veterinary drugs and water for animals. The upper two wealth groups typically spend significantly more on animal drugs and water for their animals and the reference year was no exception - better off households spent over 10 times more than very poor households on animal drugs and six times more on water for animals than poor households.

Expenditure on schooling and health also varied across wealth groups. Access to formal education is severely limited by a lack of schools and the cost of school fees, stationery and transportation. Schools exist in only some of the villages, which means that in order to attend these schools, households need to find a way to transport their children to the school, pay the school feels, stationery costs, and bear the opportunity cost of the lost labor from the child. Because of these costs, very poor and poor households rarely send their children to school. Koranic schools are more widely available in the main and small villages as well as along the water points in rural areas, and these are free, but the pastoral nomadic lifestyle, insecurity and the need for children to help at home mean that most poorer children do not attend school. Very few girls are in school, kept at home to help their mothers with the burdensome domestic workload. This general pattern would have been even more accentuated in the reference year since it was a below average year, which meant that household resources were further constrained, and a choice to send children to school would have been even more unlikely. Better off households are more likely to send their children to formal schools, and this is reflected in the expenditure patterns, which show that, on a per capita basis, better off households spent around 220 SoSh on schooling, compared to 90 SoSh for very poor households. There are no hospitals or medical clinics in the livelihood zone, although poorly equipped Mother and Child Health (MCH) centers are found in a few of the villages, along with some private pharmacies. The better off go to Galkayo town to find health services, but this involves expensive transportation and consultation fees that most other wealth groups cannot afford. As a result, better off households spent considerably more in the reference year on medicine, devoting 64 SoSh per capita to annual health costs compared to the 46 SoSh, 14 SoSh and 8 SoSh per capita spent by middle, poor and very poor households, respectively.

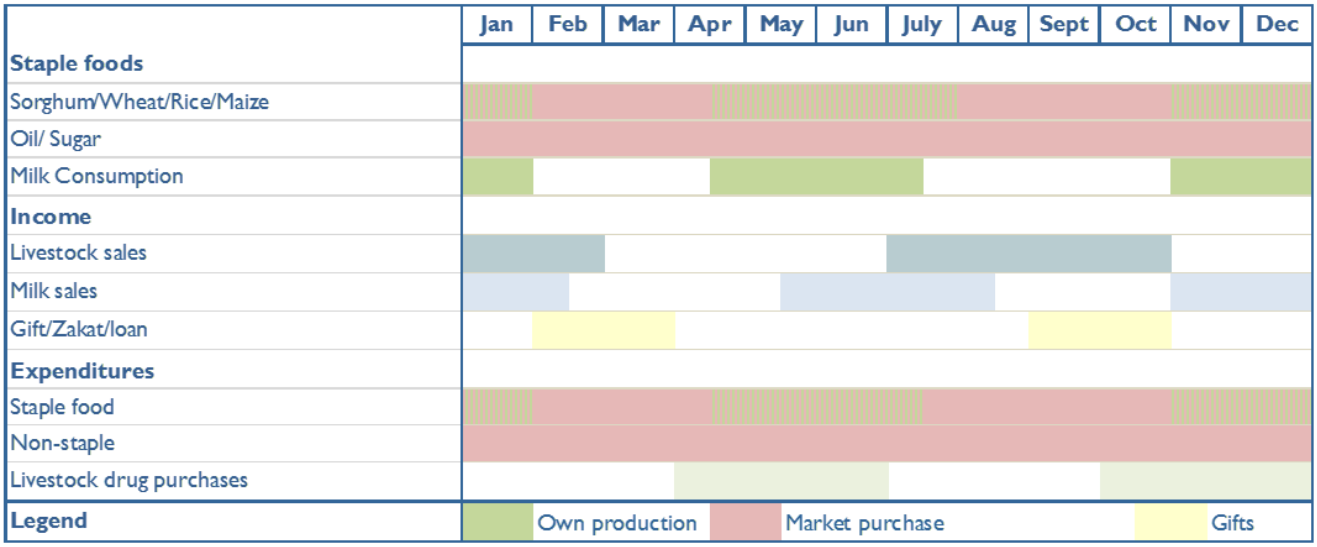
Clothing and non-essential items (shown in the 'other' category) are the two additional categories of expenditure captured in this graph. Spending on clothing was quite limited in the reference year as this was one of the spending categories that households could cut back on in order to increase spending on food. The 'other' category includes spending on loan repayment, taxes, gifts, festivals, tobacco, chat and other miscellaneous items. Some of these items can potentially be eliminated or at least delayed in a bad year. Although the repayment of loans is important for very poor households,

because failure to do so undermines one's ability to take out loans in the future. Given that inter-seasonal loans are so important for ensuring household survival, it is essential to keep this future option open, even when repayment creates immediate hardships.

Calendar of major sources of food and income for poor households

Households in this pastoral zone purchase food throughout the year, but staple food purchases are particularly high in February and March, which is when milk is less available for consumption. In April, camels' and goats' milk from newly lactating animals helps households reduce their reliance on staple grain purchases. In November, households' 'own production' of milk and meat combines with purchased grain to round out the diet. Cash income from livestock sales peaks from July to October and then again in January and February. This is supplemented by income from milk sales, peaking twice a year: from November to February and May to August. These sales help to fund the purchase of livestock drugs, which occur around the same time.

Figure 7: Consumption and income calendar for the Addun Pastoral Livelihood Zone



Source: FSNAU

Hazards, Response and Monitoring Variables

Drought is the most and frequent hazard in the Addun Pastoral Livelihood Zone. It is not uncommon for drought conditions to persist across multiple seasons, and it is this back-to-back failure of seasons that creates the most devastating effects for local households. The rainfall levels here are typically low to begin with, sustaining only the minimum level of graze and browse, suitable for a nomadic pastoral economy, but just barely. Droughts cause a cascade of negative effects: reduced pasture and water lead to a deterioration in livestock body conditions, lower milk yields, and declining livestock prices. Given that pastoralists' food and cash income depends so heavily on the productivity of their livestock, cash income and access to purchased food – which makes up the majority of household food income – is severely constrained in a drought. Pastoralists can bounce back from one season of poor rainfall, but multiple seasons cause disastrous outcomes. In these cases, pastoralists from this zone migrate to the neighboring livelihood zones of Hawd and even across the border into Ethiopia, although the risk of tick-borne diseases is a major inhibitor to this kind of migration.

Market disruptions are also a common problem in this zone. The remote nature of this zone, along with its poor road infrastructure and its heavy dependence on supplies of food sourced from far away, create a persistent risk of market-based food insecurity. The transportation costs in Addun are high and trade route disruptions are common, caused by

insecurity, problems with shipping – such as piracy and high seas – and limited transport. All of these can lead to a spike in the prices of food and other essential goods. International embargos, such as the devastating livestock ban imposed by Gulf States in the early 2000s, are another source of concern, especially since the main driver of the local economy is livestock sales, many of these bound for export.

Livestock disease is another major problem. Endemic diseases, such as Contagious Caprine Pleuro-Pneumonia (CCPP), sheep/goat pox and endo-parasites cause significant losses in income since they undermine livestock body conditions in the dry seasons and reduce viable livestock sales. Livestock diseases lead to reduced milk production and lower livestock prices and sometimes result in quarantines and trade bans, which have wider economic consequences. The *Addun Pastoral Livelihood Zone* is distinct from most other pastoral livelihood zones in Somalia in that ticks and tick borne diseases are not common. This is because the environmental and vegetation conditions are not conducive for the survival and perpetuation of the vector. Large-scale livestock disease outbreaks were less frequent in the reference year due to prevention measures taken by NGOs (VSF, PULPA and NAHA).

Environmental degradation is another critical concern. Ecologically, Addun livelihood zone is predominantly covered by drought resistant shrubs and scattered acacia trees, which are not suitable for charcoal burning, although *grewia* trees are good for construction. During drought periods, however, livestock and people congregate in the few areas where normal rains occur, resulting in environmental degradation (loss of vegetation cover) due to overcrowding and overgrazing, indiscriminate tree cutting and charcoal burning, particularly in South Mudug. Deforestation and overgrazing leads to soil erosion and more rapid rates of evapotranspiration, which further dries out an already-dry vegetative base.

Table 3: Coping strategies in response to shocks in Addun Pastoral Livelihood Zone

Very poor/poor	*Middle/better off*
Reduce expenditure on non-essential items and switch spending to essential food and non-food items.	Reduce expenditure on non-essential items and switch spending to essential food and non-food items.
Increased reliance on social support/gifts	Out migration to the Hawd and Nugaal in the west and northwest, and Golol in the south. This is only done by wealth groups that own camels and larger goats/sheep herds. Families split, with men taking the camels and women and children staying behind.
Increased sale of livestock, which is limited by small herd sizes and declining livestock condition and prices in a bad year.	Increased sale of livestock, although declining livestock condition and prices in a bad year can limit the effectiveness of this option.
Increased collection of firewood, construction materials, charcoal for sale	Increased loans, which are easier for middle and better off households to procure as they are more credit-worthy
Previously, poorer household members would migrate to the eastern coastal areas to seek fishing labor opportunities. However, this has been reduced because of piracy and the international marine forces that are off the Somalia coast to regulate piracy.	

Source: FSNAU, Livelihood Baseline Analysis, Addun Pastoral, Technical Series Report No VI.38, July 2011

In order to make it through bad years, pastoralists in this livelihood zone pursue a number of time-worn strategies. Chief among these is reducing expenditure on non-essential items and concentrating all purchases on only those that meet the households' immediate needs. All households also increase the number of animals they sell, in order to destock before animals become so emaciated that they can no longer bring in a decent price and to build up cash reserves to buy food and other essentials. Poorer households turn to relatives, friends and neighbors for help, although if it is a bad year everywhere, this help is hard to come by. Poorer households also try to collect and sell firewood where possible, and to sell charcoal, especially in southern Mudug. Middle and better off households take their livestock out of the zone if circumstances force them to, trekking to the Hawd and Nugaal in the west and northwest, and to Golol in the south. This requires the family to split, with men taking the camels and women and children staying behind. All households also seek loans from shopkeepers

and livestock traders, but middle and better off households are more likely to secure them given that they are more credit-worthy and tend to have more influence over livestock traders.

Table 4: Key parameters to monitor in the Addun Pastoral Livelihood Zone

Item	Key Parameter – Quantity	Key Parameter – Price
Animal production	Camels' milk – yields (seasons 1 & 2) Goats' milk – yields (season 1 & 2) Camels – herd size Goats – herd size Sheep – herd size	Camels' milk - price Camels – local price Goats – export & local price Sheep – export & local price
Other	Seasonal labor – number of jobs Self-employment opportunities Gifts/social support – frequency received Loans – amount received	Seasonal labor – wage rates Self-employment – income earned Gifts/social support – amount received Loans – repayment terms
Expenditure		Sorghum – consumer price Wheat flour – consumer price Rice – consumer price Maize – consumer price Sugar – consumer price Oil – consumer price

Source: FSNAU, 09 Addun Pastoral_5Nov15 Baseline Storage Sheet.

Estimated population of Addun Pastoral Livelihood Zone

Zone	Region	District	Livelihood	Population 2014 UNFPA
North East	Nugaal	Eyl	Addun pastoral	12,149
North East	Mudug	Gaalkacyo	Addun pastoral	32,499
Central	Mudug	Gaalkacyo	Addun pastoral	
Central	Mudug	Hobyo	Addun pastoral	50,175
North East	Mudug	Jariiban	Addun pastoral	39,504
Central	Galgaduud	Dhuusamarreeb	Addun pastoral	65,069
Central	Galgaduud	Cadaado	Addun pastoral	24,898
Central	Galgaduud	Ceel Buur	Addun pastoral	26,215
09 Population 2014 total				**250,509**

CENTRAL AGROPASTORAL COWPEA BELT (ZONE SO10)

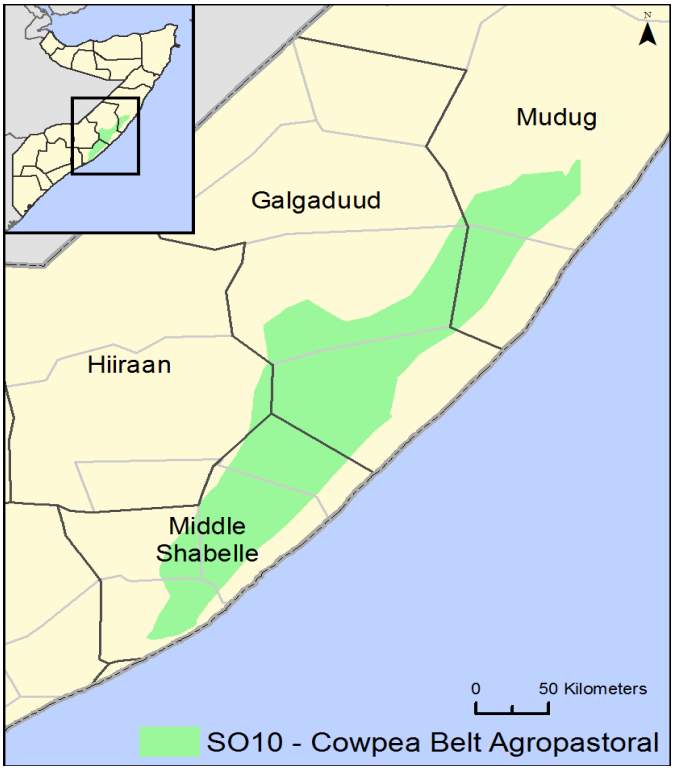
General Livelihood Zone Description

Table 1: Summary of data supporting the Central Agro-Pastoral Cowpea Belt livelihood profile

Field data collection	2000, 2001
Consumption year	April – March
Reference year	1996/97
Initial estimated validity	Through 2007

Source: FSNAU.

Livestock production is the driver of the local economy in the *Central Agro-pastoral Cowpea Belt Livelihood Zone*. Cowpeas provide a supplementary food and income source to milk/ghee, purchased staples, livestock sales and sales and consumption of bush products. *Zakat* gifts of food and cash are also important to the food security of poor households. Droughts are a recurrent feature here but livestock pests and disease, as well as crop pests, also affect the local economy. Moreover, like the rest of south-central Somalia, this zone has been deeply affected by the "war economy" of post-Siad Barre Somalia, and by the violence which has gripped the country since 1991. The northern section of this zone may see more peaceful times ahead with the creation of the new autonomous federal state called *Galmudug*. This process was initiated in 2006 but has continued over several years due to negotiations about borders with Puntland authorities to the north.[42] The southern part of the zone is more closely integrated with Mogadishu trade flows as well as the Shabelle riverine markets. The south is also more integrated politically with Mogadishu. Unfortunately, the political tensions between warring factions in Mogadishu have often spilled over into clan conflicts in the southern part of this zone leading to ongoing insecurity. The zone's population is spread out in three different regions covering much of Middle Shabelle Region (Jowhar/Mahady, Adan Yabaal, Balcad/Warsheikh and Cadale districts) as well as the southern part of Galgaduud Region (Ceel Buur and Ceel Dheer districts). The southern tip of Mudug Region (Haradheere and Hobyo Districts) also falls within this zone. The total population is an estimated 141,129 (UNFPA, 2014).



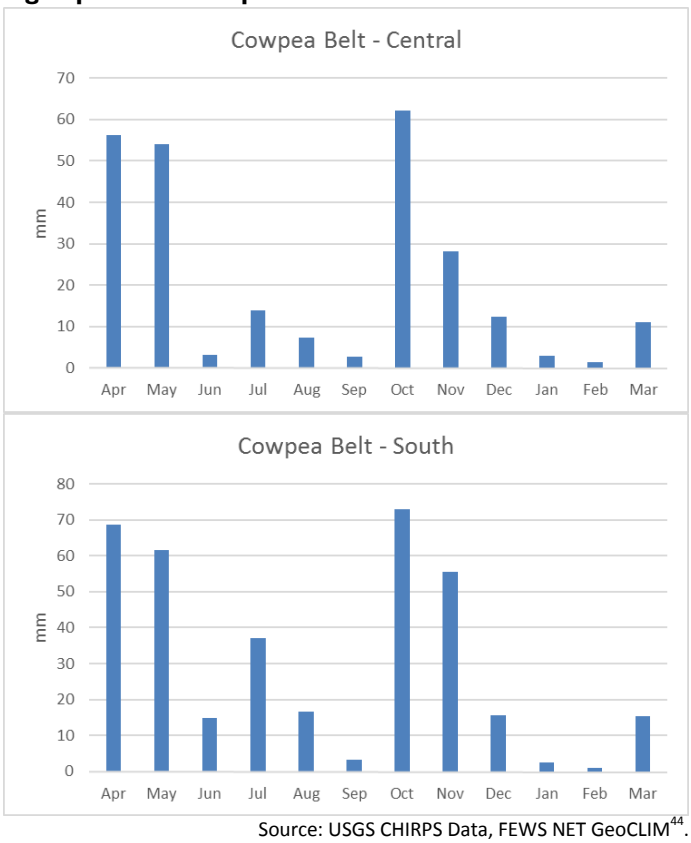
Central Somalia north of the Shabelle River is largely one flat plain located on a relatively high, arid plateau that slopes gently down to the Indian Ocean. Grass grows after the rains but during the dry season, the land is mainly covered with thick bush and thorn trees. East of the *Cowpea Belt* is a strip of land paralleling the coast that contains active sand dunes. However, in the cowpea belt itself, soils on the plateau are known locally as *carro-cad*, meaning "white soil". "White soils" are a mix of sand, organic matter and silt and are relatively fertile although the top soils are shallow.[43] Strong north-east winds blow across the plains from November-March then switch to south-west winds from May-October. The winds blow away shallow topsoil that has become exposed from over-grazing or land clearing, creating erosion. Day-time temperatures are hot with monthly mean maximum temperature of 29-32° Celsius. Hot weather coupled with low rainfall which, in this

[42] Peace is not assured, however, as clan fighting continues and much of Galmudug is broken into clan-based mini-states. Moreover, since the 2006 formation of Glmudug, piracy off the coast has increased and kidnapping and other violence has continued. In one survey of the population, 75% ranked security as their most pressing concern. Somalia Report. 2012*: Special Report: What is Galmudug?* April 8, 2012.
[43] Mohamed Ali Arkow. 1993: Development in a Fragile Environment. The Case of Somalia. *Refuge*. Vol 13, No.1 (April 1993).
The other types of soils in central Somalia include « dark soils » which are heavy clay and « red soils » which are predominantly sandy.

area, averages only 300-400 mm per year with significant variability from year to year. Although this area is not ideal for agriculture, households cultivate opportunistically. Moreover, farming families reportedly doubled from 1991-2000 due to an influx of people fleeing conflict (especially from the riverine areas).[45]

Infrastructure in this zone is minimal. In particular, there are very few services supporting livestock production or farming. Households use ground water and shallow wells for domestic use and for watering livestock. Better-off households own private *berkads* for watering their livestock. There are very few boreholes and those that were built prior to 1991 have fallen into disrepair.[46] The southern part of the zone is served by the seaport and airport in Mogadishu although warring factions in the city have often prevented safe access to these facilities. There are also two other seaports in the Middle Shabelle Region, both located in Balcad District, namely in Ceel Macaan and Ceel Caade. Cisiley airport also has provided air access when Mogadishu airport was closed. In addition, there is relatively good road access in the Middle Shabelle Region to Mogadishu city. The north of the zone is served by the port and airstrip in Hobyo in the neighboring *Coastal Deeh* zone. Road network in this northern part of the zone is poor. The major south-north road artery from Mogadishu to Bosasso (Puntland) through Belet Weyne passes north of the zone through *Hawd Pastoral*.

Figure 1: Estimated average rainfall in mm in Central Agro-pastoral Cowpea Belt



Source: USGS CHIRPS Data, FEWS NET GeoCLIM[44].

Due to the prevailing agro-ecology and climate, households practice shifting cultivation. The availability of land is not a constraint and farm sizes are relatively large (3-4 ha on average). A plot of land is typically cultivated for about 3 years. The family then clears a new plot of land and the old one is left fallow for several decades (30-35 years). To protect the fields from grazing livestock, thick fences are built using vegetation that is cleared from the fields. This has led to significant vegetation degradation over the years. Men and women clear the land, sow and weed using hand tools such as small axes and short-handled hoes. The principal food crop grown in this zone is cowpeas. During the lighter *deyr* rains, some sorghum is intercropped with the cowpeas as sorghum tolerates water stress reasonably well. During the more reliable *gu* rains, cowpeas are intercropped with watermelon. Some of this crop is sold. What remains is typically sufficient food to last about 3 months of the year. Cowpea leaves are also used as fodder, and some years, fodder crops may be grown as well. Crop cultivation faces many challenges in this area, chief among them low and erratic rain. Conversely, the wetter El Nino years bring crop pests and diseases which may wipe out the crop (e.g., in 1997-1998).

Livestock production in this zone is centered primarily on camels and goats. Cattle and sheep are also kept by households but in smaller numbers. Camel and goat milk and ghee are important food sources in season and camel milk is also sold. *Shoats* (sheep and goats) and cattle typically have a limited grazing range of about 20-30 kilometers from the village. During the rains, livestock usually move inland to take advantage of fresh vegetation and surface water. During the cool, dry,

[44] Based on USGS CHIRPS data, a combination of satellite-based Rainfall Estimates (RFE) and station data, with data extending more than 30 years (1981-2014). Source, FEWS NET and USGS.
[45] FSAU. 2000. Food Economy Baseline Profile. Central Agropastoral. FSAU/UN FAO.
[46] Arkow (1993) argues that despite the benefits of more accessible water, environmental degradation around these water points also became a significant problem.

hagaa season, herders shift with their livestock toward the coast. From January, as the rangelands get increasingly drier, the animals congregate near main water points. Camels are frequently on the move according to where browse can be found as well as according to seasonal migration patterns. Water scarcity is a major problem in this zone, forcing herders to travel long distances in search of water and browse. During the hot, dry season known in Somalia as the *jilaal*, camels are trekked several hundred kilometers in search of suitable rangeland. Adult men herd the camels during their long trek while women stay in the village with the children to cultivate their fields and guard the rest of the herd. Camels are particularly suited to this zone and survive droughts better than other types of livestock. During the 2010-2011 drought for example, by June 2011 it was estimated that camel herds had declined by 18% compared to herd declines of 50-60% for cattle, sheep and goats.[47] During years of poor rainfall, herders in the southern part of the zone, take their livestock to the Shabelle riverine area even though high concentrations of livestock there often lead to tension between farmers and herders.

One of the major pests in this zone is a type of fly known locally as *Riibi*.[48] The flies hatch nine days after the arrival of the first rains and can be fatal to livestock. Before the flies hatch, herders leave the flies' breeding ground – a 500 km long and 30-40 km wide area in the south-east of central Somalia – for other rangelands for a period of 40 days. After this time, the flies will have died. The out-migration of livestock for these 40 days is an ecological mechanism allowing plants to properly get established before herders return with the animals to graze. During this period in the wet season of out-migration, herders go either to the neighboring Hawd pastoral zone or to the coast.

Other income generating activities that supplement livestock and crop production are petty trade and seasonal migration to the coast for fishing (i.e., in Harardhere District).

Markets

Similar to other parts of Somalia, this livelihood zone has very poor road conditions that make overland transport difficult. Very poor roads translate into exorbitant prices for consumer items especially for staple goods such as rice, wheat and sugar. Most years, this region has one of the highest cereals prices in South/Central Somalia due to high transport costs involving long and rough roads. The shortest route to the zone from Mogadishu goes along the coast but this route is covered by sand dunes and hence not easily travelled.

Livestock and milk markets

Camels, cattle, sheep and goats are sold for local trade as well as for export in this agro-pastoral zone. Sheep and goats are sold in the highest numbers in the Central Region, including this agro-pastoral zone. Livestock that are sold for export pass through various market cities before being shipped to the Middle East, including from Mogadishu, Belet Weyne (Hiraan Region) and Dhusa Mareeb (northern Galagdud). Dhusa Mareeb city is a major supply market for livestock exported to the Middle East through Bosasso port in Puntland. Overseas demand peaks during major religious festivals (specifically the *Haj* and *Ramadan*). One study estimated that about 51% of animals exported to Saudi Arabia were exported during the *Hajj* season. When analyzed by type of animal, the estimate is even higher for *shoats.* About 90% of sheep and goats exports were estimated to occur during the *Hajj* (November).[49] Prices are usually lowest during the period of peak sales. However, there is also variation from year to year depending on whether animals are in good body condition or suffering from food and water stress. During major drought events, prices (and terms of trade) plummet hurting livestock owners. The livestock export trade in Somalia suffered under an export ban of live animals from the Horn of Africa to Saudi Arabia from 2000-2009 due to an outbreak of Rift Valley Fever. This ban greatly affected trade flows, volumes and prices during the nine-year period.

Milk supply peaks in late gu/early *hagaa* (June-August). At this peak period, a lactating camel can produce up to 5 L per day although during the *jilaal*, production can drop to as low as 1 L/day/camel. Herders sell milk in order to generate cash to

[47] FSNAU. 2011. *Post Deyr 2010-2011 Presentation. Central Region*.
[48] Mohamed Ali Arkow. 1993: Development in a Fragile Environment. The Case of Somalia. *Refuge*. Vol 13, No.1 (April 1993).
[49] Abbas, Yousif, Nur. 2014: *Animal Health Constraints to livestock exports from the Horn of Africa. Scientific and Technical Review*. December 2014, Issue 33-3.

buy sugar or other staples. The main constraint is access to markets. Although producers will travel as far as 25 km from village to a road-side collection point, there are heavy labor costs to such sales. Lack of labor to carry the milk on foot to collection points limits milk sales in this zone. Selling milk is usually the responsibility of women although men will carry milk to market hubs if they are traveling that way. Women are also involved in the sale of milk and ghee in destination markets such as Mogadishu.

Cereal markets

The *Central Agropastoral Cowpea Belt* is located in the Central Somalia trade basin. This trade basin suffers from poor road networks within the region although the major road artery from Mogadishu to Bosasso through Belet Weyne passes north of this zone. In 2011, several challenges were identified in Middle Shabelle Region, including parts of this zone. These challenges were three-fold: (1) high price volatility; (2) potential hoarding behaviors; and (3) Lack of cross-border trade to increase supplies of red sorghum and white maize during periods of food stress.[50] In general, the cross-border trade flow of cereals from Ethiopia into Somalia reaches only the northern sections of Galgadud and Mudug Regions but does not enter this zone. Instead, staple cereals are imported into the zone's markets from the sorghum and maize belts of Bay Region and Lower Shabelle Region through Mogadishu. Cereal prices typically double during the year from the post-harvest low price to the pre-harvest peak price. For instance, in 1996-1997, the value of staple cereals was 2 bags for an export-quality goat. However, during the *jilaal* season, the price increased to just one sack of staple grain for a quality goat. Notably, large scale import/export traders import rice, wheat flour, sugar and vegetable oil from overseas markets which are re-distributed within Somalia through a network of wholesalers and retailers.

Cowpea markets

Cowpeas are the major crop grown in this zone and there is a relatively high demand for the crop throughout Somalia as cowpeas are an integral part of the Somali diet. Somalia as a whole is legume-deficit and local supplies are typically out-stripped by local demand. The cowpea trade typically flows south from village and district markets to the Mogadishu market hub. Trade also flows north, including to Togwagaale for cross-border sale in Ethiopia. Locally produced cowpeas are also supplemented by beans coming in across the border from Ethiopia as well as lentils imported from Asia and the Middle East. Prices fluctuate seasonally and inter-annually following supply trends. Prices are low post-harvest in July and January, often reaching their lowest point after the *deyr* harvest in January but climbing to their highest level in June (prior to the *gu*). In the last 5 years, extremely high prices were recorded in 2011 during extreme food insecurity due to crop failure and extremely tight food supplies.

Casual labor markets

In a good year, livestock and crop production provide most of the food and income needed by agro-pastoral households in this zone. Some of the poor supplement their income with casual labor but the overall rate of casual work is relatively low. For those households who need this work, typically they look for local on-farm opportunities. Payment is usually in-kind and is paid in cereal rather than cowpeas.

Credit

Credit is taken seasonally by households from all wealth groups in food or cash. Credit is typically taken in advance of the harvest to purchase staple food. Debts are paid in part or in full post-harvest. Some debt is often carried over from year to year. However, households must pay a portion of the debt in order to ensure their line of credit for the following season. Small amounts of credit, taken seasonally, are available to both women and men. Women are often viewed as more reliable by shopkeepers due to better rates of repayment. Credit is taken from shopkeepers, traders, relatives and community

[50] WFP. 2011. *Food Market and Supply Situation in Southern Somalia*. October 2011.

leaders. The usual amount taken as goods is in the range of US $5-30. Higher amounts (i.e., more than US $30) are usually in the form of cash. A small premium is typically added to the price of the good taken on credit compared to its cash value.[51]

Conflict

Violence and civil insecurity have been widespread across southern and central Somalia since the collapse of Siad Barre's central government in 1991. When the Somali nation state disintegrated, much of south-central Somalia fragmented into territories controlled by different powerful clans. Warring factions have led to ongoing violence in both the cities and the country-side, and have led to widespread population displacement at various times. The driver of much of the ongoing conflict is control of resources, including permanent water points and pasture land. In Middle Shabelle Region, the dominant Abgal clan (a sub-clan of the Mudulood) was aligned with the warlords of northern Mogadishu. Thus, proximity to Mogadishu, and the violence associated with the city, has spilled into the rural areas of Middle Shabelle Region too.

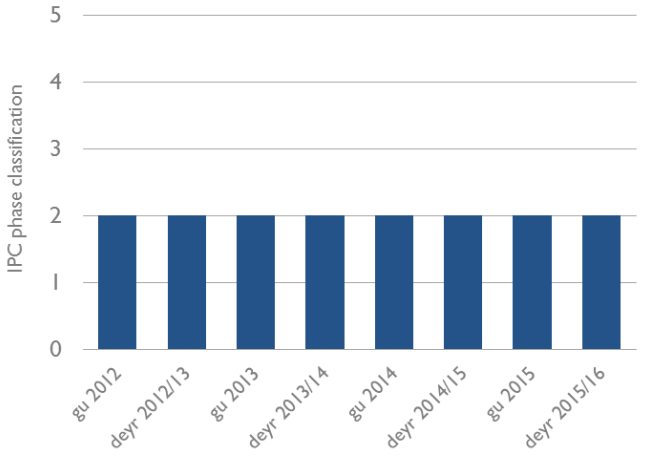
One particular problem in Galgaduud Region is landmines that were -planted years ago but continue to affect travelers in the region.

Off the coastal waters of Galgaduud and Mugud Region, piracy and kidnapping play a large role in the situation there. This directly affects the *Coastal Deeh Livelihood Zone*. However, it has indirectly affected the *Central Agropastoral Zone* as well by affecting port access and the flow of commodities both for trade and for humanitarian aid.

Food access history

This zone has been rocked by natural crises as well as by armed fighting between warring clans. In the last decade, 2010-2011 stands out as one of the worst recorded humanitarian crises in recent Somalia history. Drought played a large part in this famine but insecurity compounded the problem. All districts in this zone were affected by the 2011 famine. Food, nutritional support, water trucking, and health and hygiene support were all provided during this period.

Figure 2: Recent trends in IPC phase classification with 1 as worst and 5 as best



Source: FSNAU

Droughts are a regular event in the arid areas of the Horn of Africa, including in the *Central Agropastoral Cowpea Belt*. The extreme drought events of 1972-1973, 1983-1984 and 1991-1992 affected much of the continent and Somalia was no exception. Aid arrived but it often came after mortalities had begun to rise. The Horn of Africa was also affected by prolonged drought in 2005-2006. In central Somalia, drought events since 1991 have resulted in complex emergencies due to the combination of drought, insecurity and very high staple food prices. Moreover, in the *Central Agropastoral Zone*, political tensions and clan conflict had many negative effects on the emergency response. In particular, it was often difficult to access affected populations in rural areas due to insecurity. In addition, aid agencies were not able to have a regular presence on the ground. For example, by 2010, most UN and international aid agencies had been forced out of south-central Somalia due to the risk of violence and the lack of respect for international humanitarian law. Conflict also led to population displacement and restricted livestock movement to water and pasture. Trade disruptions had further effects such as high commodity prices when supply was blocked in Mogadishu or Bosasso port.

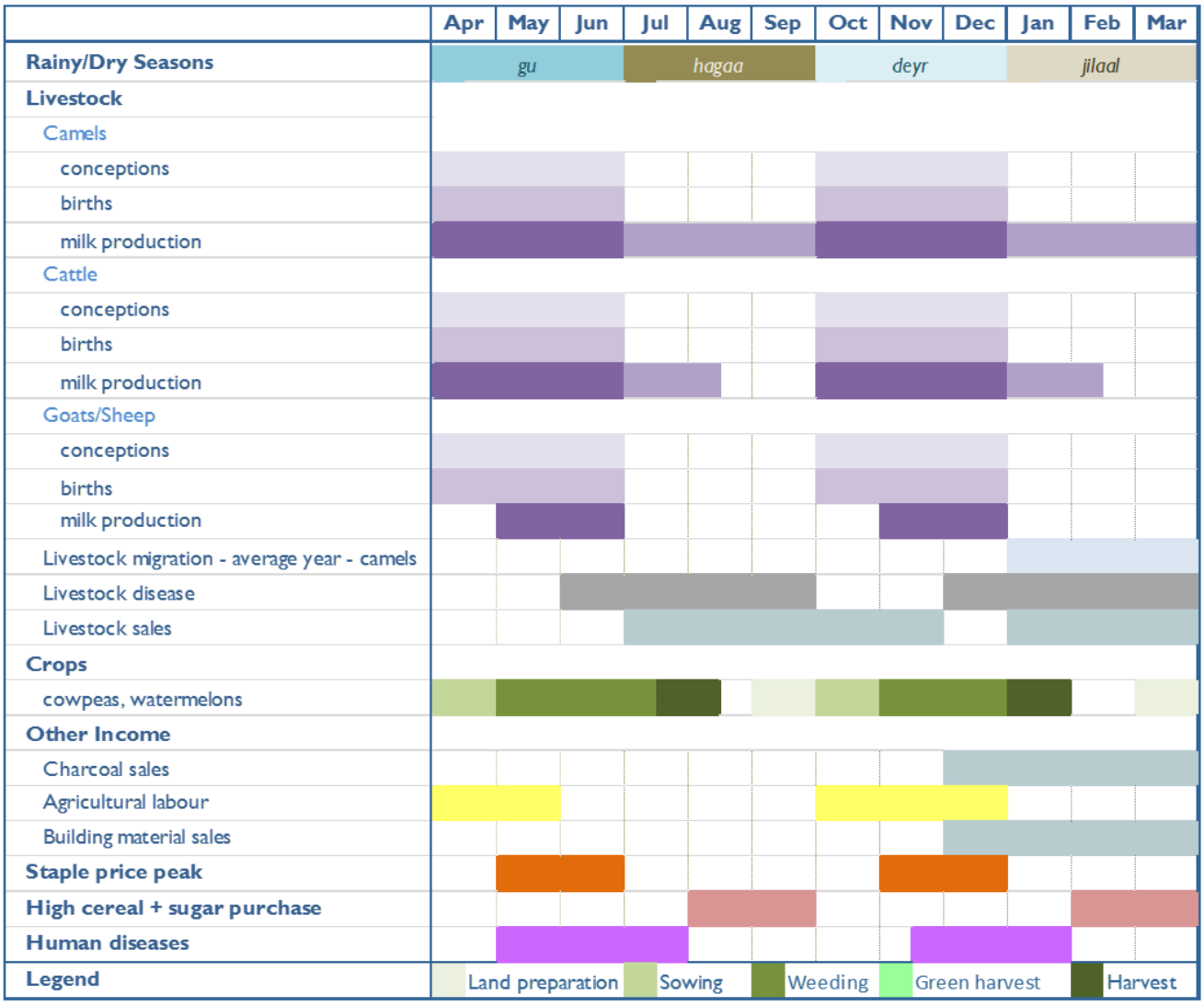
[51] The Somalia Cash Consortium. 2013: *Access to Credit and Unconditional Cash Transfers in South Central Somalia*. ACF, Adeso, DRC, SCI. February 2013.

The humanitarian community is once again responding to a deteriorating situation in much of Somalia. In the *Central Agropastoral Zone,* drought is the main reason why households are in danger of significant food gaps. Herders are in particular need of water and fodder for their livestock. However, the population group most at risk in Middle Shabelle, Galgaduud and Mudug Regions are the displaced. All three regions reportedly had high numbers of IDPs in late 2014.[52] Malnutrition rates, post-*gu* 2014, were rising amongst the displaced population in many centers due to a combination of food stress, disease outbreaks and poor health and hygiene facilities.

Seasonal calendar

Rainfall, although low, is bimodal, thus dividing the year into four distinct seasons. The main rains are the *gu* (April-June). Three months later, the *deyr* rains arrive (October-December). Between the two rainy seasons, there is the windy, dry season called the *hagaa* (July-September). Close to the coast, there are sometimes *hagai* showers at this time too. The hot, dry season is the *jilaal* (January-March).

Figure 3: Seasonal calendar for the Central Agropastoral Cowpea Belt Livelihood Zone



Source: FSNAU, CCP BSS SO10 1996/97.

[52] Galgaduud Region had a reported 120,000 IDPs; Middle Shabelle Region had 51,000 IDPs; and Mudug had 71,000 IDPs according the OCHA 2015 Report. OCHA. 2015: *Humanitarian Needs Overview – Somalia.* November 2014.

An important source of food and income for agro-pastoral households is milk and ghee. The milk season is associated with the rains as livestock births are higher when water and pasture are more plentiful. Thus, milk consumption and sales are relatively high during the *gu* and the *deyr* seasons. Milk production declines during the *hagaa* and *jilaal*. When own-milk supplies are high, households reduce their food purchases of cereals, sugar and vegetable oil. Moreover, during the rains, herders sell milk and ghee at collection points along roads or in market towns. With milk to sell, herders do not usually sell livestock during the period of the *gu*. Instead, herders let their livestock feed and fatten for sale in the dry season. During the *hagaa* and in the *jilaal*, traders or brokers purchase local animals and then "stock pile" them in readiness for export when demand peaks in the Middle East (July/August and October/November). Thus, livestock are sold seasonally to raise income for staple food purchase but sales are also fueled by export demand in the Middle East.

Cowpea production is rain fed in the *Central Agropastoral Livelihood Zone*. Clearing land for planting happens in March/April just prior to the *gu* rains. Once the rains arrive, cowpeas and watermelons are planted, then weeded during the growing season and finally harvested in July. During the *deyr* rains, sorghum is sometimes intercropped with cowpeas. The *deyr* harvest is in January.

The other important food and income sources in the *Central Agropastoral Zone* are wild foods and bush products. Wild foods are collected and eaten during the long, hot *jilaal* season (January –March). Wild leaves are sometimes gathered for cooking but more typically women and children snack on wild fruit (such as *hohob* or *jiib*) while collecting firewood or while herding their goats. Game meat is also more plentiful in the dry season. In addition, the dry season is the period when households collect poles and sticks to sell for construction. Moreover, they make and sell charcoal for income at this time too.

Different types of staple foods are purchased during the year. The peak period for food purchases coincides with the dry seasons when milk supplies decline. Cereal prices are lowest post-harvest in July and January then rise to their peak pre-harvest in May-June and November-December. High prices particularly affect the poor as they purchase cereal throughout the year as their wet season milk production is not very high

Wealth breakdown

Camels, goats and sheep are the main basis of wealth in this agro-pastoral zone. This mix of livestock helps herders to cope with regular droughts as well as to take advantage of overseas demand for the various types of livestock. Camels are best suited for the arid environment. However, small stock recover more quickly from droughts which allows households to have some income fairly quickly post-drought.

Table 2: Wealth group characteristicsin Central Agropastoral Cowpea Belt

	Poor	Middle	Better-off
Household percentage (%)	20-30	50-60	15-25
Household size (#)	7-8	7-8	7-8
Land holding (ha)			
Land area owned	1-2	3-4	1.5-2.5
Land area cultivated	1-2	3-4	1.5-2.5
Typical livestock holding (#)			
Shoats	20-40	50-70	80-150
Cattle	0-3	3-5	5-10
Camels	1-5	5-15	20-40
Other productive assets (#)			
Donkey/ox cart	0	0	0
berkad	0	0	1

Source: FSNAU CCP SO10 1996/97

Better-off households, who comprised about 15-25% of households in the reference year, owned large herds of both camels and shoats. This puts them in a relatively good position to cope with drought or other crises that hit. For instance, in 1996-1997, the better-off typically had 20-40 camels and 80-150 *shoats* as well as 5-10 cattle. Land size was a less important asset and better-off households farmed on average 1.5-2.5 ha.

Middle households owned about half the livestock of the better-off. Middle households are the largest wealth group in this zone, comprising an estimated 50-60% of households in the reference year. Their camel herds were typically 5-15 head in

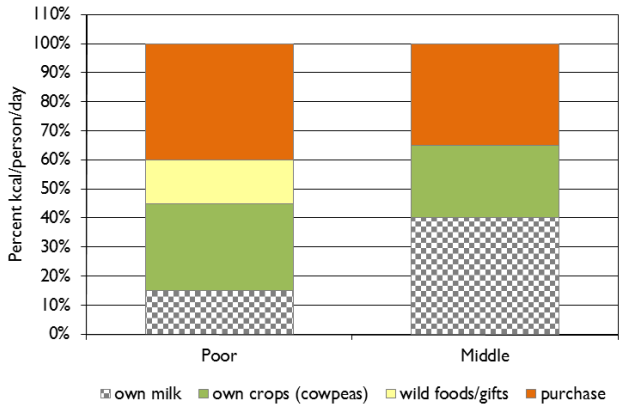
addition to 50-70 *shoats.* Cattle holdings were very small (3-5 cattle). In total, these livestock assets were sufficient to provide 70-80% of middle household annual income in 1996-1997. To compensate for smaller herds, many middle households farm more land than the better-off. In 1996-1997, their average land holdings were 3-4 ha.

The poor are those households who mainly keep small stock. Their goat and sheep flocks are about half the size of the flocks of middle household, and 20-40 shoats was the typical number in the reference year. The poor own very few camels (1-5) and even fewer cattle (0-3). However, as most of the poor have at least one milk camel and some female goats, milk and ghee still provided 10-20% of their food needs in the reference year. Traditional social support mechanisms are still active in this zone. Both middle and better-off households provide *zakat* to poor and very poor households. *Zaka*t is given after the harvest but gifts from relatives or community leaders may be given to the poor at other times of need too.

Sources of food and income and expenditures

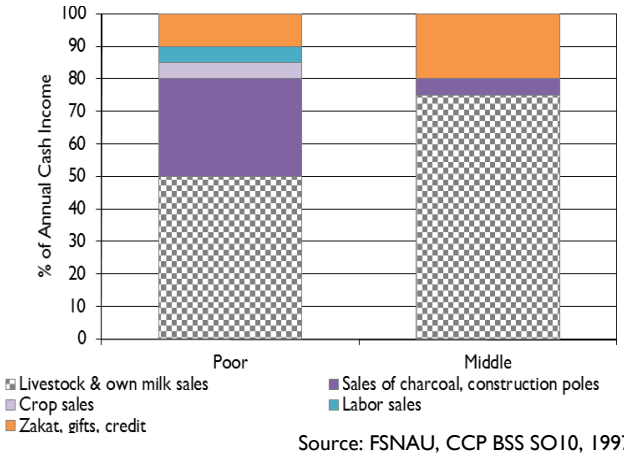
Agropastoral households secure a certain amount of food from livestock (namely milk, ghee and meat). They also grow some of their food; and they sell livestock and milk/ghee in order to purchase other staple food items. The difference between wealth groups is the proportional importance of these three primary food sources.

Figure 4: Food sources by wealth group, Central Agropastoral Cowpea Belt Zone



Source: FSNAU, CCP BSS SO10, 1997

Figure 5: Cash income sources by wealth group, Central Agropastoral Cowpea Belt Zone



Source: FSNAU, CCP BSS SO10, 1997

In 1996-1997, food purchases comprised an estimated 30-45% of the annual food needs of both poor and middle households. This translates into 3-5 months of food purchases. Middle households typically bought more wheat flour, sugar and cooking oil than the poor who concentrated on staple grain purchases (rice, sorghum, maize and a little wheat flour) as well as sugar and oil. Sugar is very important in the Somali diet as it is taken with tea which may be drunk by adults throughout the day. Tea even constitutes a meal, particularly the morning meal. It is particularly important in times of food stress when a family cannot afford to purchase much cereal. Given how important sugar is in the culture, when money is tight, agro-pastoral households often prioritize sugar purchase over cereal purchase.[53]

The greatest difference between wealth groups was the contribution of own-milk and ghee to household food needs. Middle households, with their greater numbers of camels and goats, produced sufficient milk to provide 35-45% of their annual food needs. This means that milk supplied 4-5 months of food energy if all the household ate was milk. In practice, households drink more milk during peak production periods (the *gu* and the *deyr*) and then smaller amounts during dry seasons when production is low.

[53] Montani, A., Omwega, A. 2002. *Food Utilisation in Somalia*. FSAU/UN FAO. September 2002, page 17.

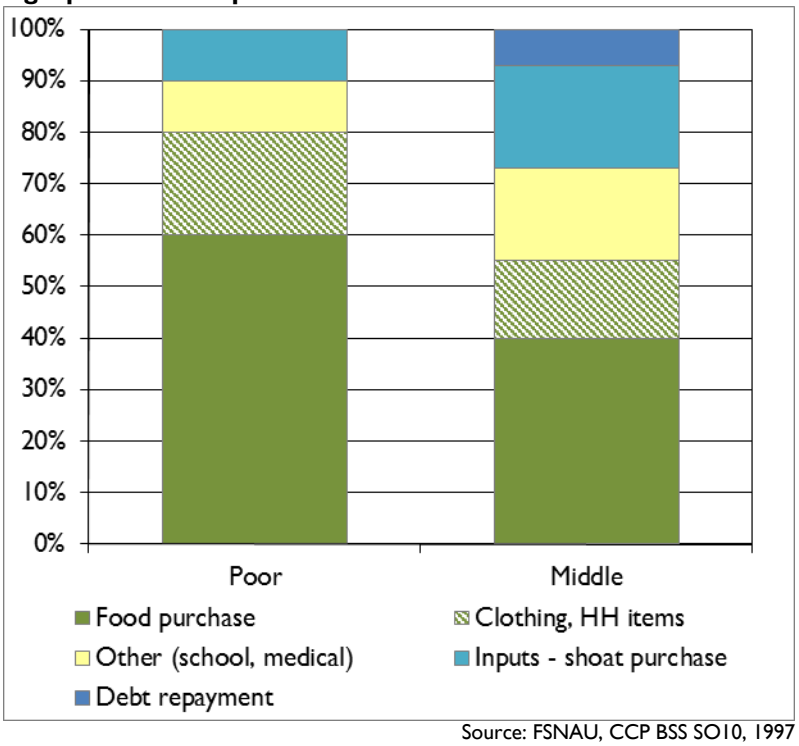
Poor households typically own only 1-2 milk camels. They also have a few female goats which produce milk too. This provides milk and ghee for 1-2.5 months of the year (10-20% of annual food needs). Camel milk is taken either fresh or sour. Goat milk is usually added to tea. For the poor, own-milk and ghee are an important supplement to staple cereals grown and purchased but their production is not sufficiently high for milk to be a dependable staple during the year.

Cowpeas and other crops that are grown by households in this zone are the third main source of food. For poor and middle households, own-crops comprised an estimated 25% (middle) to 30% (poor) of their annual food needs in 1996-1997. Not all cowpeas grown are consumed and in bad years, more are sold in order to buy needed grains. However, in a relatively good year, the yield is sufficient to provide households with food for a month or two after each harvest (July/August and January/February). Cowpeas are usually cooked with whole maize or sorghum and eaten with vegetable oil (traditionally sesame oil).

In 1996-1997, poor households did not meet all their annual food needs from own-production and food purchases alone. To make up the balance, they also gathered wild food and hunted game. The January-March *jilaal* season is when wild food, such as *gocoso* and *xabag* (wild gum), is available for home consumption. Often women and children eat wild fruits, such as *hohob*, while herding *shoats* or gathering fuelwood and water. Food gifts given to the poor as *zakat* also helped them to meet their food needs during the reference year. Together, wild food and gifts comprised 15% of the poor's annual food needs in 1996-1997.

Livestock and milk/ghee sales are the most important sources of income for all wealth groups in this zone. *Shoats* are the main type of animal sold during a relatively good year. Conversely, milk and ghee for sale comes from camels (goat milk which is reserved for home consumption). Livestock sales peak during two periods of the year in particular: around July during the month of Ramadan, and in October during the *Hajj*. At this time, demand is especially high in the Middle East which is a huge export market for livestock from Somalia. Milk and ghee are sold during the wet seasons (the *gu* and the *deyr*) when production is high. Both poor and middle households earn a substantial portion of their annual income from livestock production. However, the proportional importance differs. In 1996-1997, middle households earned 70-80% of their annual cash income from the sale of livestock, milk and ghee. Poor households, by contrast, earned about half this amount (45-55% of their annual cash income).

Figure 6: Allocation of expenditures by wealth group, Central Agropastoral Cowpea Belt Zone



Source: FSNAU, CCP BSS SO10, 1997

Middle households earned the balance of their cash income through the sale of bush products as well as by taking out some credit seasonally. For poor households, the sale of bush products is their second most important income source after sale of livestock, milk and ghee. This involves making and selling charcoal as well as collecting poles and sticks for use in the construction industry. The poor also collected wild foods such as *xabag* gum for sale. This aromatic gum is used by many urban Somalis as incense on Fridays; as chewing gum; and as traditional medicine. Income earned from these activities comprised 25-30% of their annual income in the reference year.

As a supplement to these two main sources of income, the poor also sell some cowpeas

and/or watermelons and look for work opportunities on-farm during the cropping seasons. Some of the poor also receive cash support either in the form of *zakat* or as a gift from a better-off relative. Together, these other income sources comprised 10-30% of their annual income in the reference year.

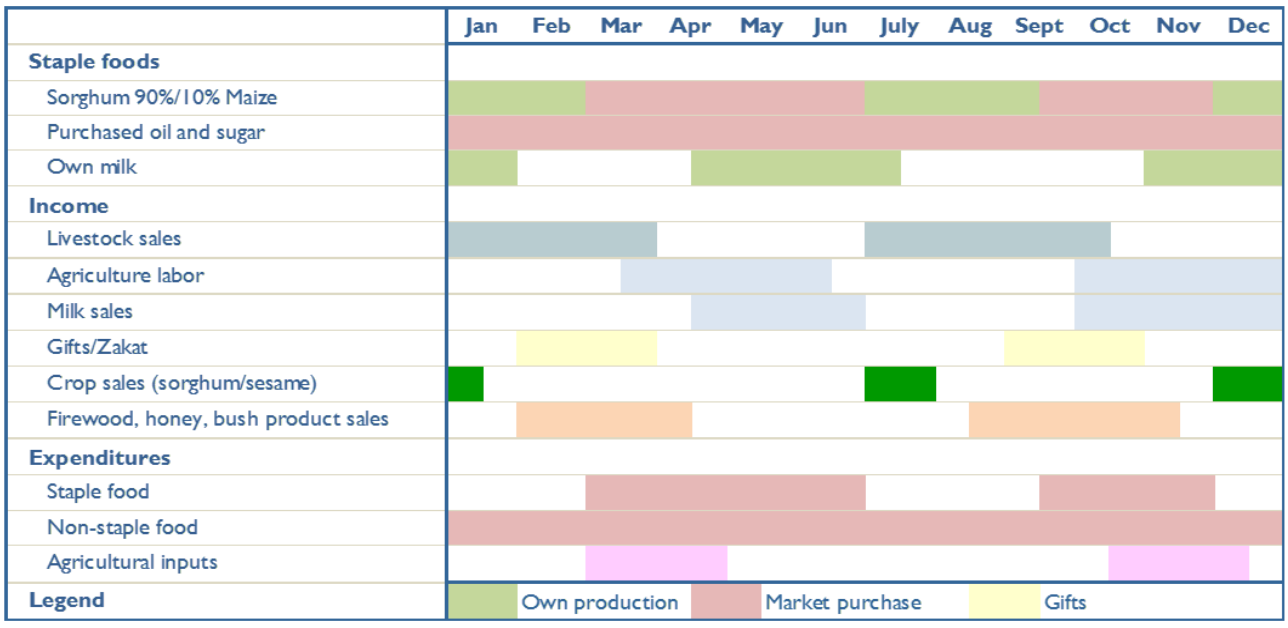
Relative to their income, the poor spent a large proportion of their money on food. For example, during the reference year, 60-65% of their annual expenditures went toward food. Much of this spending was on staple grains including sorghum, maize, rice and wheat flour. Sugar purchases were also very important as sugar is taken with tea. Often, tea with milk and sugar constituted a meal for the adults in the family. This left only about one-third of their income for other needs. In 1996-1997, about 10-20% of spending was on essential goods such as clothes, kerosene, salt and soap. A further 5-10% was spent on Qur'anic school and medicine. A small amount of cash was also used to purchase a few *shoats* in order to replace those sold and to ensure the growth of the flock.

Middle households earned more income than the poor. Hence the proportion that they spent on food was less. In 1996-1997, food spending comprised 35-45% of their annual expenditures. Staple grains, sugar and vegetable oil were the primary food items bought by middle households. The purchase of clothes and household items came to about 10-20% of the annual expenditures of middle households. 15-20% of expenditure was on education, medicine, animal drugs and gifts (the poor did not have gift and veterinary treatment expenses). Middle households also purchased shoats during the year (15-25% of annual expenditures). Their strategy was to sell older shoats and purchase (cheaper) young ones. The difference in cost was used to purchase needed supplies.

Calendar of major sources of food and income for poor households

The poor combine milk/ghee from their own camels and goats with cowpeas produced on their farm, and purchased food (cereals, sugar and oil). Small amounts of food from gifts and wild food collection also add up to their food energy during the year. In principle, the mix of livestock and crop production is a good seasonal balance. Milk and ghee peak during the rainy seasons.

Figure 7: Main components of the food access calendar for poor households in livelihood zone SO10 (Central Agropastoral Cowpea Belt)



Source: FEWS NET/FSNAU

By contrast, cowpeas, melons and sorghum are harvested at the start of the dry seasons in July and January. Moreover, wild foods are typically collected during the jilaal dry season. This seasonal balance still leaves some food gaps at key times of the year. In particular, for the poor, as they do not own many female camels and goats, milk supply in the wet season is not sufficient for all their food needs. The poor sell camel milk and ghee; they also sell shoats to earn income; but terms of trade are not favorable for consumers during the wet seasons when market supplies are at their lowest point and demand is high. Thus, the *gu* and the *deyr* are the periods of the year when the poor face the greatest food stress during the year.

Hazards, response, and monitoring variables

The cowpea belt is located in a semi-arid environment where low and erratic rainfall and dry spells are common. Rain failure over two or more seasons leads to drought, and this is the most frequent hazard that affects the zone. The zone suffers from a chronic lack of water and during periods of rain failure competition over increasingly scarce water and range resources increases, often leading to conflict. Resource-based clan conflicts have been heightened since the collapse of the central government in 1991. Historically, there have been several droughts that were associated with such high levels of livestock and crop losses that, when compounded with insecurity, led to catastrophic famines. The drought/famine of 2010-2011 was the most recent humanitarian crisis although 2015 has also been a year of high levels of need due to an El Nina and the resulting drought-induced crisis.

Livestock disease affects herders annually but widespread outbreaks occur periodically affecting much of the agro-pastoral population. Severe outbreaks, such as the outbreak of Rift Valley Fever in 1999, can lead to livestock exports bans with resulting impacts on herders' income. One of the longest bans in recent history lasted nine years from 2000-2009 when the RVF outbreak led Saudi Arabia to ban livestock exports from the Horn of Africa to the Middle East. Another pest in the zone is the *Ripii* fly. The Ripii fly causing fatalities in livestock unless they migrate away from the breeding area for 40 days.

Drought years are typically followed in this region with wetter-than-usual weather patterns. Crop pests and insects are associated with these wet years causing poor crop outcomes. The 1997-1998 period was remembered in particular for the proliferation of crop pests and insects, as well as their resulting damage. The 2015-2016 period is likewise predicted to be wetter than normal with flooding expected in the lower Shabelle and lower Juba Rivers, and a high incidence of insect and pest related damages.

In the early stages of drought, after one season of crop failure, herders typically turn to increasing their milk sales (i.e., during the *hagaa* season) to raise money to buy staple food. A second strategy is to burn and sell more charcoal as well as collect and sell other bush products. Collecting wild food for consumption and sale is a third strategy. In parts of Galgaduud Region (e.g., Hiinlabi, Warshuba and Ba'adweyn districts) rock salt is mined and sold in Mogadishu. Some poor households go in search for work in these rock salt mining areas during periods of food stress. Alternatively, for poor laborers in Middle Shabelle Region, there is limestone mining south of Beletweyne on the Shabelle River in Hiraan Region.[54]. Middle and better-off households have the further option of appealing to relatives to increase remittances. When these various options are exhausted, as happened during the 2010-2011 drought, households abandon their homesteads. 4 years ago, in the southern part of the *Central Agropastoral Zone*, people displaced because of the famine went to Jowhar city and Washiekh in Balcad District (just north of Mogadishu).

[54] Limestone is the main material used in making cement in Somalia.

Table 3: Coping strategies in response to shocks in Central Agropastoral Cowpea Belt

Very poor/poor	Middle/better off
• Consume less milk and sell more to purchase staples • Sell more charcoal • Collect more wild foods for consumption and sale • Collect and sell limestone and graphite • Look for work in fishing and salt collecting areas	• Consume less milk and sell more to purchase staples • Ask for more remittances from relatives living away • Collect more wild food for consumption and sale

Source: FSNAU CCP BSS SO10 1996/97.

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 Agropastoral Cowpea Belt Livelihood Zone*. These should be monitored to indicate potential changes to household economies, either through on-going monitoring systems or through periodic assessments.

Table 4: Key parameters to monitor in the Central Agropastoral Cowpea Belt

Item	Key Parameter – Quantity	Key Parameter – Price
Crop production	Cowpea production Watermelon production Red sorghum production White maize production	Price of cowpeas Price of red sorghum Price of white maize
Animal production	Yield – camel milk/ghee, season 1 + 2 Yield – goat milk, season 1 + 2 Supply of camels (export + local quality) Supply of goats (export + local quality) Supply of cattle (export + local quality)	Price of camel milk and ghee, season 1 + 2 Price of camels (export price + local price) Price of goats (export price + local price) Price of cattle (export price + local price)
Other	Supply of charcoal and fuelwood Supply of building poles Supply of farm labor (pre-harvest) Supply of credit	Price of charcoal and fuelwood Price of building poles Wages of farm laborers (pre-harvest)

Source: FSNAU CCP BSS SO10 1996/97.

Estimated population in the Central Agro-Pastoral Cowpea Belt (Zone SO10)

Zone	Region	District	Livelihood	Population 2012 UNFPA
Central	Mudug	Hobyo	Cowpea Belt	17,920
Central	Mudug	Xarardheere	Cowpea Belt	6,394
Central	Galgaduud	Ceel Buur	Cowpea Belt	13,981
Central	Galgaduud	Ceel Dheer	Cowpea Belt	35,215
South	Shabelle Dhexe (Middle)	Jowhar	Cowpea Belt	6,275
South	Shabelle Dhexe (Middle)	Adan Yabaal	Cowpea Belt	14,381
South	Shabelle Dhexe (Middle)	Balcad	Cowpea Belt	19,770
South	Shabelle Dhexe (Middle)	Cadale	Cowpea Belt	27,193
SO10 Population 2014 total				**141, 129**

SOUTHERN INLAND PASTORAL (SO11)

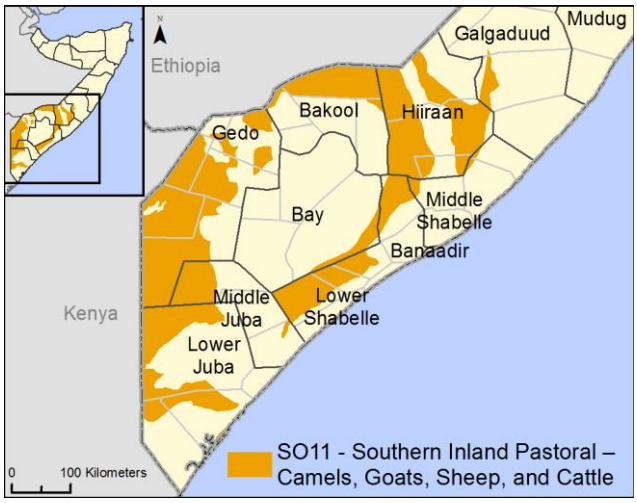
General livelihood zone description

The *Southern Inland Pastoral Livelihood Zone* (SO11) covers all areas of southern Somalia that are not suitable for crop production, including parts of Gulgaduud, Hiraan, Shabelle (Middle and Lower, Bay, Bakool and Gedo regions. The boundaries of the current zone have expanded to encompass two former livelihood zones: the *Dawa Pastoral Livelihood Zone* and the *Southern Inland Pastoral Zone*. The most recent population estimate for this zone is 546,340 (UNFPA 2014).

Table 1: Summary of data supporting the Southern Inland Pastoral livelihood profile

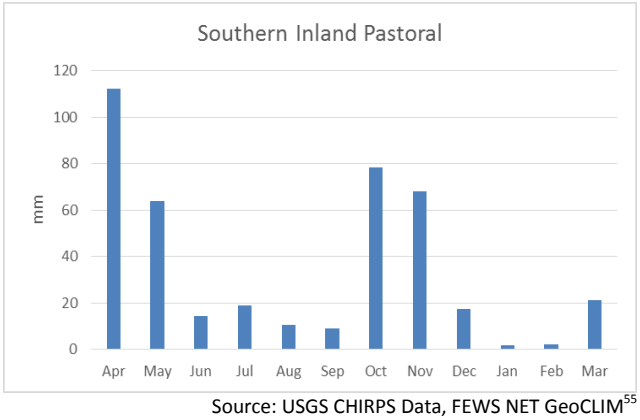
Field data collection	2009 (SIP), 2012 (Dawa)
Consumption year	April – March
Reference year	April 2006 – March 2007 SIP April 2010 – March 2011 Dawa
Initial estimated validity	Through 2012

Source: FSNAU



This is a semi-arid zone covered with dense shrubs interspersed with grazing areas comprised of savannah grasslands. The stony soils that cover this zone are characterized by limited root depth and low moisture availability. Rainfall is unreliable and characterized by large inter-annual variability. Based on an analysis of long-term (over 30-year) rainfall data, average annual precipitation levels range from 230 – 420 mm in this zone, with the central areas of the zone receiving lower levels of rainfall in general. As shown in Figure 2, there are two rainy seasons, with the first (the *gu*) traditionally bringing more precipitation than the second (the *deyr*). The expected seasonal rains, however, have shifted to some extent in the past years and recent years have seen heavy deluges occur during the *deyr* season. Acute water shortages are common, particularly during the long dry season (the *jilaal*) from January through March. Local pastoralists depend heavily on the *gu* rains to replenish local water sources and to regenerate pasture and browse for their livestock. The *deyr* rains are crucial as they help people to consolidate any gains they have made during the *gu* season. People obtain water for drinking and washing from shallow wells, rivers and individually-owned small concrete catchments (*wara*).

Figure 1: Estimated average monthly rainfall in mm in the Southern Inland Pastoral Livelihood Zone



Source: USGS CHIRPS Data, FEWS NET GeoCLIM[55]

Livestock production is the basis of the local economy and households rely heavily on camels, goats and sheep to meet their food and cash needs. Cattle are not kept in large numbers because water resources are insufficient to maintain substantial herds of cattle. Camels are the most valuable livestock in the herd, and greater numbers signify greater wealth. These drought-tolerant animals provide milk for consumption and sale, and they are also the most valuable animal to be sold on the hoof. Pack camels and donkeys are important for the transportation of household

[55] Based on USGS CHIRPS data, a combination of satellite-based Rainfall Estimates (RFE) and station data, with data extending more than 30 years (1981-2014). Source, FEWS NET and USGS.

essentials, calves and sometimes people during migration and visits to urban centers. In addition to their value derived from sales, goats and sheep are slaughtered during religious festivities for household needs and to serve important guests. Women are caretakers for the small stock (sheep and goats) while men manage the large stock (camel and cattle). Livestock graze and browse on communally owned and managed rangelands. In years when rainfall is adequate, access to these areas is not restricted, and shared peacefully. However, when the rains fail, or in times of insecurity, competition for these scarce rangeland resources can lead to violent conflicts.

All households meet their food needs by purchasing grain, oil and sugar from the market, and supplementing this with milk and meat from their own animals. The cash needed to by food and other essential items is generated through the sale of livestock, with livestock products (milk, ghee, meat) sales bringing in almost all the cash income earned by middle and better-off households in the reference year. Most goats are sold to exporters who sell on to the Gulf countries. Camels are sold to Mogadishu market. Households from the poor wealth group complement their livestock sales with self-employment activities and small amounts of food aid. The population in this livelihood zone is highly mobile and permanent settlements are not common. Animals are moved throughout the year to find pasture and water. In a normal year, this migration tends to remain within the livelihood zone boundaries. Camels are taken farther away during the dry season to higher land where grazing is better and there are permanent water points. Men are responsible for moving the camels in the dry season. Older sons move the cattle and follow opposite pathways; they are taken farther away in the wet season and brought closer to temporary settlement areas during the dry season. Women stay with the children and smaller animals around temporary homesteads; women are responsible for milking the goats and taking care of the children; they also manage daily water collection activities. Children attend local koranic schools and collect gums and resins, which are sold during the dry season. During droughts, people from this zone move their animals to distant water sources and pasture in Lower Juba, Kenya (through the Garissa market) or Ethiopia.

Mandera, in Kenya, is the main regional livestock market for areas near the Kenyan border in Gedo regions, while areas closer to Juba access Garissa and Dadaab (Kenya border) as an alternative market; Mogadishu acts as the conduit for the eastern areas of the zone. Local market towns offer up a source of demand for milk and ghee, which provide significant income for the rural population. There are strong links between this livelihood zone and the neighboring southern agro-pastoral and Juba riverine zones; shared water points, pasture resouces and markets all serve to connect local pastoralists to the wider economic geography.

Drought is a recurrent hazard in this zone and when it occurs, it creates significant strain for the local population, depleting rangeland and water resources and increasing the risk of disease for livestock. In response, this mobile population migrates with their livestock to areas where pasture and water can be found. During the reference year, for instance, pastoralists in northern Bakool and parts of Hiran moved across the border into Ethiopia, while others in Hiran and the Shabelles crossed into neighboring agro-pastoral areas. Poorer pastoralists try to increase self-employment activities, such as selling firewood and charcoal or collecting and selling gums and resins; they also look to support from better off neighbors and relatives. Those with more livestock draw down on their herds to raise the cash needed to buy more food. Households in this livelihood zone live with a chronic shortage of access to safe water, poor human health and veterinary services and infrastructure, inadequate education, sanitation and hygiene services.

Markets

Notable market points for this livelihood zone are Wanlaweyn (Lower Shabelle), Ceel Barde (Bakool), Garbaharay (Gedo Region), Buale (Middle Juba) and Afmadow (Lower Juba). The roads here, as in most other parts of Somalia, are under-developed, and those that do exist have not been well maintained. However, for the most part pastoralists living here travel by foot, using pack camels and donkeys to transport goods from markets, and water from long-distance water points during the dry seasons. Pastoralists rely heavily on the staple grain market to source a large portion of their annual food, and they buy sugar and oil as well. Other essential items, such as clothing, soap, batteries, salt and torches are obtained by sending a family member to one of the major towns with a pack camel and saved-up cash.

Livestock Markets

Livestock is the most important commodity sold in this livelihood zone, and people's livelihoods depend on access to markets. Road conditions are poor in this livelihood zone. Two main roads exist within the Bay and Bakool regions, where this livelihood zone is situation, but for the most part the pastoralist households that inhabit these regions do not utilize the tarmac thruways. People make their way to markets by foot, employing the use of pack camels and donkeys to transport cereals and other essential goods back from market along the dirt roads and footpaths that criss-cross the landscape. Although trading occurs throughout the year, most takes place in the dry season because the rainy season is a time when people migrate to pasture-rich areas, which are often at quite a distance from the main markets.

In the Bay region, Baidoa is the primary market for goat and cattle traders and in Bakool, Hudur, Burdhuhunle, El Berde and Tieglow serve as the region's major livestock markets. These central markets also provide the main nexus for households to purchase food and non-food items such as clothes, kerosene, salt and soap. Secondary markets located between the rangelands and the main markets are used only when necessary as they are far away and usually offer less profitable terms of trade. Major intermediary markets for Bay and Bakool's livestock trade are Baidoa, Beletweyn and the Kenyan town of Garissa. From Baidoa, trekkers will transport cattle through Qansah Dhere, Bardera, and Afmadow and eventually to Garissa. From Hudur, cattle travel through Mandera, Wajir and then to Garissa. Export quality cattle and goats are also trekked from main markets to Beletweyn town of Hiraan region from which point they are transported to Bossasso and Berbera ports to the Gulf countries. Camels are exported to both Kenya (Mandera and Garissa) and the Gulf States (through Mogadishu). But the primary destination for camels is Mogadishu, where demand for camel meat is always high.

Cereal markets

Staple grains flow into this zone from neighboring agro-pastoral areas, especially the *Bay-Shabelle High Potential Agro-pastoral Livelihood Zone*. There is not much in the way of a local labor market as most pastoralists are fully engaged caring for their own livestock or – on the poorer end of the wealth spectrum – pursuing self-employment activities such as gathering firewood or gums and resins, such as Frankincense, during the dry season.

Terms of trade, as measured by the amount of grain that can be purchased with the proceeds from the sale of a goat, fluctuate throughout the year and year to year, depending on local climatic and market conditions. In general terms of trade are most favorable in November and December and least favorable in June and February. In a year like the reference year this spread can be quite marked, with a goat worth as little as 45 kg of sorghum in June and as much as 110 kg in December. Increased demand, due to the Hajj, Islamic festivals and the exchange rate are important determinants of price changes.

Credit

Most households take out credit from traders and shop-keepers in the main towns and villages. Better- off households typically take out credit to purchase additional livestock. Poorer households take out loans to cover their immediate food needs, which means they have an increasing debt burden during the hunger seasons when terms of trade are poor and during droughts when livestock production declines.

Conflict

The collapse of the central government in 1991, when Siad Barre was ousted from Mogadishu by forces of the United Somali Congress (USC), began a period of conflict, instability, food crisis and severe food insecurity that continues today. In the months following the collapse, the country was torn apart by clan-based warfare and factions competing for what remained of the state's assets and power. Four months of fighting in Mogadishu alone in 1991 and 1992 killed an estimated 25,000 people, 1.5 million people fled the country, and at least 2 million were internally displaced. At the same time a drought that year served to exacerbate the effects of the destruction of social and economy infrastructure, asset stripping,

'clan-cleansing' and market disruption and by the end of 1992 an estimated 250,000 people had died. The worst-affected came from areas of the south where waves of invasions by armed militias occurred.[56]

From 2006 to 2012 the country became engulfed in the 'global war on terror', as various factions tried to consolidate power in the vacuum of leadership while at the same time a growing influence from Islamist military groups caused Ethiopia to invade Somalia, leading to increased radicalization of some members of the Union of Islamic Courts (ICU) and the emergence of *Al-Shabaab* as a major force in Somalia. This has caused increasing disruption throughout the country, and especially in southern Somalia. The three years from 2006-08 were catastrophic for Somalis. Military occupation, a violent insurgency, rising jihadism and massive population displacement reversed the incremental political and economic progress achieved by the late 1990s. During 2007 alone fighting between the Transitional Federal Government (TFG) and the insurgency resulted in the displacement of up to 700,000 people from Mogadishu. In 2011, the plight of the Somali people was exacerbated by the worst drought in six decades, which left millions of people on the verge of starvation and caused tens of thousands to flee to Kenya and Ethiopia in search of food.

The formation of a post-transition Federal Government brought back some stability to the country in 2012. However, fighting over territory in southern Somalia continues to this day as the National Armed Forces (with support from the African Union Mission in Somalia/AMISOM) try to regain strategic cities and towns from *Al Shabaab*. Frequent market disruptions have resulted from continued conflict as commercial supply routes are interrupted. In turn, supply shortages have led to price increases for local producers and consumers.

Throughout the conflict there have been ongoing contradictions between a centralized state authority, a fractious kinship system and the Somali pastoral culture in which power is diffused. Most areas in this livelihood zone have been directly affected by the conflict. Bay and Bakool Regions in general, and Baidoa in particular, were arguably the worst hit during the first and second decades of armed conflict.[57] For instance, in early 2009, the al-Shabaab group launched a major offensive to take Bakool Region. Battles for control over Mogadishu and Baidoa, as well as battles for control over much of the territory in southern and central Somalia continued into 2010. Mogadishu itself remained the center of fierce battles until 2011 when the Transitional Federal Government and AMISOM troops won control of the city from Al-Shabaab.[58] Subsequently, Al-Shabaab retreated to Baidoa, which meant continued insecurity in Bay and Bakool Regions.[59]. Moreover, main roads were risky for traveling or for transporting goods due to continued attempts by allied troops to oust Al-Shabaab. Baidoa was eventually taken from Al-Shabaab in February 2012, and in 2015, AMISOM, with support from Ethiopian National Defense and Kenyan Defense Forces, carried out a major operation to force *Al-Shabaab* out of its last strongholds in southern Somalia, including Baardheere. However, *Al Shabaab* are still active in the area carrying out guerrilla style attacks in Baidoa and along the main Baidoa-Mogadishu road. Several administrations recently created by clan militias loosely allied to the TFG are fighting back against *Al-Shabaab* insurgents in several parts of Somalia including lower Shebelle, Lower Juba, Gedo and Bay and Bakool areas.

Food access history

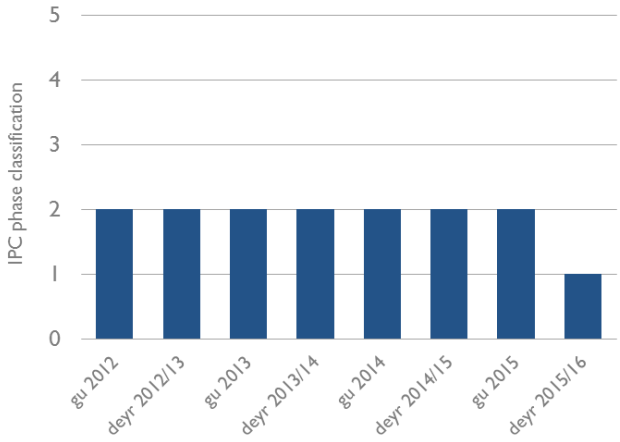
The effect of ongoing conflict has been devastating over the years. When compounded by drought and inflation it has almost always resulted in extreme food insecurity. Conflict has also meant the collapse of industries; the breaking down of infrastructure; the dissolution of state services; disruptions to trade, supply shortages, price hikes; population displacement; and violence against women. Farms have been abandoned and livestock diseases left untreated as herders lacked access to veterinary care. All these effects have had devastating consequences for the food and livelihood security of the local people. From 2003 to 2006, drought was recurrent for a significant portion of this livelihood zone, depleting

[56] http://www.c-r.org/accord-article/endless-war-brief-history-somali-conflict, Sally Healy and Mark Bradbury
[57] OCHA. 2002: *Internally Displaced Persons. Combined Report on Somalia* 1. 1 August 2002.
[58] AMISOM stands for the African Union Mission in Somalia
[59] Al-Shabaab continued to lose territory over the next couple of years. In late 2012, for example, Kenyan troops assisted the Somalia National Army and AMISOM to take control of Kismayo from Al-Shabaab. This move cut off a major source of income for Al-Shabaab: the export of charcoal.

rangeland and water resources, increasing the risk of endemic livestock disease and reducing overall options for accessing food and income.

Throughout the conflict, timely and effective interventions have been severely constrained due to insecurity. A major international emergency effort ensued in response to the country-wide famines of 1991-1992, 2005-2006 and 2011, and in 2008 and 2009 the country received the largest amounts of international food aid since the famine of 1992-93, however in late 2009 all US-funded food aid *to Al Shabaab*-controlled southern Somalia was halted. With continued insecurity in southern Somalia, the inability to provide adequate services and humanitarian support in times of drought has led to major displacements of populations and a major refugee crisis. For example, during the May to July 2011 period around 46% of the refugees who fled into Ethiopia are estimated to have come from Bay Region in Somalia.[60]

Figure 2: Recent trends in IPC phase classification, with 1 as best and 5 as worst

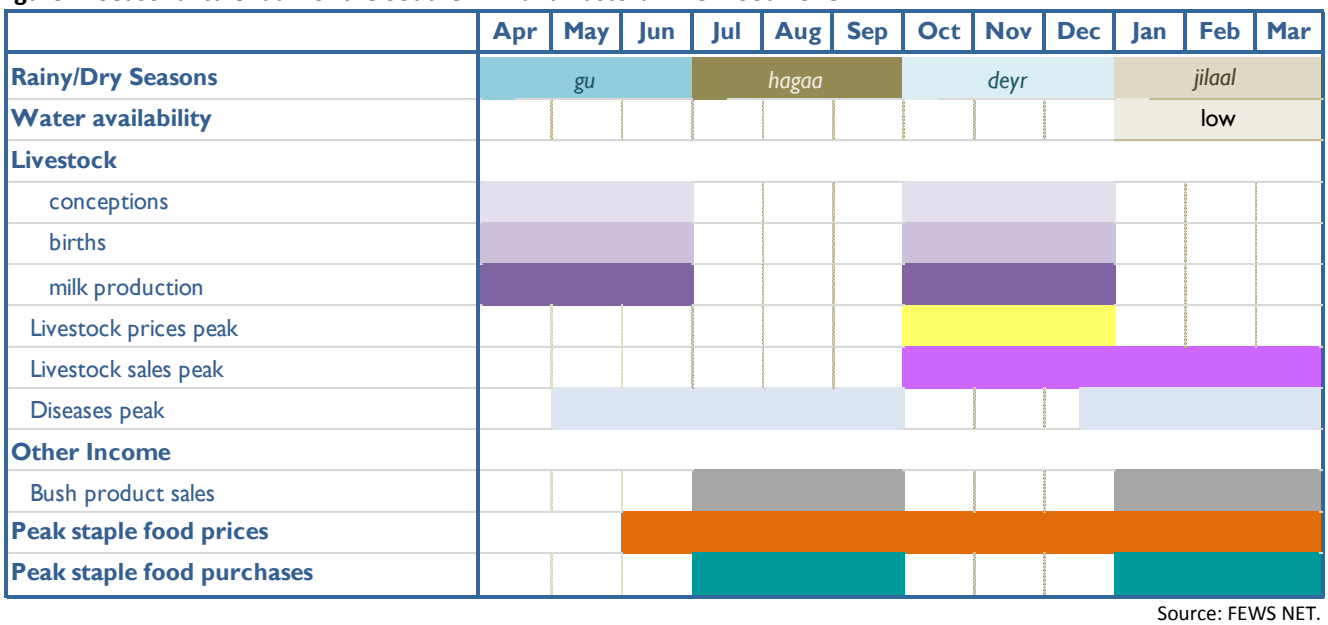


Source: FSNAU

Seasonal Calendar

The availability of water in the livelihood zone determines much of the seasonal activity. Surface water peaks in May and October, which increases pasture and browse availability. Livestock births tend to peak when water and fodder are available, giving new mothers and their young the best chance for survival. This is also when milk yields are highest. *Gu* season rainfall is usually higher than the *deyr* season, which means that pasture conditions and corresponding milk yields tend to be higher during the first season as well. Milk supplies are determined by the number of animals that conceive and give birth and the quality of the pasture and water sources during the lactation period. Births are timed to take place when

Figure 2: Seasonal calendar for the Southern Inland Pastoral Livelihood Zone



Source: FEWS NET.

[60] FEWS NET, *Internal and External Displacement among Populations of Southern and Central Somalia Affected by Severe Food Insecurity and Famine during 2010-2012*, 2014

pasture conditions are at their peak during both the *gu* and *deyr* seasons. Milk is, therefore, available throughout the year, although yields are higher in the *gu* season than the *deyr*. With milk availability being slightly lower during the *deyr* season, milk prices are higher at this time. Animals are moved throughout the year to find pasture and water. In a normal year, this migration tends to remain within the livelihood zone. Camels are taken farther away during the dry season to higher land where grazing is better and there are permanent water points. Men are responsible for moving the camels in the dry season. Older sons move the cattle and follow opposite pathways; they are taken farther away in the wet season and brought closer to the settlement areas during the dry season. Women stay with the children and smaller animals around the homestead; women are responsible for milking the goats and taking care of the children; they also manage daily water collection activities. Children attend school as well as collecting gums and resins, which are sold during the dry seasons. The dry seasons are when people need to purchase more food to supplement waning milk supplies. These periods also tend to be when diseases are higher and the family budget is stretched to meet food and medical needs. The second dry season (the *jilaal*) is especially difficult, and is a time of overall hardship throughout the livelihood zone.

Wealth Breakdown

Livestock ownership, and particularly the ownership of camels and goats, determines wealth in this livelihood zone. To a certain extent wealth is also related to household size, since larger herds require more people for herding and overall management; therefore, in order to be a better off household, you also need to have more people. Also, the better off you are, the more people you can take care of. Poorer households tend to be monogamous, but those in the middle and better off wealth groups tend to be composed of more than one wife.

Table 2: Wealth group charactersisticsin Southern Inland Pastoral

	Poor	Middle	Better-off
Household percentage (%)	30 - 40	40 - 55	10 - 25
Household size (#)	6 - 7	7 - 8	8-10
Typical livestock holding (#)			
Camels	6 – 20	20 - 40	40 - 70
Cattle	1 - 3	10 - 14	10 - 18
Goats	25 - 30	50 - 90	90 - 100
Sheep	10 - 13	25 - 35	35 - 65
Donkeys	0-2	0-2	0-2

Source FSNAU, 2009

The main livestock owned are camels, goats and sheep, with cattle less important overall. In the reference year a typical better off household owned 40 - 70 camels, 90 – 100 goats, 35 – 65 sheep and 10 – 18 cattle. Poor households, on the other hand, owned around a quarter as many livestock, which limits their access to milk, meat and cash income from livestock sales. Women and children typically care for the smaller livestock species, especially goats and sheep, whereas men take care of the camels.

The wealthier you are, the more you depend entirely on your livestock to meet all of your food needs (either directly through milk and meat, or indirectly through selling milk or animals to generate cash to buy food) and your cash needs. The poorer you are, the more likely you are to have to find cash options outside of your herd, and to rely on gifts from households that are better off than you. This means that poor households are often stretched, trying on the one hand to manage their herds, and on the other, forced to spend their time collecting gums and resins and firewood.

Poorer households receive support from better off households in the form of *zakat* – gifts of live animals (usually goats and sheep) given during the first month of the Islamic calendar (January). These gifts are not a guarantee, however, and depend on better off households having surplus animals to offer. Thus, in years following a drought, when conception rates have been poor, gifts are reduced and sometimes eliminated. Remittances are generally not common in this livelihood zone.

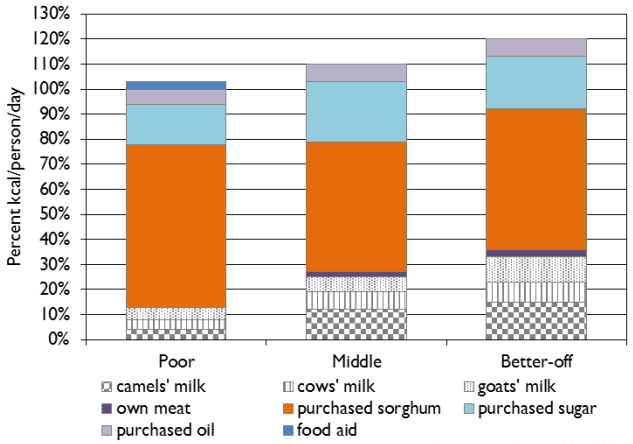
Sources of food and income and expenditure patterns

Own milk and meat along with purchased food and food aid comprised the only three sources of food for households in this livelihood zone in the reference year. A diet of milk, small amounts of meat, grain purchased from the market, and oil and sugar is standard in this livelihood zone. Milk supplies peak and wane seasonally following the rainfall patterns, and the patterns of conception and birthing. During the rainy seasons milk yields are higher due to improved pasture condition; also

at these times most animals give birth, which induces lactation, providing milk for both the young animals and the household. Camels provide the bulk of the household milk, followed by cows and goats. Poor households have around 1 camel milking throughout the year, providing around 2 liters of milk per day during the *gu* rainy season, dropping down to 1 liter a day in the *deyr* season. This brings in a total of around 550 liters a year; around 50% of this is sold, and the rest is consumed (either as fresh milk or ghee), covering just under 5% of the household's required calories over the year. An additional 270 liters is obtained from their 1 milking cow, and around 285 liters from around 8 milking goats. All of the cow's and goats' milk is consumed, with both sources providing an additional 9% of annual calories. Middle and better off households have 4 - 7 camels, 2 - 4 cows and 17 - 35 goats milking. After sales, camel milk contributes 12 - 15% of annual calorie requirements for these households; cow milk and goat milk combined provide 15 - 20%. Meat from animals in the herd that die naturally, or are slaughtered for festivals or celebrations, offers up a small contribution of additional calories.

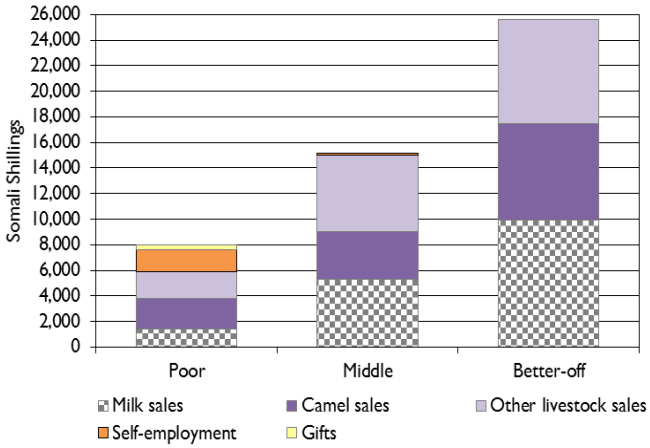
Food purchased from the market covers the remaining needs for households in this zone. Sorghum is the main staple grain in much of the zone, with wheat flour, maize and rice purchased as well; the amount of grain purchased is partly a function of how much milk is available. In bad years, households buy more grain to make up for declines in milk production. Staple grains covered 50 - 65% of the annual food needs of households during the reference year. Oil is typically purchased more heavily during the dry season to make up for the lack of milk at these times, although better off households may purchase oil throughout the year. Households buy and consume sugar regularly throughout the year. Better off households consume almost one kg a day of sugar covering over 20% of their minimum calorie requirements through sugar; poor households consume around half this amount, but with their smaller household sizes, the calorie contribution made by this sugar is still over 15% of minimum requirements.

Figure 3: Food sources by wealth group, Southern Inland Pastoral Zone



Source: BSIP BSS, 2009

Figure 4: Cash income sources by wealth group, Southern Inland Pastoral Zone



Source: BSIP BSS, 2009

Livestock are the primary source of cash income in this zone; camels' milk is sold in significant amounts, and camels, cattle, goats and sheep are all sold live. Middle and better off households depend entirely on cash generated from their own herds. Poor households need to supplement their income with self-employment activities and gifts. Overall, better off household cash income in the reference year was more than three times higher than poor household annual income.

Camels are important not just as a source of milk which is both consumed and sold, but also because they provide cash to households in the form of direct livestock sales. Better off households sell around 2 camels a year, bringing in 4,300 shillings from camel sales alone. Middle households sell one camel and poor households sell none. Cash from camel sales accounts for around 20 - 30% of middle and better off household cash income. Cattle are also sold, but much less frequently. Goats (male bucks) and sheep (male rams), however, provide important cash income for poor households, who sell around 4 goats a year and 4 sheep. Goat and sheep sales combined comprise around 20 - 25% of cash income for poor households.

The remainder of poor household income is made up through self-employment activities and gifts. Self-employment includes collecting and selling gum Arabic and Frankincense, poles for construction, and firewood. Self-employment brings in around 20% of annual cash for poor households; gifts of cash from better off neighbors and relatives makes up the last source of cash income, providing a very small amount.

Taking a look at expenditure, we see a high proportion of annual cash spent on food (both staple and non-staple) by poor households. This is because they have to make up more of a gap since they produce less milk. But it is also important to keep in mind that these graphs show the relative proportion of cash spent on food; in absolute terms better off households spend more on food, because they have larger households. However, because their cash income is over three times higher, the relative amount spent on food is lower for better off households.

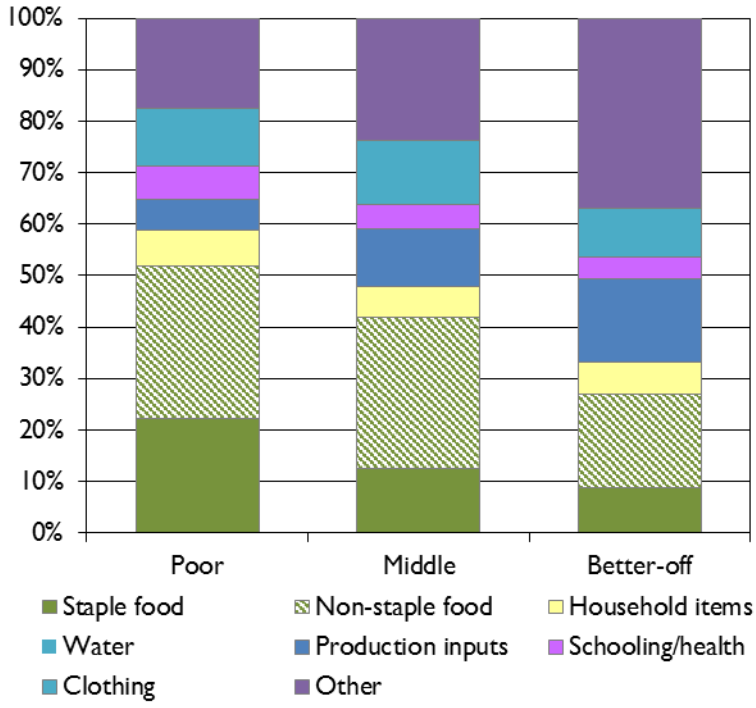
All households also need to spend money on basic household items, like tea, salt, soap, kerosene and utensils. These are included in the 'household items' category above. Of these, tea and utensils takes the largest amount out of this budget on an annual basis. Tea is a critical part of life in this pastoral zone and this is reflected here.

Production inputs are another important area of expenditure. All households buy veterinary drugs and middle and better off households also buy salt for their animals as well as purchasing animals most years to restock their herds. Better off households spend more than 10 times as much on inputs as poor households.

All wealth groups spend roughly the same amount per capita on schooling. Access to formal education is limited due to the lack of formal learning institutions. Koranic schools are available in the main and small villages as well as along the water points in rural areas but the pastoral nomadic lifestyle, insecurity and the limited number schools limit attendance. Those from middle and better off households occasionally send their children to formal schools in the main towns. Better off households spend considerably more on medicine, even when holding household size constant.

Clothing and non-essential items (shown in the 'other' category) are the two additional categories of expenditure captured in this graph. The other category includes spending on taxes, gifts, festivals, tobacco, chat and other miscellaneous items. This represents the amount of cash that could potentially be drawn down on in a bad year, highlighting the greater surplus that better off households can draw on.

Figure 5: Allocation of expenditures by wealth group, Southern Inland Pastoral

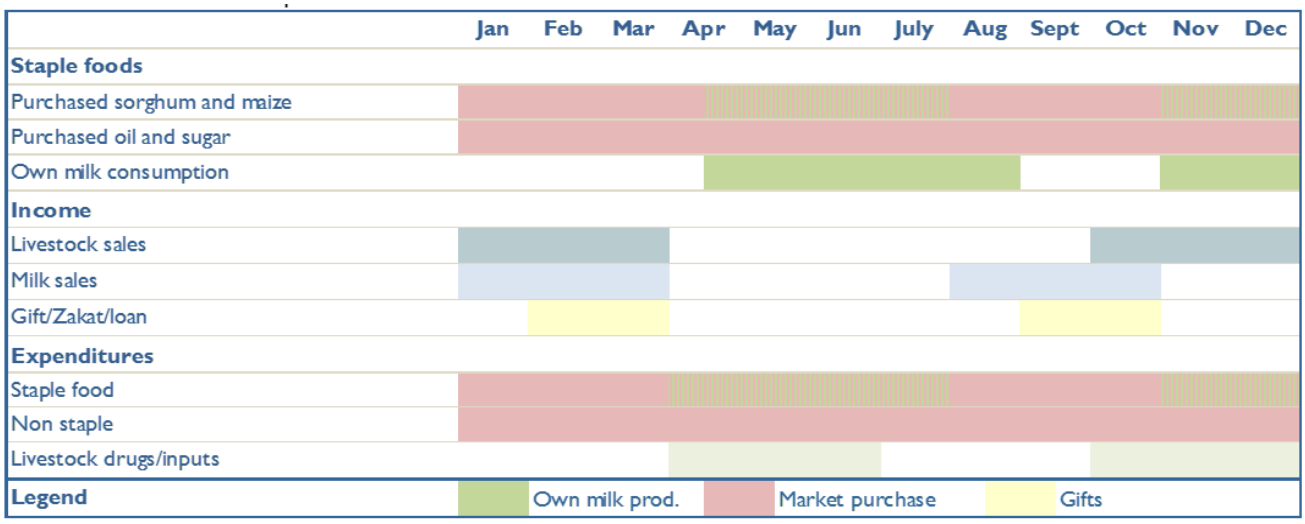


Source: FEWS NET

Calendar of major sources of food and income for poor households

As discussed above, people here survive on a combination of purchased food and milk from their own herds. Staple food is purchased throughout the year, but more grain is bought from January to April and August to October, which is when milk is less available for consumption. Likewise, because most households own camels, they have access to milk throughout the

Figure 7: Consumption and income calendar for the Southern Inland Pastoral Livelihood Zone



Source: FSNAU

year, but production tapers off in the dry seasons, triggering a need to buy more staple grain. From April through August and November until January, milk supplies are high, allowing households to cut back somewhat on their staple grain purchases.

Cash income from livestock sales peaks from October through March. Milk sales are highest during the two dry seasons. At these times households keep their livestock closer to peri-urban markets, providing access to the clients who purchase their milk. In November and again in April, milk sales decrease because people migrate to wet season grazing areas away from these peri-urban settlements. Households use the cash from livestock and milk sales to help fund their livestock drug and inputs purchases, which usually occur during the rainy seasons.

Hazards, Response and Monitoring Variables

Drought is the most persistent hazard in this livelihood zone. The rainfall levels here are typically low to begin with, sustaining only the minimum level of graze and browse, suitable for a nomadic pastoral economy, but just barely. According to many reports, the frequency, duration and intensity of droughts has increased in recent years. Droughts cause a cascade of negative effects; reduced pasture and water lead to a deterioration in livestock body conditions, lower milk yields, and declining livestock prices. Given that pastoralists' food and cash income depends so heavily on the productivity of their livestock, cash income and access to purchased food – which makes up the majority of household food income – is severely constrained in a drought. With consecutive droughts some poorer pastoralists have lost their capacity to maintain a viable herd and find themselves destitute, forced to migrate to peri-urban or urban areas in Gedo and across the border in Kenya and Ethiopia, where they depend on casual employment opportunities and humanitarian assistance. The problem of pastoralist 'drop outs' is likely to increase in the face of increasing drought events associated with climate change.

Civil insecurity and market closures have been major hazards in southern and central parts of Somalia. Sporadic fighting between Federal Government of Somalia forces supported by the African Union Mission in Somalia (AMISOM) forces on the one hand and anti-government insurgents on the other hand has at times restricted the flow of food and other basic items, which in turn has increased food prices and the cost of living. Disrupted trade flows, restricted movement of nomadic pastoralists to pasture and water points and the loss of assets have seriously undermined local livelihoods. Displacement to neighboring regions within Somalia or Kenya and Ethiopia has been common. Routes between source markets in Kismayo and Mogadishu in Somalia, Garissa and Mandera in Kenya, or Dolow in Ethiopia and pastoralists are often cut off.

Livestock disease is another major problem. Tick-borne diseases and Contagious Caprine Pleura Pneumonia (CCPP) cause significant losses in income since they undermine livestock body conditions in the dry seasons and reduce viable livestock

sales. Lack of grazing, combined with long trekking distance to water points and poor forage quality, predispose livestock to diseases such as internal parasites (Gooriyan), diarrhea (Shuban), lumpy skin disease, and diif (a respiratory diseases affecting shoats).

Environmental degradation caused by an ever-widening search for firewood and materials to make charcoal is another critical concern. Deforestation and overgrazing leads to soil erosion and more rapid rates of evapotranspiration, which further dries out an already-dry vegetative base.

Table 3: Coping strategies in response to shocks in Southern Inland Pastoral Livelihood Zone

Very poor/poor	*Middle/better off*
Increased reliance on social support/gifts	Increased livestock sales
Increased collection of firewood, construction materials, charcoal for sale	Increased milk sales
Increased work in urban areas (portering and domestic labor)	Increased migration of livestock

Source: FSNAU and FEWS NET reports.

In bad years, households employ time-worn survival strategies, aiming to reduce their non-essential consumption, increase cash income where possible and change their expenditure patterns. The better-off and middle households have more assets and diverse sources of income than the poor, which enable them to recover much faster from persistent shocks. Households normally employ coping strategies in times of stress. During times of shock, poor households intensify milk and livestock sales and seeking of social support, especially remittances from middle and better off relatives and friends living in urban areas or abroad. Others intensify collection of firewood, construction materials and charcoal making. Cash or in-kind support is intended to sustain them through the hard times until normal conditions resume. Livestock migrate to Jubba regions and Ethiopia, with some family members. Additionally, poor households migrate to neighboring urban towns in search of casual labor activities, such as portering for men and domestic work for women and young girls. The cash or food income earned is usually sent back to their families.

Table 4: Key Parameters to monitor in the Southern Inland Pastoral Livelihood Zone

Item	**Key Parameter – Quantity**	**Key Parameter – Price**
Animal production	Camels' milk – yields (seasons 1 & 2) Cows' milk – yields (season 1) Goats' milk – yields (season 1) Camels – herd size Cattle – herd size Goats – herd size Sheep – herd size	Sorghum prices Sugar prices Camels' milk - price Cows' milk – price Camels – export & local price Cattle – export & local price Goats – export & local price Sheep – export & local price
Other	Firewood – amount sold Gums and resins – amount sold Gifts/social support – frequency received	Firewood – prices Gums and resins – prices Gifts/social support – amount received
Expenditure		Sorghum – consumer prices Oil – consumer prices Sugar – consumer prices

Source: FSNAU, Baseline Storage Spreadsheet, SIP, 2009.

Estimated population for the Southern Inland Pastoral Livelihood Zone (SO11)

Zone	Region	District	Livelihood	Population 2012 UNFPA
Central	Galgaduud	Dhuusamarreeb	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	4,127
Central	Galgaduud	Ceel Buur	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	2,185
South	Hiraan	Belet Weyne	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	18,973
South	Hiraan	Bulo Burto	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	32,437
South	Hiraan	Jalalaqsi	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	58,419
South	Shabelle Dhexe (Middle)	Jowhar	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	2,689
South	Shabelle Dhexe (Middle)	Adan Yabaal	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	612
South	Shabelle Dhexe (Middle)	Cadale	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	1,295
South	Shabelle Hoose (Lower)	Kurtunwaarey	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	26,306
South	Shabelle Hoose (Lower)	Qoryooley	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	25,537
South	Shabelle Hoose (Lower)	Sablaale	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	802
South	Shabelle Hoose (Lower)	Wanla Weyn	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	11,324
South	Bay	Buur Hakaba	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	16,024
South	Bakool	Ceel Barde	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	51,503
South	Bakool	Tayeeglow	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	1,943
South	Bakool	Waajid	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	4,855
South	Gedo	Garbahaarey	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	29,718
South	Gedo	Baardheere	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	49,671
South	Gedo	Belet Xaawo	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	38,184
South	Gedo	Ceel Waaq	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	36,561
South	Gedo	Doolow	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	19,089
South	Gedo	Luuq	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	22,925
South	Juba Dhexe (Middle)	Bu'aale	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	4,182
South	Juba Dhexe (Middle)	Jilib	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	15,365
South	Juba Dhexe (Middle)	Saakow/Salagle	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	11,390
South	Juba Hoose (Lower)	Kismaayo	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	14,517
South	Juba Hoose (Lower)	Afmadow/Xagar	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	38,059
South	Juba Hoose (Lower)	Badhaadhe	Southern Inland Pastoral (Camel, Goats, Sheep and Cattle)	7,646
SO11Population 2014 total				**546,340**

SOUTHERN AGROPASTORAL (ZONE SO12)

General Livelihood Zone Description

Table 1: Summary of data supporting the Southern Agropastoral livelihood profile

Field data collection	May, 2008
Consumption year	April – March
Reference year	2006/07
Initial estimated validity	Through 2017

Source: FSNAU.

Camels, *shoats*, cattle and sorghum are the key elements of this agro-pastoral economy.[62] Located in the drylands of south-central Somalia, the prospect for agriculture as a reliable food source is very low. Overall, it is a cereal deficit zone although some sorghum can be grown over two seasons, most of it during the *deyr* (October-December). Livestock are the main source of household food and income and the export of camels, cattle and goats is important to the cash economy. Prolonged droughts are a recurrent feature here. Livestock diseases are another main hazard as are trade bans on livestock exports (which often follow disease outbreaks). Although this zone can only support marginal agriculture, the number of households practicing farming has increased since 2000. These "new" agro-pastoral households were former pastoralists whose herds declined due to repeated droughts and other problems. Consequently, the boundaries of this zone were re-examined in 2008 to adapt to these economic changes. The current zone's boundaries are not contiguous but contain various pockets across Somalia's southern regions. There are two long, narrow strips near the Juba and Shabelle Rivers which border the *Riverine Pump and Gravity Irrigation* zones. These sections are found in Hiraan, Gedo, Middle and Lower Juba Regions. They include the following districts: Belet Weyne/Matabaan, Bulo Burto/Maxaas and Jalalaqsi (Hiraan Region); Garbahaarey/Buur Dhuubo, Baardheere, Belet Xaawo, Ceel Waaq, Dolow and Luuq (Gedo Region); Saakow/Salagle (Middle Juba Region); and Afmadow/Xagar (Lower Juba Region). Another major section is found in central Bakool Region covering four districts: Xudur, Tayeeglow, Waajid and Rab Dhuure. The total population of the zone in these fifteen districts is 485,652 (UNFPA 2014).

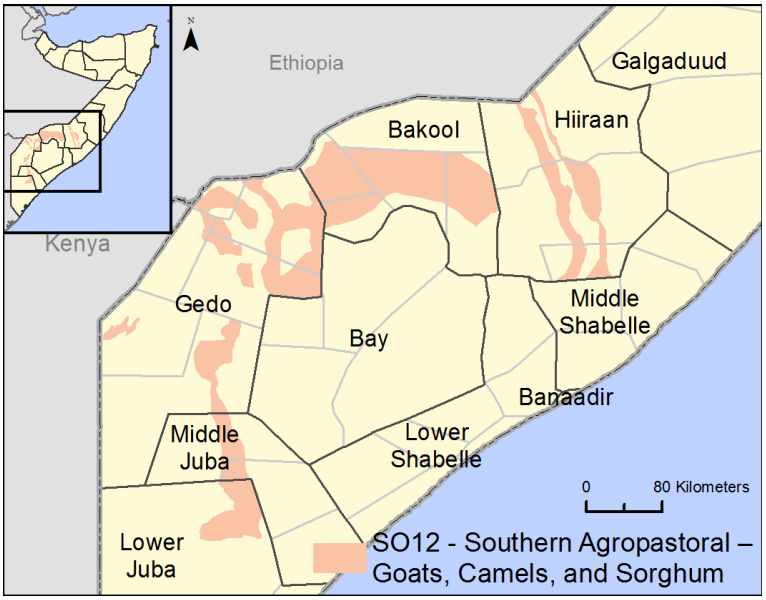
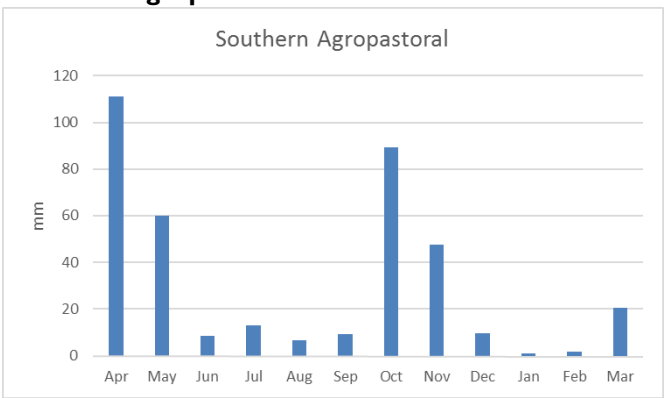


Figure 1: Estimated average rainfall in mm in Southern Agropastoral Livelihood Zone



Source: USGS CHIRPS Data, FEWS NET GeoCLIM[61]

Much of southern and central Somalia beyond the coastline consists of a wide limestone-sandstone plateau that rises 500-1500 meters above sea level. The central section of the plateau is bordered on the south side by the Juba River and on the north side by the Shabelle River. The environment is predominantly shrub vegetation with pasture growing in season. There is also some woodland in

[61] Based on USGS CHIRPS data, a combination of satellite-based Rainfall Estimates (RFE) and station data, with data extending more than 30 years (1981-2014). Source, FEWS NET and USGS.

[62] Shoats = sheep and goats

areas close to the rivers. Deforestation in this zone is increasingly a concern. Natural depressions in the land form water catchments that make sorghum cultivation possible most years. However, soils are not very fertile as on the whole they are stony with poor moisture retention and, in places, high salinity. Low and erratic rainfall also work against high output farming. Rainfall is bi-modal but sparse – on average 300-350 mm annually. Traditionally, two-thirds of this yearly total fell during the primary *gu* (April-June) season. Such seasonal patterns are shifting and many years the (October-December) *deyr* rains have become more predominant. Typical daytime temperatures throughout the year are around 27° C with the hottest period occurring from January-March.

In the *Southern Agropastoral Livelihood Zone*, services to support the livelihoods of the local population are very weak. The zone is also poorly served with basic service infrastructure to support health, hygiene and education.[63]. However, Qur'anic schools are widespread and most children receive their education from these schools either during the day or in the evening. Water is accessed mainly through shallow wells although natural rain-water catchments provide water in season. There are also some boreholes in the zone which are serviced by local communities. In extended dry seasons, households (particularly the poor) pay for water from these boreholes. Other infrastructure includes major and secondary roads. There is a key secondary road through Jubaland from Kismayo to Dolow on the Ethiopian border through Buale, Bardheere, Garbahaarey and Luuq. Another major road affecting transport and marketing in this zone goes from Mogadishu to Baidoa to Luuq (Gedo Region) and the on to Ethiopia and Kenya. Finally, there is a main road from Mogadishu to Beledweyne (Hiraan Region) which then connects to main towns and cities in the north ending at Bosasso. There are also secondary roads that feed into the major road arteries. For instance, there is a feeder road connecting Baidoa, Hudur and Tieglow (Bakool Region) with Beledweyne (Hiraan Region) from where it joins the main Mogadishu-Bosasso road to the north. For the most part, road infrastructure in south-central Somalia has not been well maintained since the state collapsed in 1991. Moreover, most roads in the zone are tertiary dirt roads that become muddy and impassable during the rainy seasons. Vegetation encroachment is another problem affecting road systems in the zone. Air infrastructure is also poor due to war. There is a single airstrip in Bakool Region located in Wajid as well as a single airport in Hiraan Region at Beledweyne. Gedo Region is well-serviced with airstrips located in Bardera, Garbahaarey, Luuq, and Dolow. However, many times over the last two decades, civil unrest has meant that these airstrips although functional were inaccessible to humanitarian and emergency aid agencies.

The *Southern Agropastoral Livelihood Zone* is a marginal agricultural area where livestock production is the mainstay of local livelihoods. In a relatively good year, households earn 80% or more of their cash income from milk/ghee and livestock sales, and this income is used to purchase staple foods for 7-8 months of the year. Households also consume milk directly from their mixed herds of camels, cattle and *shoats*.[64] Of the three, camels are the top producers. In the reference year, 2.6 L/camel/day was the typical daily milk yield for 6 months of the year.[65]. Even with only 2 milk camels, this adds up to a lot of fresh milk in a day and thus it is common for households, even for the poor, to sell 40-50% of their camel milk. Cow milk was not typically sold and the 2 L/cow/day – which was the typical peak yield for 4-5 months of the year – was reserved for household consumption.[66] Altogether in a year, milk and meat consumption provided 16 - 28% of household food energy.

Most years, the milk herd is kept near the village but the non-milk (or "dry") herds are trekked between wet season and dry season grazing areas. Camels are taken the farthest distance, herded by the adult men of the community. Migration routes vary as herders are opportunistic and trek where rainfall and browse is likely to be highest. In drought years, this route is toward riverine areas in Lower Shabelle Region, or to Bay Region neighboring Bakool. Some years, the migration route is to areas within Ethiopia. In general, migration occurs during the wet season and it is mainly camels which are taken to distant rangelands. Cattle, goats and sheep usually stay near the village and are cared for by women and children throughout the year. During this time, when the family splits up, women make the key decisions regarding management and care of the village-based herd, including decisions about livestock sales. One major challenge in this zone is livestock

[63] The number of primary schools in neighbouring Bay Region in fact decreased between 2007 and 2005 from 117 down to 92 (FSNAU. *Livelihood Baseline Analysis Bay and Bakool*. Technical Series, Report VI.23, May 20, 2009).
[64] Donkeys are also kept by households in this zone living in Hiraan and Gedo Regions.
[65] Yields dropped to 1.5 L/camel/day for the six months of low production in the dry seasons
[66] Goats are a third source of milk. In the reference year, each goat produced on average 250 ml of milk for 2 months. This provided poor households with about 1.75 L of milk per day for the two months of peak production.

disease management. Disease outbreaks are particularly common in years of extreme weather events, for instance when drought breaks and rains return leaving weakened animals vulnerable to illness. Most years, the incidence of disease is highest for a four-month period beginning at the end of the *gu* and *deyr* rainy seasons.

In this zone, sorghum production is carried out as a supplement to livestock production rather than as a main economic activity.[67] Land availability is not a constraint but the reliability of rainfall is a problem as are poor soil conditions, scarcity of surface water and pests such as birds. Even in a relatively good year, the harvest of staple grains was sufficient for only about 4 months of food energy (although it was higher in the Gedo, Hiraan and Middle/Lower Juba sub-zone). Certain years, such as in the 2006-2007 reference year, the January *deyr* harvest was the period of highest output. Most years, yields in this zone averaged 0.25-0.4 MT/ha.[68]. Men and women share agricultural tasks evenly, carrying out hoeing, weeding and harvesting by hand. Children also often work in the fields, assisting with bird scaring after school or protecting crops from other pests.

The dry scrubland of south-central Somalia may be marginal for agriculture but it does have other natural resources that provide some supplementary food and income. Households gather wild foods such as *kable* (a green leafy vegetable) for nutritional diversity. In Bakool Region, households gather honey for consumption and sale. Bush products are also a source of income and firewood, building poles, grass for fodder, and grass for house thatching are all sold in local markets.

Markets

All households in the *Southern Agropastoral Livelihood Zone* are highly reliant on market activity in order to secure their basic food. For 1-2 months after the main harvest, households depend on their own stocks. Otherwise, milk/ghee and livestock are sold to generate the income needed to purchase staple food. In general, households have reasonably good access to markets in this zone. There are village markets as well as district market centers and also regional market hubs. Furthermore, cities are major commercial centers and there are several located in or near the zone, including: Baidoa (Bay Region); Beledweyne (Hiraan Region); and Luuq and Bardhere (Gedo Region). Baidoa is an important market for Bakool Region agro-pastoralists as it provides a link to the north-east trade route as well as to overseas markets. Regional and district market hubs include Hudur and Wajid (Bakool Region); Buula-Burte (Hiraan Region); Dolow (Gedo Region); and Hagar and Sakow (Lower/Middle Juba Regions). Road access itself is often difficult because when it rains dirt roads become muddy and impassable and this creates supply shortages and price rises. Since 1991, conflict has also led to numerous transport and trade disruptions with the associated price increases as stocks dwindle. Many of the major commercial centers in or near the zone (including Baidoa, Beledweyne, Luuq and Bardhere) have been affected by inter-clan fighting leading to blockades into and out of the cities, most disastrously during the extreme drought and conflict of 2011.

Livestock markets

Livestock markets are extremely important in this zone as households sell a range of livestock products when in season, including camel milk, and cow and goat butter/ghee. Households also sell camels, cattle and goats of export and local quality. Destination markets for livestock are urban areas within Somalia as well as cross-border markets in Kenya (Nairobi and Mombasa) and, most importantly, the Middle East.[69] Large import/export traders control the overseas livestock trade to the Middle East. They also control imports of key food supplies (such as rice, wheat flour and sugar) from Asia. The cross-border trade of livestock from Somalia to Kenya is also tightly controlled, managed by businessmen from connected Somali clans. The large-scale traders are based in major commercial centers and own transport trucks for hauling goods. In turn, they buy or sell to wholesalers who in turn buy and sell to small retailers in the districts. Livestock are typically trekked from primary market to intermediary market through a system of brokers, traders and hired trekkers. The trek begins with the owner registering the export-quality livestock being sold. Camels are trekked typically to Mogadishu, which is the main

[67] In the areas of the zone nearer to the Juba and Shabelle riverine zones, there is a little more diversity in crops, including some maize, sesame and tomatoes. In addition, honey is harvested in small pockets of the zone.
[68] This yield compares to 0.5-6 MT/ha in the Bay/Bakool High Potential Agro-pastoral zone
[69] There is also relatively high demand for ghee in Bosaso and Yarowe markets.

destination market for camel meat. Cattle and goats destined for Kenya markets are trekked through Afmadow market to Garissa (Kenya) from where they are trucked from the intermediary market to the destination market.

In the reference year, households in all wealth groups earned roughly the same income from export sales as from local sales. [70] The volume of sales both for local and export-quality animals is highest during the dry season. Peak sales come at the time when livestock are concentrated around permanent water sources near district markets. Conversely, sales are lowest in the wet season when livestock have scattered in more distant rangelands. Historically, prices work the opposite to trends in sales, dipping to their lowest levels during the *jilaal* (January-March) dry season when sales are highest and peaking in the wet season when sales are low. During the reference year, price and trade patterns were different. Supply surged during the first good *deyr* rains, post-drought, leading to a dip in prices. Moreover, camel and cattle prices were low overall during the year compared to long-term average, reflecting poor livestock conditions post-drought. [71]

Income is also very seasonal for milk sales. Milk production peaks shortly after the rains which, depending on the year means peak production from May-August as well as from November-January. Prices are typically lowest during these periods when supply is highest. During the reference year, seasonal patterns generally followed the long-term average. The only difference was that camel milk prices rose sharply in January. This reflected lower milk supplies than usual due to low conceptions in 2006 as livestock struggled to recover after the 2005-2006 drought.

Cereal markets

Cereal trade flows and price dynamics in this region are largely shaped by proximity to Somalia's sorghum basket - the Bay Region high potential agro-pastoral zone -- where the majority of Somalia's sorghum is grown. Maize is also imported from the Banadir market in Shabelle area, and in some years, cereals are imported from Qalafe across the border in Ethiopia. Since 2001 when *deyr* production routinely became higher than *gu* production, sorghum imports were highest from June-December. This is also when prices were highest reflecting high demand. Conversely, imports dropped in January after the *deyr* harvest and stayed low until around May. During this time, prices were low for producers and for consumers.

Trade flows begin right at the village level. Typically, wholesale traders pay for an "assembler" to purchase sorghum post-harvest directly from farmers. The sorghum is bagged and then transported by the wholesaler to various district and regional markets where it is sold to retailers and then on to consumers. Sorghum from Bay Region is distributed in this way throughout the country. However, sorghum purchased from producers in the *Southern Agropastoral Livelihood Zone* is usually re-sold in local district markets and is rarely traded outside of the zone.

Casual labor markets

Poor laborers undertake a range of work to earn income during the year. Within the zone, casual labor opportunities include farm labor, herding, mudding walls and working as a porter. In Bakool Region, laborers usually travel south to the Bay Region in search of work in the "high potential agriculture" zone. Similarly, in the Gedo, Hiraan and Middle/Lower Juba sub-zone, laborers often travel to the higher-potential riverine zones to look for work. Farm laborers are usually paid cash but they may also be given 1-2 meals per day from the employer. In the Bay/Bakool Region, it was found that wage rates peaked in July and November during harvest.

Credit

Credit is usually taken on an annual basis from local traders or retailers by households from all wealth groups. Loans of food or money are given to households who have at least some collateral. This collateral can be either livestock or crops. However, poor households can only access small loans given their few assets. For the most part, households take the food debt during the rainy seasons prior to the harvest and when livestock are still scattered in wet season grazing areas. Once

[70] The exception was camel sales for better-off households who earned more than double the income from local camel sales compared to export.

[71] Only goat prices were more or less on par with the long-term average due to their more rapid recovery of goats from the recent drought.

they harvest their crop, they repay their debts. Debts are repaid at least in part each year in order to ensure access to credit for the next year. Credit may also be taken by poor households from middle and better-off households as there is no formal credit system in the zone and the poor typically need loans to make it to the next harvest.

Conflict

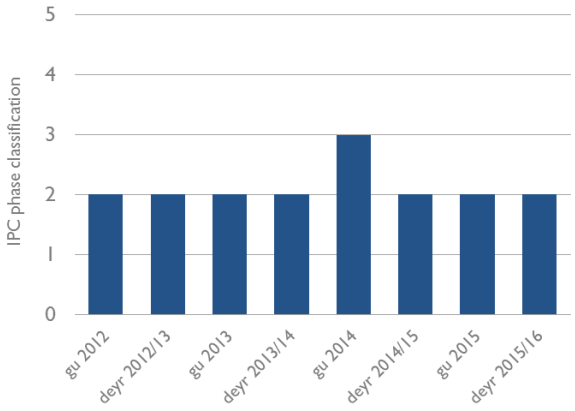
The collapse of the Somalia nation state in 1991 sparked over two decades of violent civil unrest and population displacement. It was also one of the major contributing factors behind the extreme hunger of 1991-1992. Most areas in this livelihood zone have been directly affected by the conflict. Bay and Bakool Regions in general, and Baidoa in particular, were arguably the worst hit during the first and second decades of armed conflict.[72] For instance, in early 2009, the al-Shabaab group launched a major offensive to take Bakool Region. Battles for control over Mogadishu and Baidoa, as well as battles for control over much of the territory in southern and central Somalia continued into 2010. Mogadishu itself remained the center of fierce battles until 2011 when the Transitional Federal Government and AMISOM troops won control of the city from Al-Shabaab.[73] Subsequently, Al-Shabaab retreated to Baidoa. Their base there meant continued insecurity in Bay and Bakool Regions.[74]. Moreover, main roads were risky for traveling or for transporting goods due to continued attempts by allied troops to oust Al-Shabaab. Baidoa was eventually taken from Al-Shabaab in February 2012, and in 2015, AMISOM, with support from Ethiopian National Defense and Kenyan Defense Forces, carried out a major operation to force Al-Shabaab out of its last strongholds in southern Somalia, including Baardheere. However, Al-Shabaab are still active in the area carrying out guerrilla style attacks in Baidoa and along the main Baidoa-Mogadishu road.

The effect of ongoing conflict has been devastating over the years. When compounded by drought and inflation it has historically resulted in extreme hunger. Conflict has also meant the collapse of industries; the breaking down of infrastructure; the dissolution of state services; disruptions to trade, supply shortages, price hikes; population displacement; and violence against women. Farms have been abandoned and livestock diseases left untreated as herders lacked access to veterinary care. All these effects have had consequences for the food and livelihood security of the local people.

Food access history

As in most of south-central Somalia, the *Southern Agropastoral Livelihood Zone* has faced significant food insecurity since 1991 due to the combination of low and erratic rainfall, high staple grain prices, livestock disease and conflict. There was a major international emergency effort during the country-wide famines of 1991-1992, 2005-2006 and 2011. In addition, in 2002, there was an international response to famine conditions reported in parts of the *Southern Agropastoral Zone* (notably Gedo Region) after 3 years of drought compounded by conflict. At that time, it was reported that acute shortages of water and fodder caused losses of up to 40 percent of cattle and 10-15 percent of goats and sheep both in Somalia and in Ethiopia. However, timely and effective interventions were often difficult. In 2002, for example, in northern Gedo Region as well as parts of Bakool Region, relief efforts were suspended due to insecurity. Similarly, during the 2005-2006

Figure 2: Recent trend in IPC phase classification, with 1 as best and 5 as worst



Source: FSNAU

[72] OCHA. 2002: *Internally Displaced Persons. Combined Report on Somalia* 1. 1 August 2002.

[73] AMISOM stands for the African Union Mission in Somalia

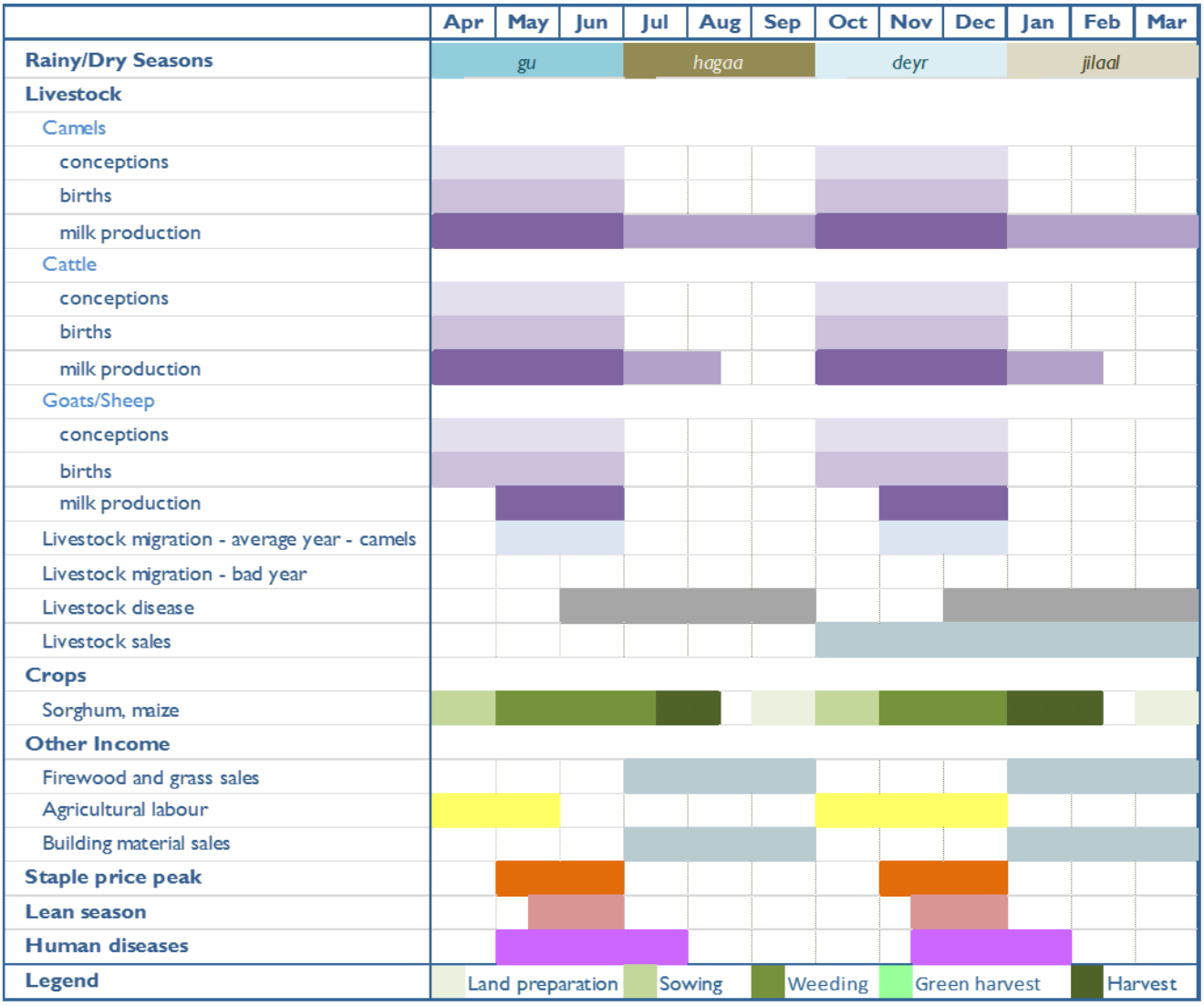
[74] Al-Shabaab continued to lose territory over the next couple of years. In late 2012, for example, Kenyan troops assisted the Somalia National Army and AMISOM to take control of Kismayo from Al-Shabaab. This move cut off a major source of income for Al-Shabaab: the export of charcoal.

drought, when global acute malnutrition was over 20% in Gedo Region (and 15-19% in other parts of the zone), the emergency response efforts were hampered by insecurity. WFP reported that in its operational regions – which included Gedo, Lower and Middle Juba, Bay and Bakool Regions -- food aid beneficiaries only received between 45-70% of the intended aid ration due to insecurity (as well as some logistic and pipeline issues).

2014-2015 is also predicted to be a year of food insecurity in this zone. The 2015 *gu* harvest, for instance, was 45% below the long-term post-war average in the marginal cereal growing areas of Hiraan Region, Middle Juba (33%) and Lower Juba (67%). Malnutrition rates in Gedo Region in the neighboring pastoral zone were also deemed critical. Unfortunately, humanitarian assistance for the affected population may be jeopardized by the predicted flooding expected in November/December 2015 as well as continued insecurity (both of which will hamper the transport and distribution of aid).

Seasonal calendar

Figure 3: Seasonal calendar for the Southern Agropastoral Zone



Source: FSNAU SAP BSS SO12 2006/07.

The calendar year is divided into four seasons, each season lasting approximately three months each. Rainfall is bimodal so effectively there are two wet seasons (the *gu* and the *deyr*) and two dry seasons (the *hagaa* and the *jilaal*). In most of

southern Somalia, the (April-June) *gu* rains are the heaviest and the most reliable. However, since 2001, there has been a shift in Bakool Region and heavier rains have often been received instead during the (October-December) *deyr* season. The *jilaal* follows the *deyr*; and the *hagaa* follows the *gu*.

Milk production – or the months of peak yields – is associated with the wet seasons when browse and pasture are plentiful. Income from milk sales is also highest at this time. Moreover, during the wet season, farm work is busiest. Wet seasons are also associated with high cereal prices due to poor market access from washed-out roads and low supply. Thus for poor households who depend on food purchases during the wet seasons, high grain prices coupled with a high need for grain purchases are often associated with their "lean" season. Since 2001, this lean season has often been associated with the *deyr* rather than the *gu*. Milk production fills some food and income gaps at this time. Furthermore, livestock prices in a year of good rains are often relatively high from October-December due to the good condition of livestock. Nonetheless, these periods are still considered the time of year when households are most likely to face food shortages.

The timing of livestock conception is important to the agro-pastoral economy as it affects the timing of milk production. In years of adequate rainfall, conception occurs during the rainy seasons. However, the timing of conception differs when droughts occur. Stressed animals do not conceive so conception is low during the first rainy season post-drought. Hence, post-drought recovery takes longer in pastoral and agro-pastoral economies as households need to wait 6-12 months after conception for the birthing and milk season to start.

The sorghum harvest is associated with the dry seasons, that is, in July (*hagaa*) and January *(jilaal*). Depending on rain outcomes in a particular year, the major harvest will be either after the *gu* or after the *deyr*. During the period of harvest, staple food prices typically drop. In the reference year, prices remained low from January-June. Then, due to the poor *gu* harvest outcome, prices rose from July-December. Hence, in 2006-2007, the post-harvest drop in grain prices was most pronounced in January-March during the *jilaal*, following the main harvest in January. The other activities associated with the dry seasons are collecting firewood, grass and building poles for sale. Dry seasons are also associated with a high incidence of disease as diseases usually peak right after the rains.

Wealth breakdown

Livestock are the most important asset in this zone, particularly camels and goats. To a lesser extent, land holdings are an important asset too. For the 15% of households who are considered better-off in their communities, their livestock holdings are quite considerable. In the 2006-2007 reference year, for instance, the wealthiest households owned an estimated 15-55 camels and 50-120 sheep and goats (*shoats*). Cattle holdings were in the range of 8-15. The range in the number of livestock owned is quite large due to variation within the zone. In the Bakool Region sub-zone the rangeland is best suited for browsing animals so camel and goat herds, consequently, were higher. By comparison, in Gedo, Hiraan and Middle/Lower Juba Regions, there is better access to pasture near the riverine floodplains. Hence, camels and cattle share equal prominence in that sub-zone (i.e., better-off households owned an estimated 15 each of cattle and camels). There are also variations between sub-zones in the average farm land cultivated. Farm sizes are smaller in the Gedo, Hiraan and Middle/Lower Juba sub-zone due to more competition for land. There, average land cultivated in the reference year was 5

Table 2: Wealth group characteristics in the Southern Agropastoral Zone SO12. ***Bakool sub-zone data in parenthesis (e.g., 3-6)***

	Poor	**Middle**	**Better-off**
Household percentage (%)	40	45	15
Household size (#)	5-7	6-8	8-10 (2 wives)
Land holding (ha)			
Land area owned			
Land area cultivated	1-3 *(2-4.5)*	3-7 *(3-6)*	4-6 *(2-10)*
Typical livestock holding (#)			
Shoats	5-20 *(32-40)*	20-50 *(56-65)*	50-100 *(80-130)*
Cattle	0-5 *(3-6)*	5-10 *(8-12)*	15 *(12-23)*
Camels	0-3 *(6-10)*	4-6 *(11-25)*	15 *(26-55)*

Source: FSNAU, SAP BSS SO12, 2007

ha. This compared to an average of 9 ha in Bakool Region. In Bakool Region, polygamy is common amongst the better-off households, and they also usually support a bigger household (8-10 people).

Many households in this agro-pastoral zone fall in the middle wealth group (45%). In general, middle households own about half the number of livestock compared to the better-off. Numbers owned in the reference year were in the range of 4-25 camels, 5-12 cattle and 20-65 shoats. [75] There was considerable variability within the zone especially in terms of numbers of camels owned. Land holding sizes also varied considerably. Overall, the average farm cultivated by middle households was in the range of 5-7 ha. Less land is cultivated in the Gedo, Hiraan and Middle/Lower Juba sub-zone.[76]. Indeed, in this sub-zone, the main difference between middle and better-off households is not land cultivated but livestock owned. In short, both wealth groups farm roughly the same amount of land but better-off households own about twice as many camels, cattle and *shoat*s.

The poor comprised about 40% of households in 2006-2007. The poor in this zone form relatively small households of 5-7 members. Poor households are defined as those who own very few livestock and, in particular, who own very few camels and cattle. For those who do have large-stock, the average was about 1.5 camels together with 2.5 cattle in Gedo, Hiraan and Middle/Lower Juba Regions. Higher livestock holdings were recorded in Bakool Region where 6 camels and 4.5 cattle was the average found there. Some of the poor own no camels or cattle at all, especially in the Gedo, Hiraan and Middle/Lower Juba Regions, where they are principally small stock owners instead. Indeed, the poor's main assets are their sheep and goats. Flock numbers cover quite a range but overall, a typical number of *shoats* owned by the poor was 12 in Gedo, Hiraan and Middle/Lower Juba Regions, and 35 in Bakool Region.

Land is the other asset owned by the poor. As with livestock, there were differences between the sub-zones. Land sizes were higher in Bakool Region (5 ha cultivated on average). This compares with the average of 2 ha cultivated in the areas in Gedo, Hiraan and Middle/Lower Juba Regions.

Gifts (*zakat*) are provided to the poor from better-off and middle households in the village, and from relatives living in the main towns. Gifts were given in the form of sorghum during the reference year. However, gifts of cash or live animals are also common some years.

Sources of food and income and expenditures

This zone is made up of two different sub-zones and in each sub-zone, the balance between crops and livestock differs. A brief description of food and income sources in the baseline year, by sub-zone, is provided below.

Gedo, Hiraan and Middle/Lower Juba sub-zone

In the Gedo, Hiraan and Middle/Lower Juba sub-zone, crop production plays a larger role than in the Bakool sub-zone. In this sub-zone, for poor and middle households, own-crops contributed 2 meals a day for an estimated 6-7 months during the reference year. This met about 55% of their annual household food needs. Milk/ghee and meat met a very small proportion of annual food needs (0-10%). Instead, purchased food (cereals, sugar and oil) was the other significant food source. In 2006-2007, purchased food comprised on average 40% of annual food needs for poor households and slightly less (30%) for middle households. Middle households purchased more sugar and oil than the poor, as well as tea. For the poor, any food gaps remaining were met through the collection of wild greens and other bush food.

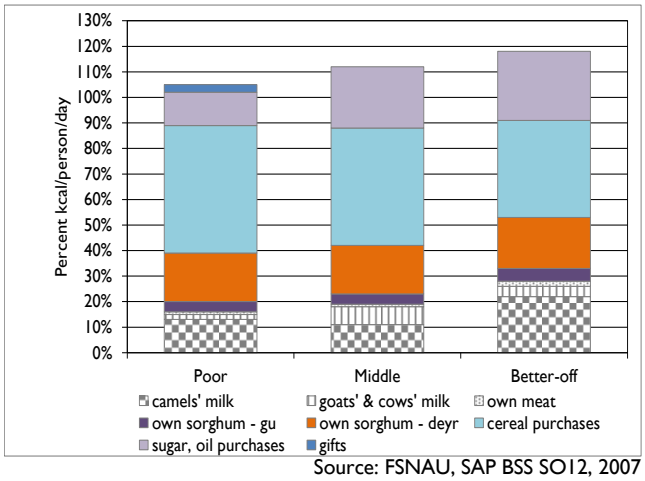
[75] Camel herd sizes varied considerably within the zone. In the Bakool Region, camel herds of middle households were relatively large (9-25 camels in the 2006-2007 reference year). By contrast, in the agro-pastoral sub-zone in Gedo, Hiraan and Middle/Lower Juba Regions, camel assets (4-6) are relatively low compared to cattle herd sizes and compared to the Bakool Region sub-zone.

[76] In general, middle households in Bekool Region cultivated an estimated 7 ha in the reference year but in the Gedo, Hiraan and Middle Shabelle sub-zone, land cultivated per household was roughly 5 ha.

In this sub-zone, the cash for food purchases came from a mix of sources. Middle households secure most of their food from own crop production but generated most of their income from livestock production. Livestock and livestock product sales accounted for an estimated 55-75% of middle households' income, of which sales of milk, ghee and butter were principal. Crop sales also contributed an estimated 10-20% of annual income in the reference year.

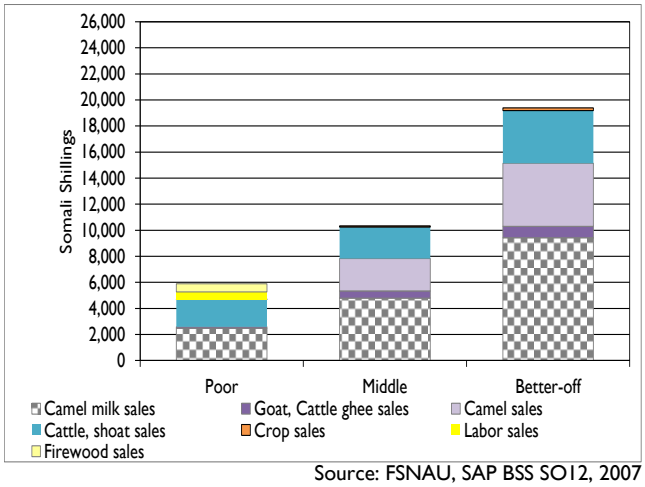
The pattern for the poor was different. For these households, sales of livestock, livestock products, casual labor and bush product sales were combined to generate an annual income. In their case, only 20-30% of their annual income came from livestock production (including sales of ghee, eggs, a little milk and male *shoats*). Casual labor was the primary source of income for the poor. Examples of labor in this zone include agricultural labor, mudding walls, carrying goods as a porter and herding. The poor also looked to self-employment to generate income, such as earning cash by selling firewood, building poles, honey and bush meat (dikdik). Cash gifts and crop sales added small amounts to their annual income.

Figure 4: Food sources by wealth group, Southern Agropastoral Livelihood Zone



Source: FSNAU, SAP BSS SO12, 2007

Figure 5: Cash income sources by wealth group, Southern Agropastoral Zone



Source: FSNAU, SAP BSS SO12, 2007

Bakool Region sub-zone

Patterns of food and income sources were a little different in the Bakool Region sub-zone. The priority in the Bakool Region sub-zone is livestock production. Crops play a much more secondary role. For instance, in the 2006-2007 baseline year, crop production (mainly sorghum from the *deyr* harvest) accounted for only about 25% of the annual food needs of poor, middle and better-off households alike. Milk, ghee and meat consumption differed by wealth group, and was a significant source of annual food energy for better-off households (almost 30%) but was lower for middle households (an estimated 20%) and the poor (15%). Nonetheless, the key difference was levels of food purchase. In Bakool Region sub-zone, food purchases during the reference year comprised an estimated 65-70% of annual food energy for most households, compared to 30-40% in the Gedo, Hiraan and Middle/Lower Juba sub-zone. In both areas, the types of food purchased were similar. Sorghum was principal food; sugar and cooking oil were supplementary. Middle and better-off households proportionately bought less sorghum than the poor and instead more sugar. Tea was another common purchase throughout the year.

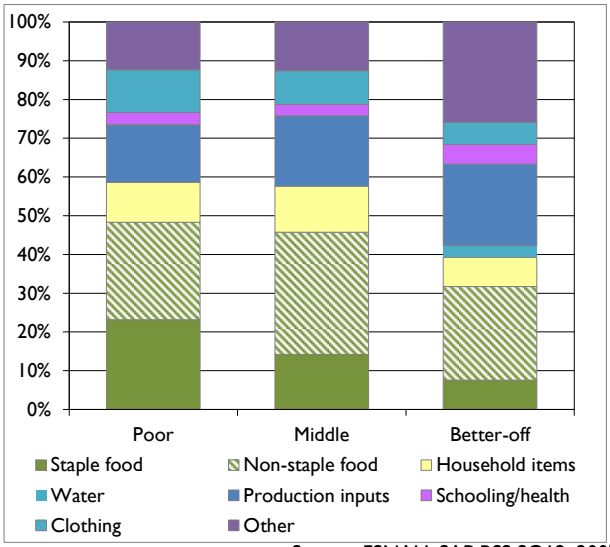
In the Bakool agro-pastoral sub-zone, the income earned to buy food mainly came from livestock production. In this way, the Bakool sub-zone differed from the Gedo, Hiraan and Middle/Lower Juba sub-zone. In Bakool sub-zone, crop sale income was negligible. Instead, income from livestock production comprised an estimated 80-100% on total annual cash income in the reference year for many households (although only 45% of annual income for some of the poor). This compares with the Gedo, Hiraan and Middle/Lower Juba sub-zone where on average 25% and 55% of the annual income of the poor and middle households respectively came from livestock production. Camel milk sales were particularly important for middle

and better-off households. Supplementary income was also earned from sales of cow and goat ghee/butter. Poor households also earned some income from selling camel milk and goat ghee/butter but did not sell ghee or butter from cows. The other major source of cash was livestock sales. Sales of local and export-quality camels were the major cash-earner for middle and better-off households. The poor did not sell camels but instead sold an estimated 5 *shoats* during the year (both for local and export markets). As poor households own too few livestock to earn sufficient income from this source alone, they had to find other ways to generate cash. The primary sources were farm labor and firewood sales.

The different balance between crops and livestock production in the two different sub-zones affects which types of hazards are the greatest risk of food shortages. In the Gedo, Hiraan and Middle/Lower Juba sub-zone, households are relatively more affected by poor crop outcomes. In the Bakool sub-zone, households are relatively more affected by increases in staple grain prices and by livestock production outcomes.

Throughout this zone, food purchases were the major expenditure during the reference year for all wealth groups. Poor households proportionately spent the most on food. On average, food accounted for about 50% of the poor's expenditures. Of this, about half was on staple food and half was on sugar and cooking oil. Food spending was also high for middle and better-off households. In the reference year, food costs were and estimated 30-45% of their annual household expenditures. In contrast to the poor, spending on non-staple food (sugar in particular) was the highest expense rather than sorghum costs.

Figure 6: Allocation of expenditures by wealth group, Southern Agropastoral Livelihood Zone



Source: FSNAU, SAP BSS SO12, 2007

In addition to food, the other common expenses for all households across the zone were basic household items (soap, salt, tea, kerosene and utensils) and clothes. These basic necessities comprised about 15-20% of annual spending for all wealth groups in the reference year. Most households paid a clan tax but only middle and better-off households paid money for their children to attend Qur'anic school.

Livelihood inputs were an important expense during the year although not a large one. Spending on inputs such as animal drugs, salt and livestock purchase accounted for 15-21% of total annual spending for poor, middle and better-off households alike. Poor households did not have labor expenses but both middle and better-off households paid workers either for farm work or to herd livestock. For instance, middle households typically employed 5-7 workers for farm work in the Gedo, Hiraan and Middle/Lower Juba sub-zone. Better-off households also paid for water and for laborers to collect water for livestock for 6 months during the reference year.

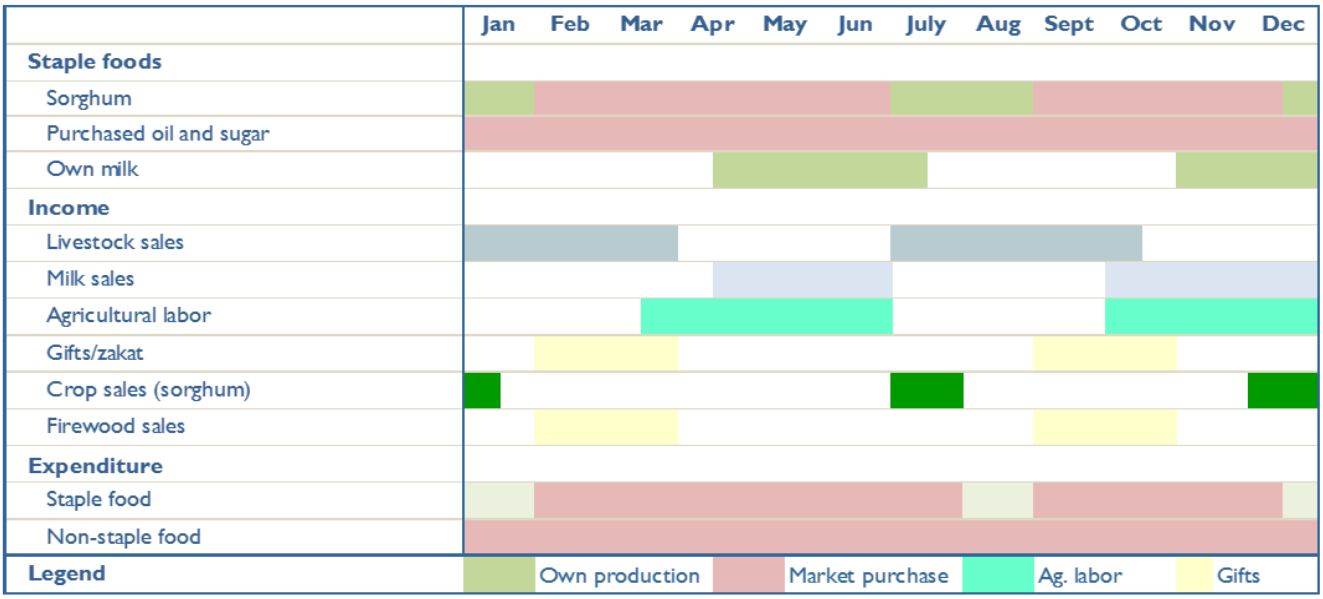
Calendar of major sources of food and income for poor households

Poor households, like other wealth groups in this zone, depend on their livestock to generate income to purchase food. Sales of camel milk and goat ghee/butter as well as the sales of goats (export and local quality) and cattle are their primary sources of income in a fairly normal year. Together with milk, own-sorghum and some labor and/or self-employment income, poor households are able to meet their basic food energy needs.

For the poor, food access peaks directly after the *gu* and *de*yr harvests (July and January respectively). The harvest usually carries households through the dry season. Livestock sales to buy food to supplement own-stocks also help to keep households fed during those months. By the wet season, milk supplies increase. So too do on-farm labor opportunities if households need cash. Nonetheless, the wet seasons – namely mid-May-June and again in November-December – are

considered the "hunger" seasons for the poor. At this time, households mainly rely on the market for food and in the wet seasons, prior to the harvest, staple grain prices peak. In addition, household labor is needed for herding and farming and own-production needs must be balanced with paid labor.

Figure 7: Consumption and income calendar for the Southern Agro-pastoral Livelihood Zone



Source: FSNAU

Hazards, response, and monitoring variables

The agro-ecology in this livelihood zone is semi-arid and hence the zone is prone to erratic and variable rainfall leading often to drought. Drought is the most common periodic hazard that affects the zone. Historically, over the last 25 years, there were three drought-induced hunger events – 1991-1992, 2005-2006 and 2010-2011 - that led to significant population displacement and high mortalities. Major drought events were also recorded in 1997-1999, 2001, 2003-2004, 2008-2009 and 2014-2015. Not all drought events led to mass starvation and high mortalities. Where droughts were compounded by violent, civil insecurity, emergency interventions were late or negligible (due to inaccessibility of the population), and important market flows were cut off (including cross-border trade with Ethiopia and Kenya) leading ultimately to a high number of deaths.

Livestock disease is another periodic hazard that can severely affect food and income of the local population in this zone. For instance, there was a major disease outbreak affecting camels in 2006-2008 in the Bakool Region sub-zone. Moreover, the outbreak of Rift Valley Fever affecting cattle that swept across the drylands of Somalia, Kenya and Ethiopia led to a trade ban on exports of cattle to Saudi Arabia from 2000-2009. Trade to some extent shifted south to Kenya but the disease outbreak coupled with the trade ban affected livestock producers greatly. Foot and Mouth (FMD) is another common disease affecting cattle. Since 1991, disease surveillance has been extremely limited but one study reported relatively high cattle mortalities from FMD in 2006-2007, post drought. The incidence of FMD peaks at the beginning of the *deyr* rains and mortalities are highest among young animals aged 1-2 years.[77]

Some flood events affect this zone by disrupting transport and trade flows. Poor market accessibility and low cereal supplies in the markets boosts prices and the high staple grain prices greatly affect the agro-pastoralists in this zone. 2007-

[77] Dr. M Hassan Ali Jabra. 2010. *Foot and Mouth Disease Surveillance in Central and Southern Somalia*. FAO / EuFMD Eastern Africa FMD Workshop, Nairobi, February 2010.

2008 is remembered as a year of terrible floods. The 2015 deyr season is also anticipated to be a potential flood event (especially in the Lower Shabelle and Lower Juba riverine agricultural zones) which could have knock-on market and price effects on staple grain consumers. This zone also suffers from environmental degradation as well as poor essential services (health, hygiene and education.) These problems affect the zone year in, year out contributing to the overall poor health and nutrition status of vulnerable members of the community, as well as weakening income opportunities.

The first step taken by agro-pastoral households to cope with drought is livestock out-migration. Adult men in the household trek their camels to rangelands less affected by drought. In the Bakool sub-zone, the usual route is south to Bay Region and to Haway in Lower Shabelle Region. Depending on the geographical extent of the drought, they may trek north into Ethiopia. The remaining members of the household turn to other strategies to boost income such as selling more bush products, searching for casual work opportunities and selling some of the livestock remaining near the homestead. They will also consume less milk/ghee and sell most of what is produced (typically very little in an extended drought). Some income is also earned through hunting and selling small game (such as dikdik). Another important strategy is to look for credit either from shopkeepers or from friends or relatives. Those with access to remittances also try to increase their remittances from relatives living outside the zone. In periods of prolonged and severe drought and/or insecurity, whole households migrate out of the zone to urban centers in search of food.

Table 3: Coping strategies in response to shocks in the Southern Agropastoral Livelihood Zone

Very poor/Poor	Middle/Better off
• Sell more bush products including hunted game • Search for casual labor opportunities • Sell more milk and ghee/butter (consume less) • Sell livestock (goats, cattle) • Look for credit	• Family splitting (men migrate with the camels to distant rangelands) • Sell more milk/ghee (consume less) • Sell livestock • Look for credit and remittances

Source: FSNAU SAP SO12 2007.

The key parameters listed in the table below are food and income sources that make a substantial contribution to the household economy in the *Southern Agropastoral 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.

Table 4: Key Parameters for monitoring in livelihood zone SO12 (Southern Agropastoral)

Item	Key Parameter – Quantity	Key Parameter – Price
Crop production	Sorghum production (*deyr*)	Sorghum price
Animal production	Yield – camel milk, season 1+ 2 Yield – cow milk, season 1 Yield – goats milk Yield – goats ghee/butter Supply of camels (export quality + local quality) Supply of cattle (export quality + local quality) Supply of goats (export quality + local quality)	Price of camel milk, season 1 + 2 Price of cow milk, season 1 Price of goat ghee/butter Price of camels (export price + local price) Price of cattle (export price + local price) Price of goats (export price + local price)
Other	Supply of farm labor (pre-harvest) Supply of fuelwood	Wages of farm laborers (pre-harvest) Price of fuelwood

Source: FSNAU SAP SO12 2007.

Estimated Population of the Southern Agro-Pastoral Livelihood Zone (SO12)

Zone	Region	District	Livelihood	UNFPA 2014 Population
South	Hiraan	Belet Weyne	Southern Agro-Pastoral	96,590
South	Hiraan	Bulo Burto	Southern Agro-Pastoral	54,058
South	Hiraan	Jalalaqsi	Southern Agro-Pastoral	44,404

South	Bakool	Xudur	Southern Agro-Pastoral	42,055
South	Bakool	Tayeeglow	Southern Agro-Pastoral	23,317
South	Bakool	Waajid	Southern Agro-Pastoral	55,352
South	Gedo	Garbahaarey	Southern Agro-Pastoral	7,430
South	Gedo	Baardheere	Southern Agro-Pastoral	7,096
South	Gedo	Belet Xaawo	Southern Agro-Pastoral	5,452
South	Gedo	Ceel Waaq	Southern Agro-Pastoral	369
South	Gedo	Doolow	Southern Agro-Pastoral	4,091
South	Gedo	Luuq	Southern Agro-Pastoral	8,336
South	Juba Dhexe (Middle)	Saakow/Salagle	Southern Agro-Pastoral	7,690
South	Juba Hoose (Lower)	Afmadow/Xagar	Southern Agro-Pastoral	32,822
South	Hiraan	Belet Weyne	Southern Agro-Pastoral	96,590
SO12 Population 2014 total				**485,652**

JUBA-SHABELLE PUMP IRRIGATION (ZONE SO13)

General Livelihood Zone Description

Table 1: Summary of data supporting the Juba-Shabelle Pump Irrigation livelihood profile

Field data collection	2000, 2001
Consumption year	July-June
Reference year	1996/97
Initial estimated validity	Through 2007

Source: FSNAU.

This agricultural zone covers the two fairly narrow riverine areas along the upper Juba and the upper Shabelle Rivers in Somalia where pump irrigation is widely practiced together with some rainfed cultivation. The Juba River and the Shabelle River are the two main rivers of significance in Somalia, and in this zone they are central to local livelihoods. Small scale pump irrigation using diverted river water is the basis for an agricultural economy where a mix of food and cash cropping is carried out despite the semi-arid climate. Maize and sorghum are the staple food crops. In the upper Juba River, onions and tobacco are principal cash crops where they are grown intensively in riverine nurseries. Sesame, tomatoes, mangoes, sugar cane and bananas are also sold. Along the Shebelle River, mangoes are the main cash crop. Fish is also an important supplementary food. The livelihood zone is food surplus most years with several major urban markets (including Baidoa and Mogadishu) providing demand for fruit, vegetables and tobacco.[79] The 1996-1997 reference year itself was considered a relatively good year both for rainfed and irrigated farming. Floods are the main hazard for local farmers as are high input prices, market disruptions from insecurity or flooding, and pests. Flood waters can cost farmers a season's harvest but they are also a benefit as they deposit alluvial soil which improves soil fertility in the long-term. The livelihood zone is located in three regions: principally Hiraan and Gedo, as well as a small section of Middle Juba. Within these regions, the zone covers a corridor of land stretching around 5-8 kilometers out from either side of the rivers. In parts of Gedo Region, the corridor narrows to a width of 2-3 kms due to the hilly terrain. Many of the local inhabitants in the riverine zone in Hiraan Region are of Bantu ethnic origin while in Gedo Region, the inhabitants are from Somali clans. Bantus have a long tradition as subsistence farmers compared to Somalis whose traditional livelihoods were pastoral or agro-pastoral. The estimated population in the area is 114,997 (UNFPA 2012).

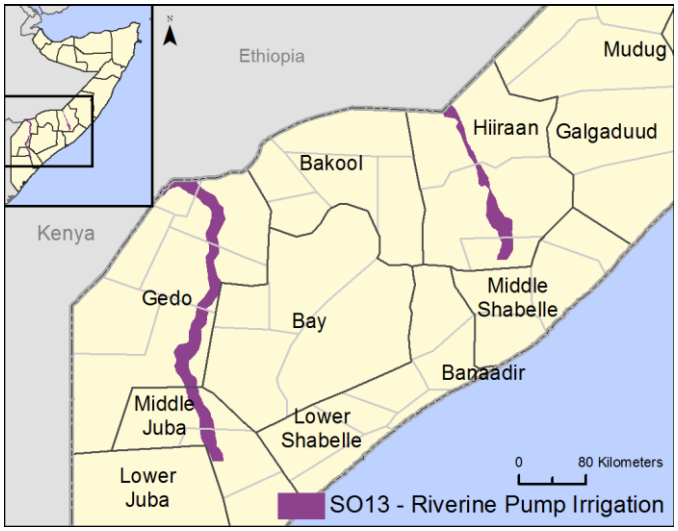
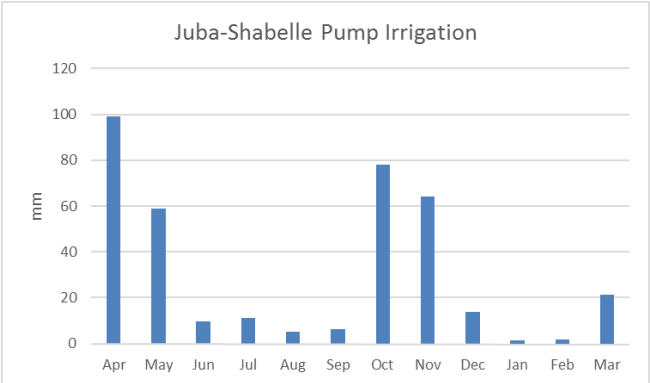


Figure 1: Estimated average rainfall in mm in Juba-Shabelle Pump Irrigation Livelihood Zone



Source: USGS CHIRPS Data, FEWS NET GeoCLIM[78].

The topography of the upper Juba (Gedo) and Shabelle Rivers is flat savannah flood plain. The rivers themselves originate across border in the highlands of Ethiopia. Thus, farmers downstream in southern Somalia are vulnerable to water use changes upstream in Ethiopia whether for

[78] Based on USGS CHIRPS data, a combination of satellite-based Rainfall Estimates (RFE) and station data, with data extending more than 30 years (1981-2014). Source, FEWS NET and USGS.

[79] UN World Food Programme. *Food Market and Supply Situation in Southern Somalia*. WFP Somalia (by Issa Sanogo), October 2011. Page 7. In recent years, tobacco production has significantly declined in the Juba Riverine (Gedo) sub-zone due to restrictions by the Al-Shabaab militias.

hydroelectric generation or for large scale irrigation.[80] The Juba River begins at the Ethiopian border where the Genane and Dawa Rivers converge. Between Luuq and Dolow the river cuts a deep gorge through the limestone plateaus on its path due south where it eventually empties into the Indian Ocean. The livelihood zone covers only the upper segment of the Juba River, (i.e., north of Sakow up to Belet Hawa and Dolow). The Shabelle River, which originates in the Bale Mountains in Ethiopia, also flows southward until near Mogadishu where it turns south-west and becomes swampy in its lower reaches. The river drains into the sands near the lower Juba River. In these lower reaches it is seasonal; however, at the point where it flows through the livelihood zone (i.e., the "upper" Shabelle), there is water flow all year round. This perennial source of water is a vital resource for farmers.[81] However, to use the river resource for cultivation, a certain amount of infrastructure is required. In the upper part of the rivers, the river beds are deep and motorized pumps are needed to access the water. Pump irrigation can only be used when the rivers' discharge is relatively low rather than in full flow otherwise the equipment would be destroyed. In addition to the motorized pumps themselves, supporting infrastructure is needed, such as a system of gates and canals. Some of this infrastructure is still functional but much was destroyed or poorly maintained after Somalia's central government collapsed in 1991.

Other infrastructure in the zone is very limited. There is a secondary road that follows the Juba River from Dolow to Kismayo. However, the road is in poor condition and it is also considered highly risky for travelers and traders alike due to the frequent occurrences of banditry as well as the many manned checkpoints. Another road links Mogadishu with Baidoa (Bay Region), Luuq (Gedo Region) and Dolow before crossing the border into Ethiopia. Finally, there is a third road servicing Hiraan Region that links Mogadishu with Belet Weyne and then both south-central cities with major centers in the north, including Bosaso on the north-eastern Puntland coast. In addition to roads, there are four airports in Gedo Region located in Dolow, Garbahaarey, Bardheere and Luuq as well as one airport in Belet Weyne in Hiraan Region. Otherwise, basic health and hygiene facilities as well as education services are extremely limited due to political instability and conflict since 1991.

The use of pump irrigation allows farmers to grow a range of crops that would not be possible using rainfed methods alone. The prevailing climate is semi-arid with an average annual daytime temperature of approximately 27° C with the hottest period usually occurring in February-April during the *jilaal* season. Rainfall itself is minimal, averaging 300-400 mm per year in total for both the primary *gu* rains (April-June) and the secondary *deyr* rains (October-November). There are various arrangements for farming in this zone. Some farmers are land owners. This situation is more prevalent in the southern parts of the zone. However, many farmers in the north access land either by paying rent or by share-cropping. For cultivation, farmers divert water from the rivers into canals using small (1 piston) India Rocket pumps. Pumps are a critical asset in irrigated farming but many farmers do not own pumps; instead, they rent them.

Rainfed and irrigated farming are both based on the two rainy seasons (the *gu* and the *deyr*). Cereals such as maize and sorghum are typically intercropped with cowpeas and these form the staple food basket. The staple food crops are planted in both seasons with the primary *gu* harvest arriving in July and then a secondary *deyr* harvest coming in January. Maize is grown extensively during the *gu* rains to take advantage of the heavier rainfall typical of that season. At this time, 60-70% of land is used for staple grain production. Typical maize yields in the 1999-2000 baseline year were 0.8-1.2 MT/ha. However, there is considerable inter-annual variation and in 1996-1997 average *gu* season maize yields were 0.6-0.8 MT/ha. During the lighter *deyr* rains, more sorghum is planted than maize. Cash crops are grown throughout the year. Oil cash crops such as sesame are more common on farms along the upper Juba River. Vegetable cash crops, such as onions and tobacco, are also cultivated intensively in nurseries along the upper Juba. These cash crops are harvested at regular intervals (4 and 2 months respectively). Some years when pastoralists are facing significant pasture shortages, farmers in the Shabelle River sub-zone and in Luuq District of Gedo plant more fodder crops in response to a predicted high demand there for fodder. Poor rainfall years also lead farmers to sell grain stalks for fodder before the grains have ripened if they predict poor harvest outcomes.

[80] Over 90% of the water in the Juba and Shabelle Rivers originates in the Ethiopian highlands. AQUASTAT Somalia. *Water Report 29*. 2005. UN FAO.

[81] It is a major hazard too. For instance, in the current 2015-2016 year, the El Nino event which began in February/March 2015 will likely lead to flooding during periods of peak rainfall in November 2015 as well as in March/April 2016.

The Juba River and Shebelle River pump irrigated farming areas are, in fact, two sub-zones. The differences between these two sub-zones can be summed up as follows: (1) **Irrigated and rainfed cultivation**: In both sub-zones, farmers typically farm a mix of irrigated land and rainfed land. However, it is far more common in Hiraan Region (Shabelle River sub-zone) for farmers to cultivate larger rainfed plots supplemented with small irrigation plots. To this end, the Shabelle River sub-zone is less commercial than the Juba River sub-zone. (2) **Types of crops grown**: Due to the predominance of rainfed cultivation in the Shabelle River sub-zone, sorghum is grown more extensively to cope with low rainfall. By contrast, in the Juba River sub-zone, maize is the primary staple grain. A second difference is that along the upper Juba River, onions and tobacco are grown intensively. In recent years, tobacco production in Gedo Region has sharply declined due to the ban on growing tobacco by the Al Shabaab militia. In the upper Shabelle River, mangoes are a key cash crop.[82]

Livestock holdings are not large in this zone as land is mainly reserved for cultivation. Moreover, livestock holdings have fluctuated in the past with relatively high livestock losses reported in El Nino flood years (i.e., 1997-1998). In general, it is only the better-off households who have some milking cows at the homestead as well as a few sheep and goats. Most households have a small flock of chickens. Livestock are zero grazed using cowpea leaves, grain stalks and other crop residue for fodder. Farmers also sell fodder to neighboring agro-pastoralists. In general, farmers in the *Juba-Shabelle Pump Irrigation Zone* have relatively strong linkages – both trade linkages and kinship affiliations –with the neighboring agro-pastoralist population. Conversely, historically, they have had more conflicts with the pastoralist population especially in dry years when pastoralists' livestock have encroached on cultivated land for grazing en route to the river. Overall, livestock holdings are higher in the upper Shabelle River compared to the upper Juba River where few households own any cattle, sheep or goats. Instead, fishing, sharecropping, agricultural labor, sales of bush products and mat making provide local opportunities for households to supplement their own-farm output. For instance, poor households typically find 60-80 days of paid work over the agricultural season.

Markets

This livelihood zone has relatively high number of major urban centers which serve as market hubs for farm produce and labor. However, market access has been highly disrupted over the years by conflict affecting cities, roads and country-side.[83] For example, in 2011-2012, there had been a major offensive by the Transitional Federal Government and AMISOM troops to force Al-Shabaab militants from key bases in south-central Somalia, including from Mogadishu, Baidoa, and Baardheere. To some extent, this offensive was successful but regular incidences of Al-Shabaab activity still occur in the zone. Since 1991, and due to the drawn-out civil war, trade routes for farm produce from the Juba Valley shifted towards to Kenya. Today, with more political stability, trade is flowing again from rural areas to major southern coastal ports (namely Mogadishu and Kismayo). Moreover, regional cities and district centers – such as Baidoa (Bay Region); Belet Weyne and Buloburte (Hiraan Region); Baardheere, Belet Hawa, Dolow and Luuq (Gedo Region); and Buale and Saakow (Middle Juba Region) – are also important destination markets for the zone's products. The cross-border trade with Ethiopia and Kenya is a further dynamic in this zone.

Road infrastructure is still being rebuilt after much damage during the civil war. In general, most rural roads are dirt. Hence, during the heavier rains of the *gu* season, roads are frequently washed out and trade becomes disrupted. One major road joins the country's capital, Mogadishu with Baidoa (Bay Region) and with Luuq and Dolow (Gedo Region) on the upper Juba. A poor quality secondary road also connects the major centers in the upper Juba area with Kismayo. There is also reasonably good road access between Mogadishu and Belet Weyne in Hiraan Region. Despite these road linkages, the political situation in southern Somalia in general, and the risk of renewed insurgency in particular, means that trade routes which are currently open may be disrupted again in the future. Safe and stable market access is not an assured situation even though this agricultural zone is a supplier of much of the region's vegetables, fruit and tobacco.

[82] In the Shebelle riverine area, cultivated land can be several kilometres away from the river although typically no further than 5-8 km away. Along the Juba River, in parts of Burdhubo and Luuq Districts, there is no riverine agriculture at all and farming is rain fed cultivation only.

[83] Belet Weyne is a good example of a city that saw much conflict (and hence restricted trade) for a couple of decades. However, since the 2012 mayoral elections, Belet Weyne has become an important market centre due in part to its location on transport routes from Ethiopia to Mogadishu, as well as to Baidoa (in the south-central Bay region) and also to cities in northern Somalia/Puntland.

Overall, the market structure in Somalia is organized around large-scale import/export traders who have the financial means to transport goods within the country as well as international trade connections. These traders control key commodity imports such as rice, wheat flour, sugar and vegetable oil. These goods are sold to wholesalers who in turn sell to retailers based in district and village markets.

Cereal markets

Maize and sorghum are the principal cereal crops grown in this livelihood zone. The market for staple grains is typically local with peak sales occurring post-harvest in July (*gu* harvest) and January *(deyr* harvest). Prices fluctuate with supply. Thus prices are highest in the months prior to the harvest (May/June and November/December) when demand is highest and supplies lowest. This hits poor consumers the hardest. Conversely, prices are lowest post-harvest when sales peak. This hits producers the hardest. Large market towns such as Bardheere (Gedo Region) and Belet Weyne (Hiraan Region) provide urban market demand for local cereals.

Trade flows and price dynamics are greatly influenced by the prevailing security situation. For instance, in December 2011 it was reported that Beled Hawa (Gedo Region) was more connected to markets in the Mandera Triangle in Kenya than to markets in Somalia in part due to conflict-induced isolation. Similarly, supply and price trends for staples in Luuq and Dolow markets are as much influenced by cross-border trade and supply as they are by the situation within southern Somalia. Moreover, in 2011, white maize from Ethiopia was found in Belet Weyne market (Hiraan Region) which in part was attributed to restricted supply flows out of Mogadishu due to fighting. In addition, consumer price fluctuations for staple grains are as much due to supply shortages from disrupted trade due to conflict as from poor crop outcomes. For instance, prices remained double the long-term norm in July/August 2014 (after the *gu* harvest) in Bulo Barde District due to the combination of three factors: erratic rains, reduced harvest and blocked trade flows on access roads.

Cash crop markets

A variety of vegetables and fruits are sold by farmers to urban markets in southern Somalia. Onions are the principal cash crop from the Juba Valley much of which is destined for Mogadishu. At times, cash crops are also sold cross-border to Kenya to the border town market of Mandera and even to Dadaab refugee camp in Garissa District. Tobacco was another primary cash crop from this zone which is in high demand throughout Somalia and which has relative price stability as it is harvested every two months. However, production was drastically affected by a recent ban on the commodity by the Al-Shabaab. The other cash crops in the zone include tomatoes, sesame, watermelon, mangoes and bananas.[84] The market for these crops is nearby district and regional urban centers. Bananas were once a flourishing cash crop for export but with the loss of preferential market access to Europe and due to El Nino floods and war, large-scale production has been abandoned and bananas are now grown only on small-holder farms for local sale. Sesame is also a major cash crop for the zone in particular and for the country in general but since 1991 it has been beset by problems of quality control and reduced overseas demand. In 2008, a local businessman started up a sesame oil factory supported with Italian aid money in order to provide local processing capability for farmers' crops. However, in 2014, traders continued to struggle to export the crop due to the lack of export grade certification by national authorities as well as a lack of formal economic partnership agreements with Europe.[85]

[84] Bananas were once an important export crop although more so for households in the Gravity Irrigation Livelihood Zone of the lower Juba and Shabelle Rivers. However, production was almost destroyed in 1991 due to the civil war. It continued at a low level with exports to Europe and the Middle East until 1997. However, the loss of European markets in 1997 and continued insecurity effectively ended exports and large-scale production of bananas.

[85] In 2012, Somalia was the 12th largest producer of sesame in the world. In order to export some sesame, traders have had to be imaginative. One trader explained to a reporter that he shipped the crop to Indonesia, nationalised it there and then traded the sesame to Germany. Anjil Parrin. 2014. *Five Challenges for Somalia's Economic Reconstruction*. IRIN News. Feb 2014.

Casual labor markets

Most casual work in this zone is rural-based and involves seasonal agricultural work (ploughing, ridging, planting, weeding, bird-scaring and harvesting). A typical poor household in 1996-1997 managed to find about 90-100 days of work over the agricultural season, receiving a payment of Somali Shillings 5,000 per day. From 2003-2007, the average rural daily wage rate was an estimated SoSH 20,000. By 2014-2015, poor workers were able to find only about 60-80 days of work over the agricultural season. Wage rates are sensitive to supply and demand; thus, rates typically decrease when there is labor migration into the zone and high numbers of people arrive in search of work. This trend is common during periods of food stress for the poor, as occurred in 2011 for example. As political stability returns to the main urban centers such as Baidoa, Belet Weyne, Kismayo and Mogadishu, these centers will also become a draw for casual labor.

Credit

Taking food, seeds or other essential goods on credit from local shops and traders is very common in the *Juba-Shabelle Pump Irrigation Livelihood Zone*. Households gain access to needed supplies by taking on debt when income is low. They repay the debt (in full or in part) once they have harvested their crop. In-kind credit amounts are typically low (between USD 5-30 per loan) with a small premium put on the price of goods taken on credit (i.e., up to 10% of the regular price). For these small loans, a report found no gender discrimination. In fact, women were just as likely to receive credit as men because shopkeepers believed that women were less likely to default and more likely to repay their loans than men.[86]

Conflict

The conflict that began with the collapse of the central government in 1991 continues to trouble southern and central Somalia even 25 years later. Some stability returned in 2012 with the formation of a post-transition Federal Government. However, fighting over territory in southern Somalia continues to this day as the National Armed Forces (with support from the African Union Mission in Somalia/AMISOM) try to regain strategic cities and towns from the militia group, Al Shabaab. Continued conflict in Middle Juba region (controlled by Al Shabaab) and neighboring districts has led to frequent market disruptions due to the blocking of commercial supply routes. In turn, supply shortages have led to price increases for local producers and consumers. A recent 2014 example is the significant price increases of staple goods in Bulo Burto town (Hiraan Region) due to transport route blockages and renewed military operations in 2014 in south-central Somalia. As of 2014, there were IDPs (Internally Displaced People) in Gedo, Hiraan and Middle Juba Regions that numbered about 155,000 people in total. Many are women and children who are particularly exposed to gender-based violence. Thus, population displacement, physical violence, market disruptions, low agricultural investment, reduced labor opportunities and staple food shortages can all be attributed to Somalia's prolonged civil insecurity and these factors have also played a large role in food and livelihood insecurity in this zone.

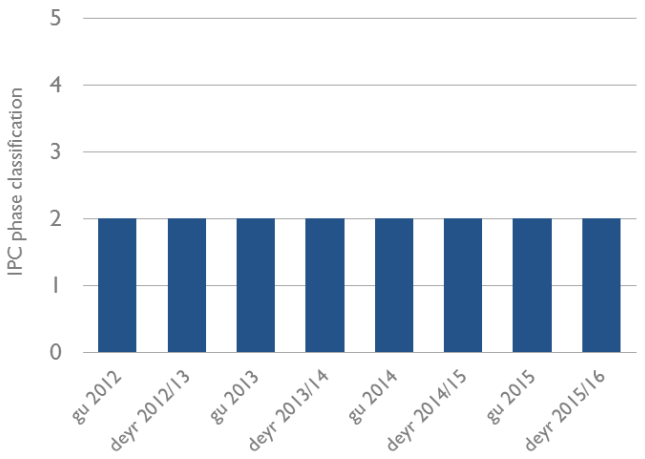
Food access history

Prior to the collapse of the state of Somalia in 1991, there was one exceptional period of extreme hunger in recent history: the famine of 1974/75. Since then, there have been two further periods of extreme hunger in southern Somalia: in 1991/92 (due to drought compounded by state collapse); and in 2011 (due to drought compounded by conflict and insecurity). Notably, in June 2010, the UN WFP withdrew from Somalia due to violent attacks against its staff as well as due to frustration over food aid diversion. This had been preceded by the withdrawal of other international humanitarian agencies in 2009. Moreover, in 2010 and 2012, Al-Shabaab banned international NGOs (such as ICRC) and several UN agencies from working in Al-Shabaab controlled territories of southern Somalia. These events and the politicization of aid in general in south-central Somalia, made deliveries of humanitarian aid to affected populations extremely difficult.

[86] The Somalia Cash Consortium. *Access to Credit and Unconditional Cash Transfers in South-Central Somalia.* INDEX Consultants for DRC, SCI, ACF and ADESO, February 2013.

In addition to the years of exceptionally severe drought and hunger, there were other drought events that affected the country as a whole. These periods included: 2000/01, 2005/06, 2008/09 and 2014/15. These drought events were widespread, affecting much of the Horn of Africa. In addition to drought, there were also years of flood crises that affected the riverine population in particular. Over the last decade, late 2006 stands out as an extreme flood year. There were also major floods in 1997, 2002/03, 2004/05, and 2009/10. Often flood years followed drought years due to the El Nina/El Nino effect. For instance, there was erratic rainfall in 2004/05 which led to drought conditions in 2005/06 in Somalia. However, during the *deyr* of 2006 (October-December) there was heavy rain and high flood water in the Juba and Shabelle Rivers.[87] This led to an urgent call for emergency assistance. In response to most of these drought and flood events, there have been humanitarian interventions (including food aid, supplementary feeding, food vouchers, cash transfers, and provision of shelter, water, health and hygiene supplies as well as medical interventions). However, the scale of these interventions has been to large part determined by agencies' access to affected populations.

Figure 2: Recent trends in IPC phase classification with 1 as worst and 5 as best



Source: FSNAU

Seasonal calendar

Four main seasons characterize the Juba-Shabelle Pump Irrigation Zone: two rainy seasons and two dry seasons. The heaviest rains fall during the gu (April-June) with lighter and more sporadic rains falling during the deyr (October-December). The dry seasons are characterized by one shorter, cooler season, called the hagaa (July-September), as well as a long, hot dry season, called the jilaal (January-March).

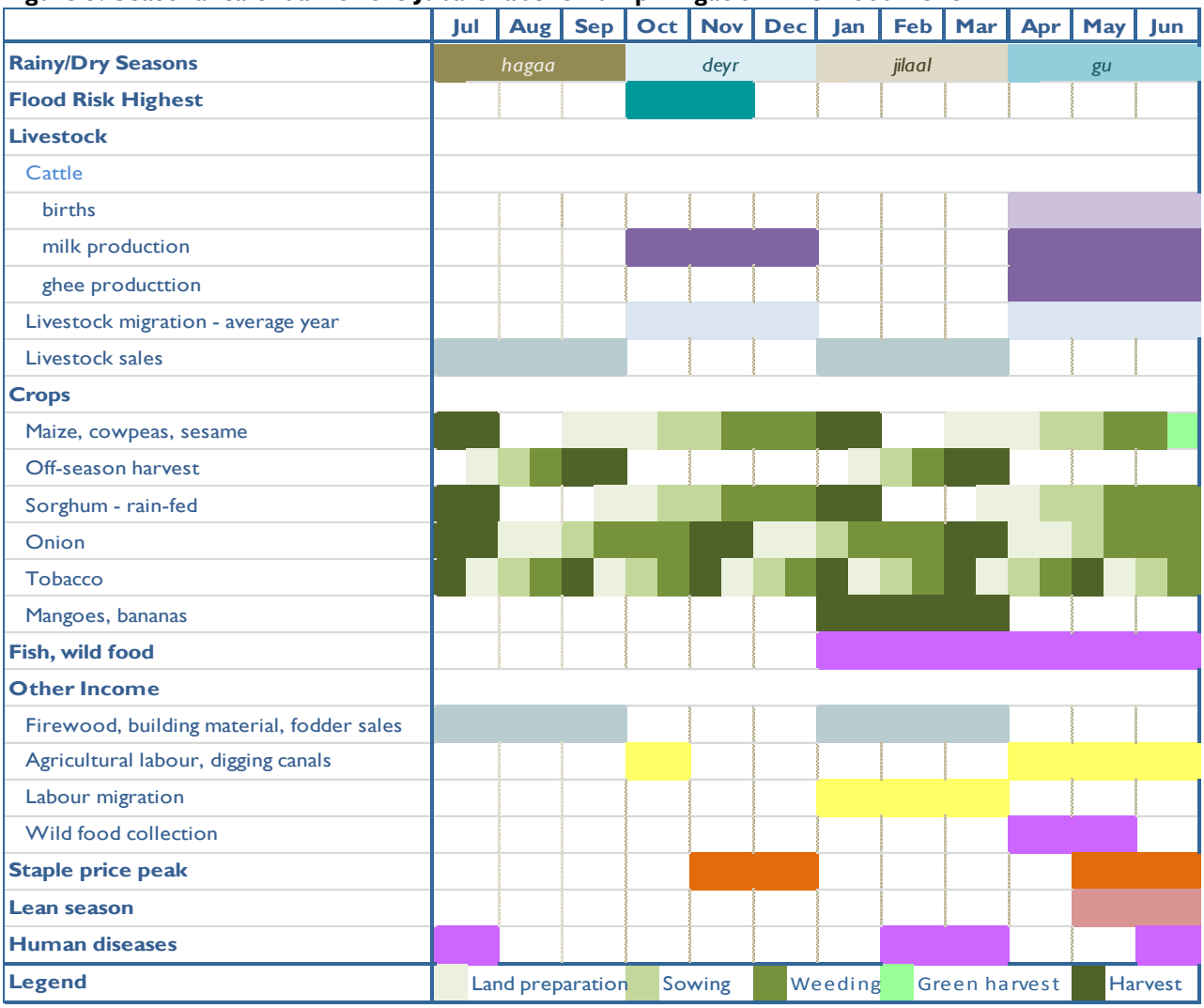
The farming season follows the timing of the rainy season in the rainfed areas of the livelihood zone. The irrigated areas, by comparison, are influenced by two factors: the outcome of the local rainy season; and, river water levels stemming from the rains in the Ethiopian highlands. By and large, in both rainfed and irrigated areas, land preparation takes place in the months prior to the rains (i.e., first in March/April and then again in September/October). Planting is carried out once the rains start. Generally, there is a first planting in April/May for the *gu* season followed by a second planting in October/November with the *deyr* rains. Once crops have germinated and begin growing, weeding takes place. The main staple food harvest of maize, sorghum and cowpeas is in July. The *deyr* harvest is in January. Once the grains are threshed and stored, farmers then harvest the stalks and other crop residues for fodder. Some maize, sesame, cowpeas and other crops are also planted "off-season" to take advantage of flood recession moisture left in the soil. The off-season *gu* harvest is in September; the off-season *deyr* harvest falls in March. In both cases, farmers need to bring in the crops prior to the start of the next season's rains.

Cash crops, particularly market vegetables such as onions, tomatoes and green peppers as well as tobacco are on a more intensive timetable. In the irrigated nurseries along the Juba River, for instance, tobacco is harvested every two months (hence six harvests per year). Onions are harvested every 4 months (3 harvests per year).

Other food sources, such as milk, fish and honey, are also very seasonal. Milk production and consumption is highest during the rainy seasons when pasture and local water sources are replenished by the rain, and cattle are well-fed. Fishing has two seasons. The first season occurs at the end of the *gu* rains when river levels are relatively high. During the *deyr* rains, river levels peak and the flow is too fast and water levels too high for successful fishing. The second season – the peak fishing

[87] The current 2015/16 year is also expected to be severe due to a combination of drought in 2014-2015 and deyr-season river flooding in 2015.

Figure 3: Seasonal calendar for the Juba-Shabelle Pump Irrigation Livelihood Zone



Source: FSNAU JSI Pump SO13 1996/97.

period -- occurs during the dry jilaal season (February/March) when water levels are low. Nilotic fish species are the type of fish found in the upper Juba River and are caught using both hook and line as well as gill nets with stretch mesh. Daily catches are rarely more than for domestic consumption. Honey production is also typically highest in February/March although honey consumption overall is relatively low in this zone.

Income that supplements agricultural production is typically earned during the dry seasons. For instance, grass, firewood, charcoal and fodder sales are typically highest during the *hagaa* and the *jilaal.* These income sources are associated more with the Shabelle River sub-zone where vegetable production is lower. Casual farm labor is also highest in the dry season as workers are often hired to prepare the land for the upcoming season. Hired farm work continues into the rainy season with planting, weeding and bird scaring.

Staple food prices fluctuate during the year as well as from year to year. During the year, price increases are associated with low supply, that is, in the 1-2 months prior to the harvest. Most years, the periods of peak prices are in May/June and November/December. Conversely, prices drop directly after the harvest. Consequently, the months of low staple food prices are in July/August (after the *gu* harvest) and January/February (after the *deyr* harvest). Market disruptions also create price increases due to reduced supply from closed transport routes.

Wealth breakdown

In the *Juba/Shabelle Pump Irrigation Zone*, land holdings and pump ownership are the key determinant of wealth. Other assets such as livestock, farm inputs, transport and small businesses also distinguish the better-off from the poor. Wealth characteristics differ between those households farming along the upper Juba River and those farming along the Shabelle River in Hiraan Region. Along the Juba River, where irrigation is more intense, households – even the better-off – own very few livestock, particularly cattle. By contrast, it is more common for households along the Shabelle River to own some cattle.

Table 2: Wealth group characteristics in the Juba Riverine Pump Irrigation Livelihood Zone. ***Shabelle Riverine figures in parenthesis (e.g., 5-9)***

	Poor	Middle	Better-off
Household percentage (%)	30-40	50-60	5-20
Household size (#)	6-8	7-9	9-11
Land holding (ha)			
Land area owned	3-5	8-15	15-20+
Land area cultivated *(rainfed + irrigated)*	1-2 *(0.5-1.5)*	2-3 *(2-4.5)*	10-15 (5-9)
Typical livestock holding (#)			
Shoats	0 *(0-4)*	0-2 *(10-15)*	3-5 *(20-25)*
Cattle	0 *(0-3)*	0 *(3-5)*	6-8 *(5-10)*
Donkeys / Oxen	0	0-1 *(1)*	2-3 *(1)*
Other productive assets (#)			
Donkey cart	0	0-1 *(1)*	2-3 *(1)*
Pumps	0	0-1	1-2
Motor vehicle	0	0	0-1

Source: FSNAU JSI Pump BSS SO13 1996/97

Better-off households are those who own substantial landholdings (15-20 ha) which are typically divided into 2-3 different farms. Much of this land is cultivated (10-15 ha). Better-off households own the means to farm a lot of land. Most importantly, they own pumps (2-3) for irrigation. In the Hiraan Region, it is more common to rent pumps rather than own them. Moreover, farmers own and cultivate a mix of irrigated and rainfed land. What wealthy households have in common throughout the zone is that they own a mix of important productive assets that contribute to their higher income. For instance, unlike other wealth groups, the better-off own cattle. Livestock holdings are relatively small in this zone and are rarely higher than 10 cows per household. A typical range in the upper Juba sub-zone is 6-8 cattle, complemented with 3-5 sheep and goats. [88] In addition to land, irrigation pumps and livestock, better-off households own other types of productive assets including a couple of oxen (or donkeys), carts; oil pressing and maize milling machines; a vehicle and a small shop. They also pay for hired agricultural labor. This means that the better-off spend relatively few of their work hours on their own farm (an estimated 20%). In total, the combined assets of the wealthy support fairly large households of 9-11 family members, including a husband, his two wives and their children. Very few households in the zone actually fall in this category, and at the last assessment (1996-1997) only 5-15% of households were considered "better-off". This asset profile has not changed much over the years and two decades on, it still reflects the situation of the better-off.

Middle households own quite a lot of land (10-15 ha) but cultivate only a small part of it (2-3 ha), and in this way they differ from the better-off. Their main constraint is that they own only one or no pumps. For those who do not own a pump, they must pay to rent one. For middle households, farming is their main preoccupation and for the 1996-1997 reference year, it was estimated that they spent about 60% of their work hours on their own farms. In general, middle households are not cattle owners. Instead, they own one or two *shoats*, some chickens (7-10) and perhaps a donkey and cart (0-1). Middle households do not own or run small shops; however, they do have enough income to engage in petty trade. They are relatively large households (7-9 people) and they typically consist of a husband, his wives (1-2) and their children. In the 1996-1997 reference year, the middle group comprised an estimated 50-60% of households.

[88] Numbers of sheep and goats owned at the household level are usually higher in the Shabelle River irrigation zone. There, a better-off household typically owned 20-25 shoats as reported in 2000 although flock numbers may have changed in the 15 years since then.

The second largest wealth group are the poor. In the baseline year, poor households comprised an estimated 30-40% of all households. Most of the poor are land owners (4-5 ha). However, they lack the means to cultivate all of this land as they own neither pumps nor oxen nor have the income to hire labor. Given the lack of assets, the poor typically cultivate 1-2 ha. They have a flock of chickens for meat and egg income but no other livestock nor other types of productive assets. The pressure to earn additional cash to meet basic expenses means that they only spend about one-third of their working hours on their own farm. Poor households typically consist of a husband, his wife and their 4-6 children.

In 1996-1997, very poor households were an estimated 15% of the population. The very poor do not own productive assets but instead engage in daily labor and/or begging.

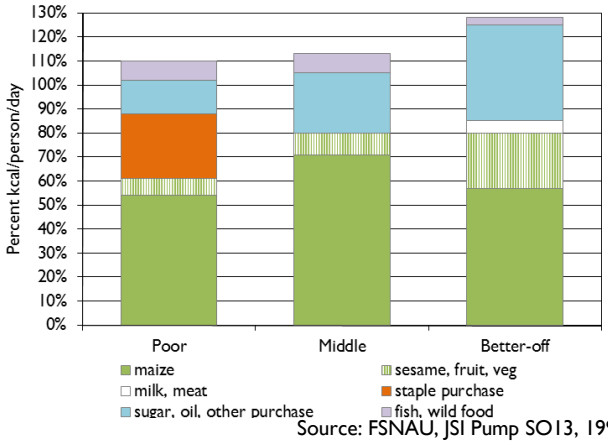
The main social mechanism to help the poor make ends meet is *zakat*. *Zakat* is given by those households with assets to those households without and can be in the form of food or money. In this zone, in 1996-1997, *zakat* was given to the poor usually in the form of food. In the upper Juba River sub-zone, for example, the poor received maize, sesame and onions during the reference year from better-off households. However, in recent years, Al-Shabaab have been receiving *zakat* rather than the poor especially in Gedo Region.

Remittances are not very prevalent in this riverine zone as estimate of its prevalence is that 5-10% of households received remittances in the current 2014-2015 year.

Sources of food and income and expenditures

Farmers from all three wealth groups in this zone produce most of the food they consume. Maize (as well as sorghum in the Hiraan Region) is the principal staple food grown and consumed. The staple grain is complemented with small amounts of cowpeas, sesame oil and vegetables (such as tomatoes and pumpkin). Better-off households also add fruit, including bananas, mangoes and sugar cane. During the 1996-1997 baseline year, the poor met an estimated 60-65% of their annual household energy needs from own-production, of which 55% came from maize alone. Middle and better-off households met about 80% of their annual food energy needs from own-production. As with the poor, 60-70% of their annual food energy was met from own-maize. This translated into an estimated 800 kg of maize produced in the *gu* and *deyr* seasons by poor households; a typical middle household produced 950 kg; and a typical better-off household produced 1,200 kg of maize. As these farmers are mostly reliant on their own production to meet their basic food needs, they are vulnerable to hazards such as floods or crop pests which reduce crop output and put them at risk of food shortages.

Figure 4: Food sources by wealth group, Upper Juba-Shabelle Pump Irrigation Zone



Source: FSNAU, JSI Pump SO13, 1997

Figure 5: Cash income sources by wealth group, Upper Juba-Shabelle Pump Irrigation Zone

Source: FSNAU, JSI Pump SO13, 1997

Most of the balance of food energy consumed during the year came from food purchases. Poor and better-off households purchased about the same amount of food energy (i.e., an estimated 40% of their annual needs). Some common purchases were sugar and oil (13-16% of annual needs). However, there were important differences. The majority of food purchased by the poor was maize. By contrast, neither middle nor better-off households bought staple grain during the baseline year. Instead, middle households supplemented their food purchases with meat and (camel) milk. Better-off households were able to afford a greater diversity of food items, including pasta, rice and wheat flour, as well as meat.

Food grown and food purchased met the basic food energy needs of all wealth groups in the 1996-1997 baseline year. However, some dietary diversity was also added by eating fish caught during peak and low river flow, as well as by eating wild meat (mainly guinea fowl) and wild greens.

Agriculture is also an important source of cash income in this livelihood zone. In the Juba River sub-zone (Gedo Region), farmers met 60-75% of their annual cash income through crop sales alone in 1996-1997. Cash crops such as onions and tobacco, which are grown intensively in irrigated nurseries, were a particularly important source of cash income. Today, tomatoes have largely replaced tobacco as a key cash crop. Better-off households were also able to raise cash through the sale of fruit such as mangoes, sugar cane, lemons and bananas. Like middle and better-off households, the poor earned some income through tobacco and onion sales. However, for the poor, maize sales were their single highest source of crop sale income in the 1996-1997 baseline year.

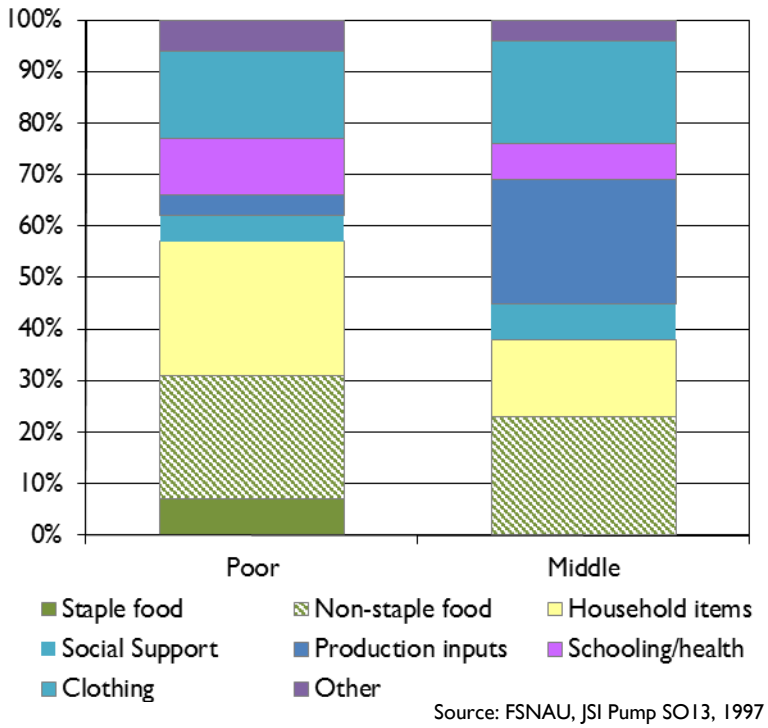
In addition to differences between wealth groups, there were also differences between the riverine areas. Onions and tobacco are associated particularly with the Juba River sub-zone. Along the upper Shabelle River, in Hiraan Region, there is less intensive irrigation. Sales of food crops (maize, sorghum and cowpeas) are sold as well as fruit (mangoes) and market vegetables. Most households sell crops post-harvest to settle debts and to ensure credit access for the next season.

All wealth groups generated additional cash through other means to supplement crop sale income. These other means differed by wealth group. The poor made and sold woven mats as well as sold bush products (such as grass and fodder). Their other source of income was local agricultural labor (mainly clearing land and weeding). Middle households also sold woven mats and/or sold bush products such as charcoal but their main secondary income source was petty trade. Better-off households, by contrast, supplemented crop sales with running a small business, such as maize milling or a village shop.

In the upper Juba River sub-zone, livestock sales income was a very low (about 5%). Poor households sold chickens and eggs, and better-off households sold livestock or engaged in cattle trading. However, in the Hiraan Region (Shabelle River sub-zone), middle and better-off farmers earn a higher proportion of their annual income from the sale of milk and livestock. This reflects higher cattle and *shoat* holdings in that part of the livelihood zone.

All wealth groups spent money purchasing food in the baseline year. Overall, 23-27% of annual expenditures was on non-staple food which

Figure 6: Allocation of expenditures by wealth group, Upper Juba-Shabelle Pump Irrigation Livelihood Zone



Source: FSNAU, JSI Pump SO13, 1997

included common items such as oil and sugar. The difference in food spending between wealth groups was that only poor households purchased staple food. In the baseline year – a relatively "normal" year for crop production -- staple food spending was less than 10% of the annual expenditures of the poor in the Juba pump irrigation sub-zone.

Some farm input expenses were incurred by all households. Poor households paid mainly for seeds, pesticides, and pump rental whereas middle and better-off households had seed, labor and fuel expenses. The most costly input was fuel for the irrigation pumps. These costs alone came to 9-18% of their annual expenditures. Irrigation pumps also required oil and spare parts for maintenance.

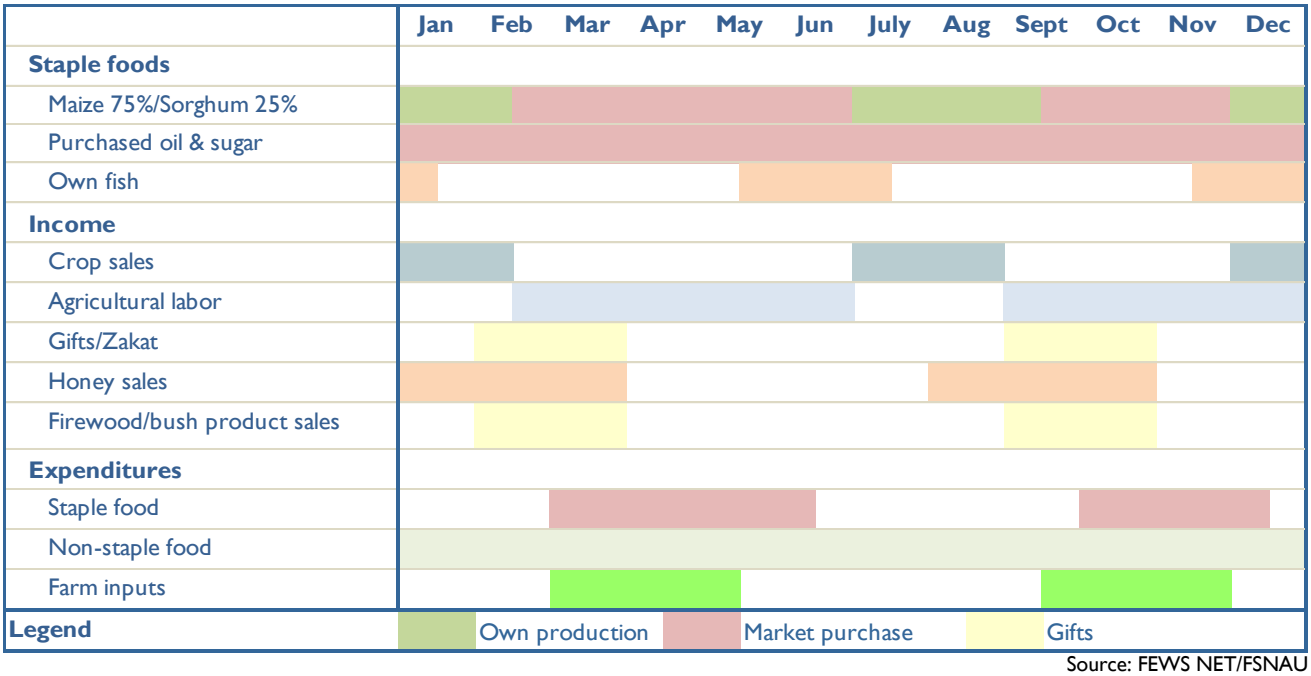
Another expense borne by middle and better-off households (but not the poor) was *zakat* and cash gifts to relatives. These expenses were relatively low (about 4% of annual expenditures) in the reference year. Notably, households from all wealth groups paid clan contributions during the year which came to an estimated 1-5% of annual household expenditures.

There were a number of basic expenses that were common to households in all wealth groups. These expenses included payment for clothes, health services and Qur'anic school (25-30%) as well as essential household items such as soap, salt, tea leaves, tobacco, kerosene for lighting, batteries and utensils. Although these expenses were common for all wealth groups, the poor spent proportionately a lot more on these items (28% of their annual expenditures) than middle households (15%).

Calendar of major sources of food and income for poor households

Crops are the backbone of the economy in this livelihood zone for poor and better-off households alike. Poor households produced over half of their annual food energy needs in the reference year, principally maize and sorghum with some intercropped cowpeas as well. The remaining food energy was purchased with cash earned from a mix of cash crop sales, sales of bush products and agricultural labor.

Figure 7: Main components of the food access calendar for poor households in livelihood zone SO13 (Juba-Shabelle Pump Irrigation)



Source: FEWS NET/FSNAU

The period during the year when household food supplies are lowest is the 2-3 months prior to the *gu* harvest. This lean period coincides with the *gu* rains, namely April-June. At this time, the poor are juggling their family labor between work on their own farms and work for other farmers due to the pressure to earn a daily income. In general, cereal supplies in local markets are relatively low prior to the harvest as household stocks run out and high demand pushes cereal prices up. Heavy rain storms that wash out roads and disrupt trade flows further pushes prices up at this time. Cereal prices also rise during the deyr rains, prior to the January *deyr* harvest, although if there is an off-season maize harvest in September, this offsets the need for cereal purchases. Most years, poor households purchase cereals for 6-7 months of the year (February-June and September-November) which puts a certain amount of income pressure on poor families.

Hazards, response, and monitoring variables

Floods and Drought: As most of the farm land in this livelihood zone is located alongside the Juba and Shabelle rivers, the risk of flooding is both a hazard and a benefit. Flash floods are due to locally-concentrated heavy rainfall. The other type of flood event occurs when there are very high water levels when the river crests. Very high water levels are due to heavy rainfall in Ethiopia. Both cases are destructive as rapid moving flood waters wash away property, crops, livestock, roads and bridges. High flood waters also deposit debris on farmers' fields that subsequently must be cleared before re-planting occurs. However, floods also deposit new soil which re-fertilizes the land. Receding flood water can also be used for growing more crops in the off-season in order to re-coup losses incurred immediately post-flood.

Table 3: Coping strategies in response to shocks in Juba-Shabelle Pump Irrigation Zone

Very poor/Poor	Middle/Better off
Shabelle riverine • Migrate to the Wabi Shebelle area in Ethiopia for agricultural labor or sharecropping. • Migrate to Belet Weyne for casual labor • Increase sales of bush products • Increase consumption and sale of fish **Juba riverine** • Search for agricultural jobs on neighboring farms • Increase sale of bush products (firewood, charcoal, grass, building poles, honey) • Reduce maize sales (reserve for consumption) • Increase crop sharing for onion and tomatoes.	**Shabelle riverine** • Migrate to higher potential areas (i.e., in Ethiopia) to find available land to farm using shifting cultivation or for sharecropping • Increase sale of building poles • Increase sale of cowpeas • Increase sale of sheep and goats **Juba riverine** • Take out credit • Look for remittances from relatives (this option applies mainly to non-Bantu farmers).

Source: FSNAU JSI Pump SO13 1996/97

Some flooding occurs most years although annual floods are more frequent in the lower Juba and Shebelle River floodplains. Historically, the 1997 *deyr* season floods were particular severe, as was the terrible flood event of 2006 caused by heavy *gu* season rains. There were further flood events in 2011, 2012 and 2013. In 2015, flooding is again expected during the *deyr* season due to El Nino. Potential damage is not only expected to affect farmers but also town residents, especially in Belet Weyne, the capital city of Hiraan Province.

In addition to the years of exceptional flooding there are also years of severe drought. 1991/92 was one such memorable drought year. Other drought events that affected the country as a whole were recorded in 2000/01, 2005/06, 2008/09 and 2014/15.

Input Prices & Market Access: Irrigation using pumps requires fuel and oil inputs. High and rising input prices are a hazard in this zone as it reduces farmers' income and/or reduces use of irrigated fields. High prices for seeds (as occurred historically in 1999 with high onion seed prices) is also a periodic hazard. Low producer prices for key cash crops – such as market vegetables, fruit and tobacco – further hurt farmers' income. Conversely, years of high cash crop prices also stand

out in history (1995 is a notable example). A further risk in this zone is market closures. Markets are typically closed due to conflict, as occurred during the two-decade long civil war when key cities (Mogadishu, Kismayo and Baidoa for instance) were too insecure for traders to enter with their goods. Localized conflict and civil insecurity still continues, creating market disruptions either in market centers or along trading routes. Looting associated with conflict also aggravates property losses.

Pests: Heavy bird and insect infestations periodically cause significant crop losses. Historically, in the year 2000, in the Shebelle riverine area, there were heavy crop losses due to birds and insects.

The key parameters listed in the table below are food and income sources that make a substantial contribution to the household economy in the *Juba-Shabelle Pump Irrigation 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.

Table 4: Key parameters in livelihood zone SO13 (Juba-Shabelle Pump Irrigation)

Item	Key Parameter – Quantity	Key Parameter – Price
Crop production	Maize production Sorghum production Cowpea production Sesame production Onion production Tomato production Tobacco production	Price of maize Price of sorghum Price of cowpeas Price of sesame (and/or sesame oil) Price of onions Price of tomatoes Price of tobacco
Animal production	Supply of goats Supply of sheep	Price of goats Price of sheep
Other	Fish catches Fruit production or supply of wild fruits (mangoes, bananas) Supply of farm labor (pre-harvest) Supply of local labor (urban, construction) Supply of fuelwood, charcoal, building poles Supply of local, woven mats Supply of fodder	Price of fish Price of fruit (mangoes, bananas) Price of farm labor (pre-harvest) Price of local labor (urban, construction) Price of fuelwood, charcoal, building poles Price of woven mats Price of fodder

Source:FSNAU JSI Pump SO13

Estimated Population of Juba-Shabelle Pump Irrigation Livelihood Zone (SO13)

Zone	Region	District	Livelihood	Population 2014 (UNFPA)
South	Hiraan	Belet Weyne	Riverine Pump Irrigation	18,973
South	Hiraan	Bulo Burto	Riverine Pump Irrigation	16,219
South	Hiraan	Jalalaqsi	Riverine Pump Irrigation	11,679
South	Gedo	Garbahaarey	Riverine Pump Irrigation	12,383
South	Gedo	Baardheere	Riverine Pump Irrigation	29,673
South	Gedo	Doolow	Riverine Pump Irrigation	2,728
South	Gedo	Luuq	Riverine Pump Irrigation	6,254
South	Juba Dhexe (Middle)	Saakow/Salagle	Riverine Pump Irrigation	17,088
SO13 Population 2014 UNFPA total				**114,997**

SHABELLE-JUBA GRAVITY IRRIGATION (Zone SO14)

General Livelihood Zone Description

Table 1: Summary of data supporting the Shabelle-Juba Gravity Irrigation livelihood profile

Field data collection	2000**[89]
Consumption year	July – June
Reference year	1999/00
Initial estimated validity	Through 2010

Source: FSNAU

The agricultural economy of the middle and lower Juba and Shabelle Rivers is based around its river resources. Farms are typically located in close proximity to the rivers (i.e., about 5-12 kilometers from the river bank). However, the zone also includes a sub-zone in the lower Shabelle area comprising agro-pastoral communities who live 20-40 km away from the river and who combine irrigation and rain-fed farming with livestock production. Farmers use different farming methods – primarily gravity flow irrigation but also flood recession and rain-fed farming-- to cultivate a mix of food and cash crops. Maize, cowpeas and sesame are grown extensively for consumption as well as for sale. These staple crops are supplemented by cash crops, chief among them market vegetables and fruit such as tomatoes, pumpkin, mangoes and coconut. For the most part, the livelihood zone should be a supplier of food to the region's large city populations. However, since the start of the conflict and the central state's collapse in 1991, the riverine economy has been plagued with problems. The most common hazard event in this zone is floods from high water when the rivers crest. This major hazard has been compounded by other problems mainly brought on by insecurity, including high input costs; a high influx of people and animals into the zone; market disruption; disputes over land; and, poorly maintained irrigation infrastructure. Thus, although the zone is considered a cereal-surplus area, food insecurity is chronic and severe hunger was most recently recorded in 2011.[91] The population is comprised of both ethnic Bantu and ethnic Somali. The Bantu, who have a long history as sedentary farmers, are located primarily in the upper part of the Lower Shabelle as well as in the Lower Juba riverine area. As a minority group, the Bantu have suffered from land grabs and violence. The livelihood zone itself is located in four different regions of southern Somalia: Lower Juba, Middle Juba, Lower Shabelle and Middle Shabelle. These regions are some of the most highly populated in the country. The total population for the zone is 755,499 (UNFPA 2012). The zone includes parts of Kismayo and Jimame Districts (Lower Juba); Jiliib and Bu'aale Districts (Middle Juba); Sablaale, Kurtunwarrey, Qoryooley, Marka, Baraawe and Afgooye/Aw Dheegle Districts (Lower Shabelle); and, Balcad/Warsheikh and Jowhar/Mahady Districts (Middle Shabelle).

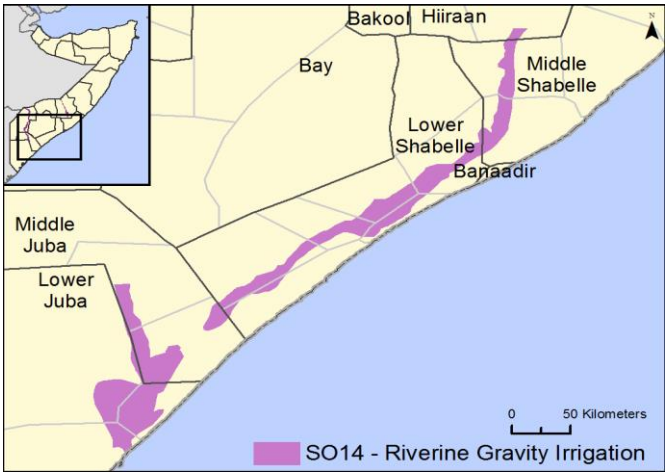
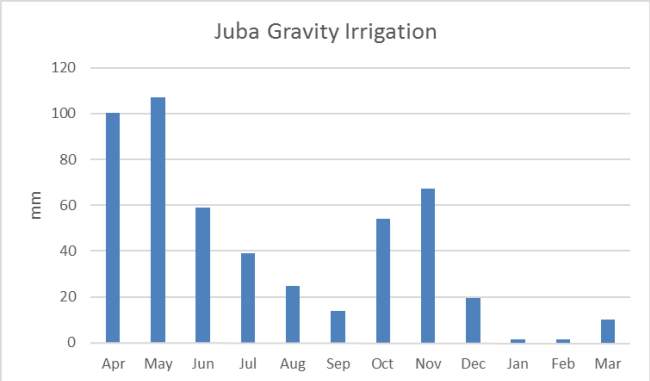


Figure 1: Estimated average rainfall in mm in Shabelle-Juba Gravity Irrigation Livelihood Zone



Source: USGS CHIRPS Data, FEWS NET GeoCLIM[90]

The Juba and Shabelle Rivers bring agricultural potential to an otherwise lowland, savannah environment dominated by a hot, semi-arid climate. The two rivers begin in the highlands of Ethiopia. The Juba River officially starts in Dolow on the

[89] See also the following technical report: FSNAU. 2013. *Subsistence Farming in Lower Shabelle Riverine Zone*. 6 November 2013

[90] Based on USGS CHIRPS data, a combination of satellite-based Rainfall Estimates (RFE) and station data, with data extending more than 30 years (1981-2014). Source, FEWS NET and USGS.

[91] WFP. 2011. *Food Market and Supply Situation in Southern Somalia*. October 2011. Page 7

Ethiopia/Somalia border at the convergence of the Genale and Dawa Rivers. It subsequently flows south all the way to the coast where it empties into the Indian Ocean. The Shabelle River never reaches the ocean but drains into swamp and sand near the Juba River after tracking south-west just north of Mogadishu. The rivers are essential not just for agriculture but also for domestic use (in some places they are the main water source used by households for their daily needs). River flow and water levels depend largely on rainfall in the Ethiopian highlands as well as, to some extent, on local rainfall. River flow is also affected by water use upstream in Ethiopia for hydroelectric power and for irrigation. Historically, water levels in both the Juba and the Shabelle Rivers have fluctuated substantially. The area is prone to flash floods and to the river cresting to flood levels. Many years have seen crisis-level flood waters (for instance, 2006 and 2007 *deyr* seasons; and 2011, 2012 and 2013 *deyr* periods). Other years have witnessed extremely low water levels due to regional drought (i.e., in 2010-2011). Prior to the state's collapse in 1991, the government helped to regulate flood waters through a system of gates and barrages as well as through sandbagging. Years of conflict have had a significant toll on irrigation infrastructure as many intakes, canals and barrages have not been properly maintained and have since become inoperable due to siltation or vegetation growth.

Other basic infrastructure and services in the zone (including transport, education, health and hygiene) have also been negatively affected by the long conflict. Today, the zone is served by airports in Kismayo and Mogadishu (both coastal ports) as well as by several main transport routes that connect Somalia's key southern port with cities and towns in the zone. For instance, there is also a major thoroughfare in the zone that connects Kismayo with Mogadishu through Afgooye. A second key route links Kismayo with Afmadow and then Dhobley (Gedo Region) near the Kenya border (although this lies just outside the zone). There is also a secondary road that connects Kismayo on the coast to Dolow on the Ethiopia/Somalia border. This important road artery runs the full length of the Juba River. However, for much of the last 25 years, it was also considered one of the most dangerous roads as it passed through Al-Shabaab controlled territory. Since 1991, these roads have all suffered from lack of repair and illegal checkpoints manned by armed militia.[92] However, since 2012, there have been some reconstruction efforts of feeder roads. Repairs have been made by local NGOs in the Shabelles with financial help from FAO and the Somali diaspora.

The climate throughout southern Somalia is hot and semi-arid. Temperatures do not fluctuate greatly during the year although there are four defined seasons. The average annual daily temperature is 27° Celsius. Local rainfall amounts are typically in the range of 350-500 mm per year with high inter-annual variability. In much of the riverine area, soils have benefited from alluvial deposits after flood events which have reasonably good drainage. Not all sections of the riverine zone have good soils and in some areas there is a mix of clayey-vertisols or sandy soil or soil with a high salt content. In particular, land between the coast and the river is predominantly sandy with little vegetation. Land access is typically by way of clan ownership. However, land tenure systems in the Lower Shabelle have had a complicated history since the 1960s with notable episodes of land grabbing and displacement. A fairly recent study in 2013 indicated that most farmers own land although a small proportion (10-20%) of the poor and very poor rent. A smaller proportion still (less than 10%) sharecrop. [93] Farms are often divided into different plots to help manage risks. Not all land owned is cultivated and some land is left fallow if river water levels are low or if input prices are too high.

Within the 5-10 km corridor adjacent to the rivers, land is cultivated by irrigation. Irrigation allows for intensive agriculture based on mixed cereal and cash cropping[94]. Gravity flow irrigation is the dominant method used (i.e., of the land under irrigation, 85% of it uses the gravity-flow method, as recorded in 2013). Use of other inputs varies by wealth group. Prior to planting, most farmers rent tractors to plough the soil as the soil compacts during the dry season making it difficult to till by hand. Only poor farmers buy seeds before each cropping season as middle and better-off farmers use seeds from their own stock. Fertilizer is not usually applied to cereal crops but is used instead on cash crops such as onions or fruit trees. Notably the poor cannot afford fertilizer.

[92] Somalia Report. Topic Infrastructure. One of Somalia's Most Dangerous Roads. 2015

[93] FSNAU. 2013. *Subsistence Farming in the Lower Shabelle Riverine Zone*, FSNAU/FAO, 6 November 2013, page 2 & 13.

[94] Although this profile looks at the livelihoods of small-holder farmers, it should be noted that there were once large commercialised banana and coconut plantations located in the lower Juba and lower Shabelle riverine zone. Bananas in particular were a significant export crop. However, major flooding during the 1998 El Nino event destroyed many of the trees on the plantations which have not yet recovered.

Maize is grown extensively during the *gu* and is typically irrigated once in the season. In the case of maize, the *gu'* harvest is higher yielding than the *deyr*. To use an example from 2013, in Afgooye the maize yield in the *gu'* was 1.23 MT/ha compared to 0.97 MT/ha which was the yield in the *deyr.* During the second cropping season, maize and sesame are both cultivated and the crops are usually irrigated twice. Only middle and better-off households use tractors during the second cropping cycle due to cost. In contrast to yield patterns for maize, sesame yields in the *deyr* season are higher than during the *gu'* (i.e., 0.42 MT/ha compared to 0.38 MT/ha). Between the *gu'* and the *deyr*, there may be additional rain that falls from July-September leading to a September off-season *hagaa* harvest.

Notwithstanding the agricultural potential in this area, a number of factors frequently lead to poor crop outcomes. Some of the most pressing issues include broken irrigation infrastructure and poorly regulated water use. For instance, a growing concern is when farmers breach the river bank to create informal irrigation channels. In turn, these breaches of the bank cause incidents of uncontrolled flooding during periods of heavy rain. Other chronic problems affecting farmers are land conflicts, political instability, clan-based conflict, and crop pest and insect infestations. Periodically, flash floods or, conversely, a lack of rain leads to crop failure as well as population displacement and animal migration into the zone. Thus despite high potential, farmers in this zone often face food insecurity.

Livestock production by farmers with access to riverine irrigation is very low. Instead, complementary sources of income include the collection and sale of bush products (such as firewood, charcoal and grass) and mat making. Women also earn income by working on hut maintenance (thatching and mud application). Men earn income as porters, carrying goods across the river. Sales of handicrafts, labor migration to urban centers, local agricultural work and petty trade are also options for cash generation. Labor migration to urban areas, including Mogadishu, takes place during the *jilaal* season (December-March). Most work is found in the construction sector. In recent years, fishing for food and income is growing in some localities within the region especially during the *jilaal* period. Certain wild foods (such as, *ambogo, rasow and dhereriow*) round out additional food sources.

Although livestock production is not key in this zone, it is nonetheless common for better-off farmers in the lower Juba area to own a couple of cows for milk production as well as 2-10 shoats for a source of ready cash as needed during the year. In the reference year, milk yields per cow were typically 1.5 L/day of which 1 L was sold. This peak season usually lasts 180 days (6 months). Those in the Lower Shabelle agro-pastoral sub-zone have substantially larger herds and differ from most of the population of riverine farmers in this regard. Cattle herds for middle households ranged from 10-40 in 1998-1999 and even the poor had cattle holdings of 0-10. The contribution of milk and livestock sales to annual income reached 20-35% for middle households (0-20% for the poor). Sheep and goats remain near the village year round but cattle are trekked between wet and dry season grazing areas. Cattle are brought near to the river during the dry season (*jilaal*) and are then taken to more distant grazing areas during the wet season. Herders also purchase fodder from the poor during the J*ilaal* to boost their animals feed. This sub-zone is not representative of the zone as a whole but it does show the variation of livelihoods in this fairly small riverine area.

Markets

The free movement of people and goods on transport routes has important market implications. War and general instability since 1991 greatly affected this zone as the agricultural sector has commercial potential that is regularly undermined by conflict. By 2011, the instability in Mogadishu had largely settled down allowing more regular market activity. Most roads that connect the village with district markets are dirt roads that become unpassable during the rains. Some households have access to the tarmac road that passes from Kismayu to Mogadishu through Marka, Qoryoleyu, Kurtunwaarey and Afgooye Districts (Lower Shabelle Region) and this facilitates market access to key urban centers. Marka is the largest town in the lower Shabelle Region (it is the former regional capital) but Afgooye is considered a travel and market hub as two main roads pass through the town (i.e., the road from Kismayu to Mogadishu and the road from Mogadishu to Baidoa in Bay Region). Lower Shabelle has access to the highest number of market hubs. By comparison, there is just one major market center in the Middle Shabelle Region for this zone: Jowhar. In Middle Juba Region, Jilib and Buaale are the market hubs. Jammame and Kismayo are the market centers serving Lower Juba.

Large-scale import/export traders control the supply of grain to this zone (as they do in much of the country). These traders import desired grains such as rice and wheat flour, as well as sugar and vegetable oil mainly from markets in Asia. These imported goods together with locally-produced staple grains are then distributed to wholesalers and retailers. Overall, markets in southern Somalia – when physically accessible -- are considered well-integrated with regional and global markets.

Cereal markets

Maize is the staple cereal grown in this riverine zone. It is grown for household consumption as well as for sale. Demand for maize is relatively high from within the zone as poor and middle households buy back local grain during the "lean season (May-July). There is also demand for local maize from urban residents in district and regional capitals. In addition, the presence of IDP camps in Mogadishu and environs has generated demand for cereals. Maize is also exported out of the zone to markets in neighboring zones (such as the Southern Agro-Pastoral) and even cross-border to Kenya. The main markets in the Lower Shablelle Region are located in the district centers (namely Kurtun Waarey, Afgooye, Qoryoley, Brava/Barawa, Sablaale, Janaale and Buulo-mareer (in Marka), and Mogadishu. The greatest problem in this zone has been trade disruptions caused by political unrest and violence. Trade disruptions inevitably push cereal prices up hurting poor consumers. There are the usual seasonal price fluctuations that occur every year as well. Cereal prices reach their lowest point right after the harvest (August as well as December/January) – which is when sales of maize by farmers peak -- and then rise to their highest level from April-July when consumer purchases peak. In this zone, maize prices fluctuations are in response to local supply and demand dynamics rather than cross-border or global events. Historically, cereal prices rose to extremely high levels in 2008 and 2011 (two years associated with severe hunger). Farmers' strategy during years of low rainfall and low river levels is to salvage some of the crop for sale as fodder to herders migrating toward the river during the jilaal season.

Cash crop markets

Sesame, tomatoes, pumpkins, bananas, mangoes and coconuts are some of the key cash crops that are grown in this zone for market sale. Coconuts are mainly grown east of the lower Shabelle River in the stretch of land between the river and the coast. The soil there is more saline and sandy, and hence better suited for coconut plantations. Mango trees are planted extensively along the Shabelle River whereas the lower Juba was known for its export-quality banana plantations. Conflict in the region meant that many plantations were abandoned. Still, most years there is production of cash crops which are destined for district and regional market hubs such as Marka and Afgooye as well as Mogadishu. Tomatoes are also supplied to canning factories in Mogadishu. There is a significant lack of processing facilities for sesame as well as a lack of a national authority to provide certification for sesame exports but some traders manage to export sesame overseas. Although not a cash crop per se, bush products such as firewood, charcoal, building poles and grass are sold for income generation. As for cash crops, market demand is generated from nearby urban centers.

Casual labor markets

Local labor opportunities are mainly found in the agricultural sector. The zone draws laborers from across the greater Lower Juba River and Lower Shabelle River floodplain, particularly from the agro-pastoralist population. Work involved with maintaining irrigation canals as well as the work involved supporting multiple cropping seasons are the two main draws for casual labor. Common hired work on-farm includes canal de-siltation, land clearing, ridging, planting, weeding, bird scaring and harvesting. Poor laborers begin their search for work during the *jilaa*l (January-March) but continue to look for seasonal farm work throughout the two cropping cycles (April-January). Years of poor rainfall (i.e., 2010-2011) see an influx of poor laborers **out** of the livelihood zone and into Mogadishu as well as other major urban centers in search of casual work there.

Credit

Taking credit seasonally when a household need arises that cannot be met with a household's own food stocks or income is very common throughout Somalia. In this agricultural zone, the most common types of credit are in-kind loans of food, seed and other farming inputs. When credit is taken in-kind, the amount is typically small (i.e., in the USD 5-30 range) and is paid back in full or in-part after the harvest. Interest is paid in the form of a premium on the price of the good (typically less than 10% of the original price). Credit is taken from local shop owners and traders as well as from community leaders and relatives.[95]

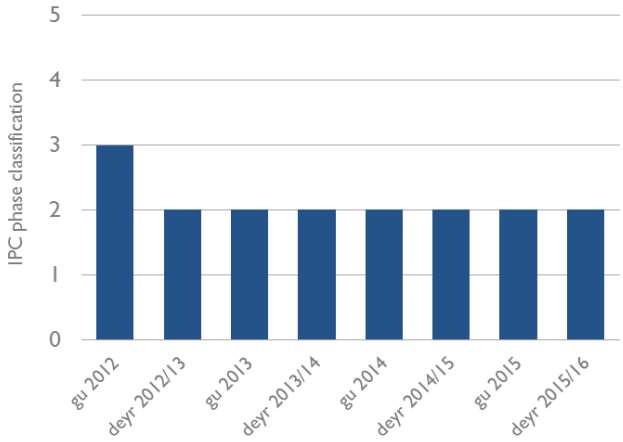
Conflict

The collapse of the government and state structures in 1991 led to over two decades of armed conflict and civil insecurity. The militant Islamist group Al-Shabaab continues to control some areas of southern Somalia and this has resulted in regular outbreaks of fighting. Kismayu's strategic location as a deep sea port has meant that it has been at the center of conflict since the collapse of the state in 1991. Conflict in the south is often clan-based and an important driver of the conflict is control over resources. In Lower Juba Region, there are 40 sub-clans reported to live in the area which has fueled fighting.[96] Resource-based conflicts involve land tenure, grazing rights and water access. Land grabbing (or farmland invasions) are particularly prevalent in the Shabelles Region and often disproportionately affect minority groups, such as the Bantu and other marginalized clans who live in the regions. This problem dates back prior to the state's collapse in 1991 when the former Italian-run banana plantations became nationalized and some land was given to political elites. The effects of conflict are many, including economic disruption, displacement, forced labor, and violent physical atrocities.

Food access history

The *Shabelle-Juba Gravity Irrigation Livelihood Zone* has been affected by many crisis events in the last two decades from floods and drought to insecurity and conflict. The degree to which humanitarian organizations have been able to successfully implement interventions has depended on their secure access to the affected areas. UNOSOM (United Nations Operations in Somalia) was created in 1992 after the government's fall in 1991 and the terrible drought of the early 1990s. However, a number events led to the withdrawal of UN and NGO agencies in 1995. Humanitarian aid continued to flow into southern Somalia, particularly during the 2005-2006 drought, and international agencies worked where security allowed. 2008 saw another surge in violence against aid workers due to the unpopularity of the West and the UN's intervention in Somalia as well as the rise of Al-Shabaab. In 2011-2012 there was a major humanitarian intervention due to drought-related hunger. However, in 2014, MSF withdrew its staff and closed its operations in Somalia due to the high level of violent attacks against staff. Violence against aid workers as well as the difficulty accessing territory in Lower Shabelle and Lower Juba regions in particular due to the high risk of attack have been recurrent problems hampering humanitarian interventions over the last two decades.

Figure 2: Recent trends in IPC phase classification, with 1 as best and 5 as worst



Source: FSNAU

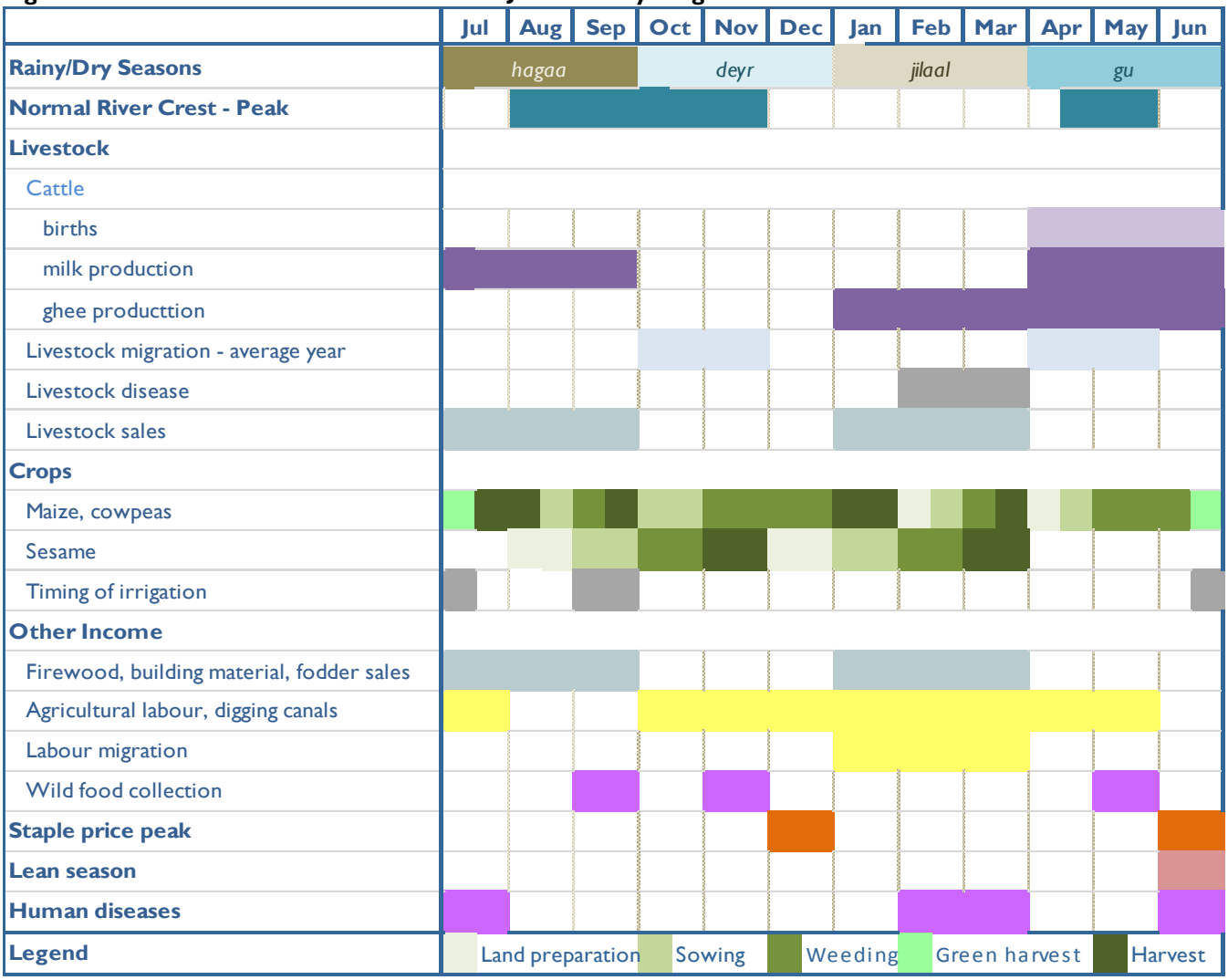
[95] The Somalia Cash Consortium. *Access to Credit and Unconditional Cash Transfers in South Central Somalia*. INDEX Consultants for DRC, ACF, SCI and ADESO. February 2013.

[96] Somalia CEWERU (Conflict Early Warning Early Response Unit). From the Bottom Up: Southern Somalia – Perspectives through Conflict Analysis. September 2013

Seasonal calendar

In this livelihood zone, there are at least two, and sometimes three, cropping cycles. The cropping cycles are influenced by the timing of local rainfall and also by the timing of the rivers' water flow (particularly the cresting of the river in September). As in much of southern Somalia, rainfall arrives in two distinct seasons: the *gu'* season (April-June) and the *deyr* season (October-December). During these periods, peak rainfall is typically May and November with the heaviest, and more reliable rainfall coming in May during the *gu'*. In addition to these two main seasons of rain, there is sometimes a third season: the *hagaa* rains (July-September). The *hagaa* is a dry season throughout much of Somalia. However, along the southern coast and affecting inland riverine areas, there is often some rainfall during these months.

Figure 3: Seasonal calendar for the Shabelle-Juba Gravity Irrigation Livelihood Zone



Source: FSNAU SJI Gravity SO14 1999/00.

Farming takes place throughout much of the year in this riverine economy. The crop cycle begins with land preparation. Ploughing takes place twice: prior to the *gu'* rains (March/April) and again prior to the *deyr* (September/October). Maize and cowpeas are planted with the start of the rainy seasons (first April, then October). In addition, if there are *hagaa* rains, there is an off-season maize planting in July. There is also a fourth planting in November/December to take advantage of river water just after the river crest peaks (August/November). Labor demand remains high during the growing season as

crops needed to be weeded. This work continues over several months (May-July and October-November). Maize is often consumed green by poor farmers whose food stocks are too low to wait for the main harvest.

The period of green consumption is usually July followed by the main maize harvest in August. Off-season *hagaa* maize is harvested in September and the *deyr* harvest is carried out in January. Some years in the Shabelles (L/M Shabelle) and lower Juba Rivers, the cresting of the river water in August/September interferes with the *hagaa* off-season maize harvest. Other years, if the river crests later, in September/October, there will be an off-season d*eyr* harvest in March.

One of the other main cash crops in this zone is sesame. Whilst maize is associated principally with the *gu'* season, sesame is associated more with the *deyr* although some sesame is planted in June/July with the *hagaa* rains. One reason for this pattern is that the *gu'* rains bring more insects and pests (such as sesame web worms). Planting usually takes place in November leading to a harvest in March/April.

The demand for casual labor on local farms is sustained for much of the year, beginning in March and lasting until the following January. February, thus, is the peak month for off-farm work. Trade activities are also highest in February/March during the *jilaal* season. Trade also picks up again in August/September after the *gu'* maize harvest. Labor migration to urban centers depends on the outcome of the maize *gu'* harvest. If it is likely to be very poor, then laborers migrate around July before the anticipated maize harvest in August. Labor migration coincides with the period of the year called the "lean season". This occurs in June/July just before the main maize harvest in August. At this time, maize prices for consumers are at their highest due to low supply and market disruptions from washed out roads.

Wealth breakdown

The key asset in this zone is arable land, particularly irrigated land. In 2013, in the lower Shabelle riverine area, from a sample of 33 villages, only 7% of cultivated land was rain-fed. The majority of cultivated land (93%) was irrigated, mainly through gravity irrigation.

Table 2: Wealth group characteristics in the Shabelle-Juba Gravity Irrigation Livelihood Zone

	Poor	Middle	Better-off
Household percentage (%)	25-45	45-60	5-20
Household size (#)	4-9	7-9	5-9
Land holding (ha)			
Land area owned	0.5-2	1.5-2	2.5-5
Land area cultivated			
Typical livestock holding (#)			
Sheep	0	2-5	3-5
Goats	0		
Cattle	0	0-1	1-2
Other productive assets (#)			
Ox cart	0	0-1	1-2
Tractor	rent	rent	rent
Mango trees	yes	yes	yes

Source: FSNAU SJI Gravity SO14 1999/00

Of the three wealth groups, the smallest wealth group is the better-off (5-20% of households). Better-off households in this zone have sufficient land, labor and financial assets to be food and livelihood secure most years. In a year of fairly good production outcomes, they do not purchase staple food. Their own-production is sufficient to last 12 months. Typically, their own 2.5-5 ha of land (3-10 ha in the agro-pastoral sub-zone) on which they grow substantial amounts of maize and sesame as well as a mix of other crops including cowpeas, sweet potatoes, pumpkin and tomatoes. In the south Juba riverine sub-zone, it is common for households in all wealth groups to have mango trees as a cash crop. In this sub-zone, it is also more common for better-off households to own livestock. In the 1998-1999 reference year, the better-off owned on average 1-2 cattle and 3-5 sheep and goats (*shoats*) as well as 1-2 ox carts. Most years, better-off households provide some cash support to poor relatives in their community. They also receive remittances themselves although it was a relatively small source of cash (compared to crop sales and trade) in 2013. Households are not very large and in this zone it is common for a better-off household to consist of a husband and wife, and their children, with a range of 5-9 members in total.

In this zone, the majority of households (45-60%) fall in the "middle" wealth group. In a relatively "normal" year, middle households produce much of their own food. They also buy staple food for roughly 1-2 months of the year. They own an

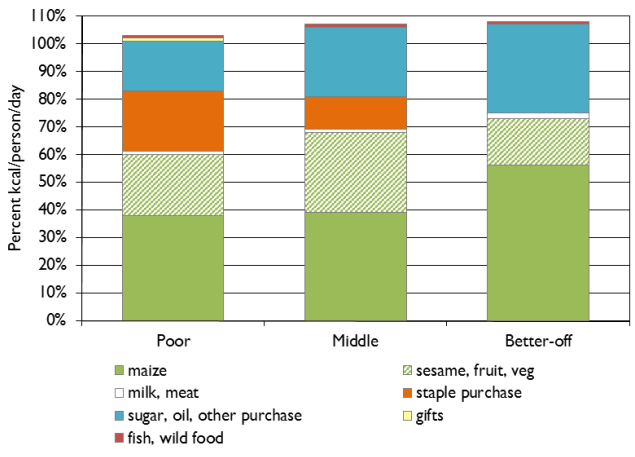
estimated 1.5-2 ha land. Owning cattle is not typical but in the part of the zone that lies in the south Juba riverine area about half of middle households owned a cow and an ox cart in the baseline year. Moreover, in the south Juba sub-zone, the majority of middle households kept 2-5 sheep and goats (*shoats*). Household size is 7-9 members comprising a husband and wife, and their children.

There are significant numbers of poor households in this livelihood zone. The highest proportion of the poor (35-45% of households) was found in the lower Shabelle riverine sub-zone. Even in the lower Juba riverine sub-zone, the proportion of poor is relatively high (25-35% of households). Poor households own some land, an estimated 0.5-2 ha per household in the reference year. However, even in a relatively good production year, the poor typically bought staple food for 2-3 months of the year. They do not generally own livestock but they may have some other assets instead. For example, in the south Juba riverine sub-zone the poor had mango trees and, near the coast, coconut trees. The poor typically depend on agricultural labor and crop sales to earn cash to buy the food they need. They also usually receive some social support from the better-off in their community. Their households are generally smaller than middle households and comprised an estimated 4-9 household members in the baseline year. In the lower Shabelle riverine sub-zone, in 2000, poor households were reported to be part of a larger family base of 8-15 members consisting of a husband, 1-3 wives and their children.

Sources of food and income and expenditures

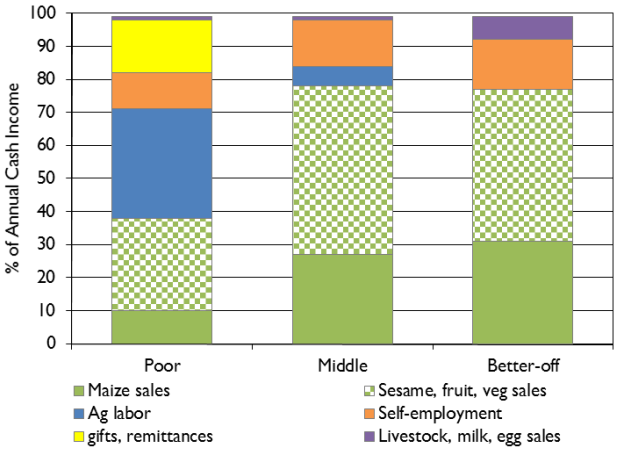
In this riverine economy, households secure their food in two ways: they grow it and they purchase it. How much food comes from own-crops and how much food comes from purchase differs by wealth group. In general, the poor grow fewer crops and hence they buy more food. Maize is the staple food crop for all households and it is associated predominantly with the *gu'* season. In particular, access to own-maize peaks during the August *gu'* harvest. For poor households, cultivated maize was almost 40% of their annual food energy in 1998-1999. By contrast, 22% came from purchased maize. For middle and better-off households, cultivated maize was 40-55% of their annual food needs, and, for middle households, only 12% of food energy came from maize purchases. The better-off did not buy maize at all in the reference year. These patterns mean that poor households are much more vulnerable to staple food price increases as they are the ones relying most on staple food purchases for their basic food energy.

Figure 4: Food sources by wealth group, L/M Shabelle-Juba Gravity Irrigation Zone



Source: FSNAU, SJI Gravity SO14, 2000.

Figure 5: Cash income sources by wealth group, L/M Shabelle-Juba Gravity Irrigation Zone



Source: FSNAU, SJI Gravity, SO14 2000.

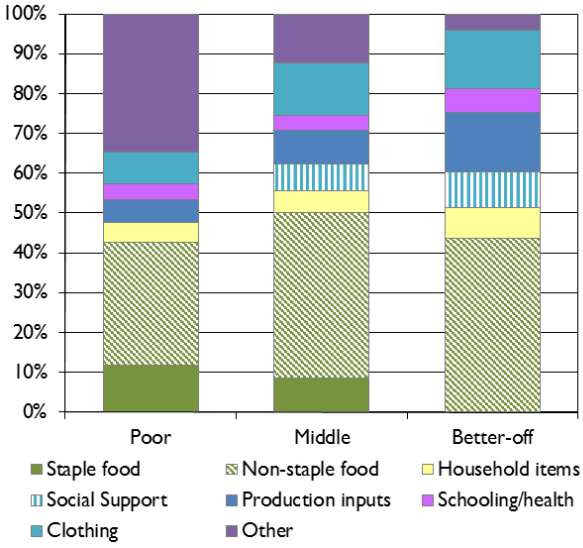
As better-off households did not buy any maize at all, the balance of their annual food energy was met through the cultivation and purchase of **non-staple** foods.[97] For example, in the south Juba riverine zone, middle and better-off households met 25-32% of their annual food needs through non-staple food purchases (for the poor, the proportion was 18%). Sugar and cooking oil were the main non-staple food items purchased during the year.

Diets are reasonably diverse in this riverine zone. Farmers supplement their staple food (maize) with cowpeas, sesame, pumpkin, plantain, Irish potato, cassava and mangoes. These other crops comprised 22% of the annual food energy of the poor. Households also consume eggs and chickens; catch fresh fish from the river; and collect wild food from the bush. All households also purchase a limited range of food items including sugar, cooking oil, skim milk, meat and fruit.
Agriculture is the basis of household food and income in this riverine zone. In 1998-1999, for instance, poor households earned about 30% of their annual cash income from crop sales as well as an estimated 30% from agricultural labor. Poor households also receive social support (*zakat*) from the better-off and middle wealth groups which is estimated to comprise about 20% of their income at end of every seasonal harvest. Crop income was higher in the lower Shabelle riverine sub-zone. In 1998-1999, an estimated 50% of the poor's annual income came from crop sales alone. The proportional importance of crop sale income was higher still for middle and better-off households. In the baseline year, sales of crops met an estimated 80% of their annual income. Sesame and maize are the highest income earners. In the baseline year, income from sesame sales and income from maize sales was roughly equal for middle and better-off households.[98] By comparison, poor households earned most of their crop income from selling sesame and only a small proportion (7-14%) from selling maize. The balance of crop sale income was earned through sales of various other crops grown in the region, including cowpeas, pumpkin, tomatoes and mangoes.

To support their households, poor households also worked as paid agricultural laborers during the year. In the baseline year, roughly one third of their income was earned through agricultural labor. In the riverine area, farm work is spread out over different growing seasons (the *gu*,' the *hagaa* off-season and the *deyr*). This provides work opportunities throughout much of the year. However, competition for casual farm work is also high. Notably, middle households also earned a small proportion of their annual income (6%) from agricultural labor. Better-off households hire labor for a number of different tasks including land preparation, sowing, weeding, harvesting and threshing as well as collecting mangoes for sale.

The balance of income earned during the reference year for middle and better-off households came from collecting and transporting products for sale. Using their ox-carts as a transport service, as well as selling charcoal, middle and better-off households earned 15% of their annual cash income from self-employment. Poor households also earned about 15% of their annual cash income from self-employment (namely, selling charcoal, firewood, grass and building poles). Remaining income for all wealth groups came from selling livestock and livestock products. For the poor, this meant chickens and eggs. For the better-off, it meant milk, goats, chickens and eggs. The exception to this pattern was in the Lower Shabelle Riverine sub-zone as poor households own no livestock there.

Figure 6: Allocation of expenditures by wealth group, Shabelle-Juba Gravity Irrigation Zone



Source: FSNAU, SJI Gravity SO14, 2000.

[97] All households cultivated a range of non-staple foods including sesame, cowpeas, pumpkin, plantain, potatoes and cassava. Diets were also supplemented with mangoes and fish caught in the rivers. These cultivated or caught non-staple foods comprised a smaller proportion of the annual food needs of the poor compared to middle and better-off households.
[98] In the baseline year, maize sales met 27-31% of their annual cash needs. Sesame sales met 36% of annual income. Other crops sold included cowpeas, tomatoes, pumpkins, potatoes and mangoes.

For all wealth groups, food purchases absorbed much of their income in the reference year. For instance, food purchases accounted for 43-53% of the annual expenditures of poor, middle and better-off households alike. The difference between wealth groups was that poor households purchased significantly more staple food. In 1998-1999, for example, poor households in the lower Juba riverine sub-zone bought on average 7 (50 kg) sacks of maize during the year. Middle households, by contrast, purchased 4 bags; and the better-off did not buy staple food at all. Better-off households produce more maize whereas the poor produce less due to limited land holdings and fewer agricultural inputs. Moreover, poor households have to sell maize post-harvest to pay back debts incurred during the cropping season. In terms of cost, oil and sugar were the highest cost food items for all wealth groups. Sugar in particular is considered an essential food item for all Somalis and is purchased in large quantities. The other major food purchase common to most households were milk, meat, fish and bananas. Even poor households bought these food items, including milk which they typically purchased daily (i.e., 1.5 liters of skimmed milk per day). Most farming households in this zone do not keep cows and do not produce their own milk. However, proximity to agro-pastoralist villages means relatively good access to milk.

Another important expenditure during the year was livelihood inputs. Households in all wealth groups spent some money on farm inputs. Better-off households spent proportionately the most money (15% of annual expenditures) as they paid for hired labor on their farms in addition to other inputs. Common expenditures included pesticides, hoes and fish hooks. In the lower Shabelle riverine sub-zone, farmers also paid to rent a tractor (i.e., 3 hours of tractor hire to plough 1 ha of land). Livelihood inputs accounted for less than 10% of annual expenditures of poor and middle households.

There were other basic expenses during the year that were common to households in all wealth groups. Household items, such as soap, kerosene and clothes, absorbed about 20% of the annual expenditures of all wealth groups. Spending on health and education was also common. Poor households spent very little (4% of annual expenditures). This reflected their lower income and spending capacity. Middle and better-off households had more cash available to spend on health and education, and these items, in addition to social spending came to 10-15% of their annual expenditures.

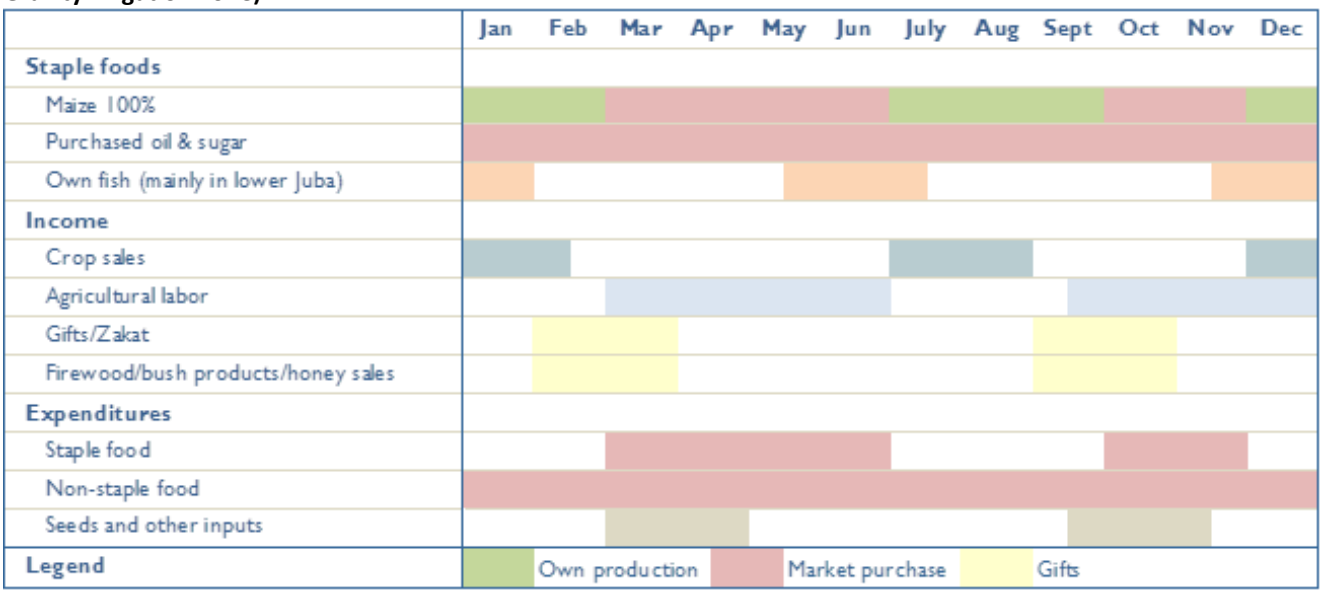
Tobacco and coffee are not essential goods but “desirable” items, important to the Somali culture. Proportional to other items, tobacco and coffee comprised a fairly large part of poor household’s annual expenditures (35%). It was important but comprised a smaller part of the spending of middle and better-off households (13% and 4% respectively).

Calendar of major sources of food and income for poor households

Poor households living in the lower Juba and lower Shabelle riverine area grow the majority of their food in a year of good rainfall. In the 1998-1999 year, own-crops comprised 50-70% of poor households’ annual food needs. Maize production was central. For example, 24-47% on the poor’s annual food needs were met through maize production alone. The second major source of food for the poor was food purchases. The food bought by the poor during the year met about 40% of their annual food needs (purchased maize alone met about 24% of their food energy). Income is also primarily derived from the agricultural sector. In the lower Shabelle riverine sub-zone, crop sales accounted for an estimated 50% of annual income. In the lower Juba riverine sub-zone, crop sale earnings were almost 30% of annual income. Money earned from working as hired farm labor came to a further 30-36% of annual income.

The importance of farm produce and income for poor households means that their season of “plenty” and conversely their season of scarcity parallels the farming calendar. This means that their lean season coincides with the *gu’* rains (April-June). During this period, the main *gu’* season maize crop is still growing but food stocks from the *deyr* have run out. This period also coincides with peak labor demand both on farmers’ own land. Farmers, hence, must juggle the demands of their own production with the need for daily cash to feed the family. In July, some of the food gap is met by consuming green maize from the farm. Credit is also taken to bridge the food gap on the days that the family work on their own crops. Food prices also peak from May-June due to high demand and low supply (trade is often disrupted due to washed out roads). Hence, the poor face insecure food access throughout the May-June lean season.

Figure 7: Main components of the food access calendar for poor households in livelihood zone SO14 (Shabelle-Juba Gravity Irrigation Zone)



Source: FSNAU

Hazards, response, and monitoring variables

The main hazards in this zone stem from living near perennial rivers. There are two types of flood hazards: (1) flash floods due to heavy rain locally or within the region which cause rivers to swell and break their banks; and (2) a very high river crest (especially during the *deyr* season) due to heavy rainfall upstream in Ethiopia which causes the water to break through the river bank. Severe floods historically have occurred in the lower Juba and lower Shabelle during *El Nino* events which are associated with wetter-than-normal conditions in the Horn of Africa. In the last 15-20 years, 1997, 2002-2003, 2004-2005, 2006-2007 and 2009-2010 stand out as years of flood emergencies. 2015-2016 is also predicted to be a year of crisis-level floods. Notably, the massive 2006 *deyr* floods on the Juba and the Shabelle Rivers were recorded as "mild" *El Nino* years. A strong *El Nino* event has not occurred since 1997-1998. In addition to flood events, years of drought and very low water levels are also memorable as this leads to crop failure too. The most recent period of extreme food insecurity due to drought was in 2011-2012. In that crisis, low river water levels and rainfall were attributed to a *La Nina* event. 1999-2000 were also severe drought years as well as 1990-1992.

The zone also faces several other hazards. Various pests affect the outcome of crops, the most notable being birds, white grubs, grasshoppers, stem borers and rats. 1998 (the year after the *El Nino* floods) is remembered by the local population as a year when an outbreak of rats destroyed a lot of crops.

One of the major causes of failed crop production or lost income is conflict and insecurity. Fighting in the lower Juba and lower Shabelle regions has led to population displacement as well as, conversely, to an influx of people and livestock into the area. (Drought years also bring an influx of herders with their livestock to the rivers' shores and into farmland alongside the rivers). Conflict also disrupts trade routes thereby reducing access to markets and reducing crop sales. Conflict also disrupts the supply of inputs to farmers, raising prices when supplies are low. Insecurity is due to clan conflicts as well as to fighting between the Al Shabaab and government forces (who are supported by AMISOM, the African Union Mission to Somalia).

Coping strategies are in large part influenced by local opportunities. The availability of wild food as well as fruit (such as mangoes) provides an expandable food source to households when the maize and sesame crops fail. Fish is another food source which can be expanded in the event of crop failure. The relative proximity of major cities in the zone also provides

access to casual labor opportunities although these opportunities are limited during periods of insecurity. Examples of the primary strategies used by the different wealth groups are summarized in the table below.

Table 3: Coping strategies in response to shocks in Shabelle/Juba Gravity Irrigation Livelihood Zone

Very poor/Poor	Middle/Better off
• Search for more days of agricultural labor • Look for sharecropping opportunities • Sell more bush products: fodder, firewood, charcoal, grass, poles • Increase collection of wild foods, fruit and fish • Migrate to cities such as Mogadishu in search of work	• Increase remittances (amount + frequency) • Take out credit • Increase fishing and collection of wild food as well as fruit (mangoes and bananas)

Source: FSNAU SJI Gravity SO14 1999/00

The key parameters listed in the table below are food and income sources that make a substantial contribution to the household economy in the *Shabelle-Juba Gravity Irrigation 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.

Table 4: Key parameters for monitoring in livelihood zone SO14 (Shabelle/Juba Gravity Irrigation)

Item	Key Parameter – Quantity	Key Parameter – Price
Crop production	Maize production Sesame production Cowpea production Pumpkin production Tomato production	Price of maize Price of sesame Price of cowpeas Price of pumpkins Price of tomatoes
Animal production	Supply of chickens	Price of chickens
Other	Fish catches Mango production Supply of farm labor (pre-harvest) Supply of farm labor (post-harvest) Supply of fuelwood and charcoal	 Price of mangoes Price of farm labor (pre-harvest) Price of local labor (post-harvest) Price of fuelwood and charcoal

Source: FSNAU SJI Gravity SO14 1999/00.

Estimated Population for Shabelle-Juba Gravity Irrigation (Zone SO14)

Zone	Region	District	Livelihood	Population 2012 UNFPA
South	Shabelle Dhexe (Middle)	Jowhar	Riverine Gravity Irrigation	35,855
South	Shabelle Dhexe (Middle)	Balcad	Riverine Gravity Irrigation	32,949
South	Shabelle Hoose (Lower)	Marka	Riverine Gravity Irrigation	98,120
South	Shabelle Hoose (Lower)	Afgooye	Riverine Gravity Irrigation	31,971
South	Shabelle Hoose (Lower)	Baraawe	Riverine Gravity Irrigation	4,814
South	Shabelle Hoose (Lower)	Kurtunwaarey	Riverine Gravity Irrigation	191,395
South	Shabelle Hoose (Lower)	Qoryooley	Riverine Gravity Irrigation	175,909
South	Shabelle Hoose (Lower)	Sablaale	Riverine Gravity Irrigation	14,716
South	Juba Dhexe (Middle)	Bu'aale	Riverine Gravity Irrigation	41,847
South	Juba Dhexe (Middle)	Jilib	Riverine Gravity Irrigation	61,505
South	Juba Hoose (Lower)	Kismaayo	Riverine Gravity Irrigation	4,838
South	Juba Hoose (Lower)	Afmadow/Xagar	Riverine Gravity Irrigation	26,250
South	Juba Hoose (Lower)	Jamaame	Riverine Gravity Irrigation	35,331
SO14 Population 2014 TOTAL				**755,499**

BAY-SHABELLE HIGH POTENTIAL AGROPASTORAL (SO15)

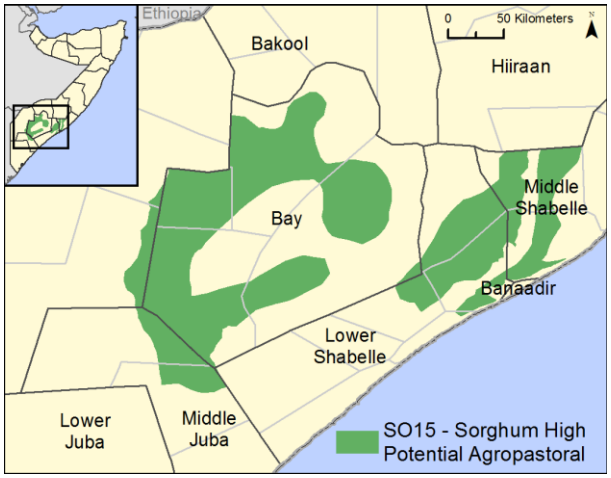
General Livelihood Zone Description

The *Bay-Shabelle High Potential Agro-pastoral Livelihood Zone* (SO15) is located in the Southern Zone of Somalia, including parts of Bay, Middle Shabelle and Lower Shabelle regions. The boundaries of the current zone have expanded to encompass two former livelihood zones: the old near-coast part of the *Southern Agro-pastoral Livelihood Zone* and the *Bay Agro-pastoral High Potential Livelihood Zone*. The most recent population estimate for this zone is 811,759 (UNFPA 2012).

Table 1: Summary of data supporting the Bay-Shabelle High Potential Agro-pastoral livelihood profile

Field data collection	2009
Consumption year	April – March
Reference year	April 2006 – March 2007
Initial estimated validity	Through 2012

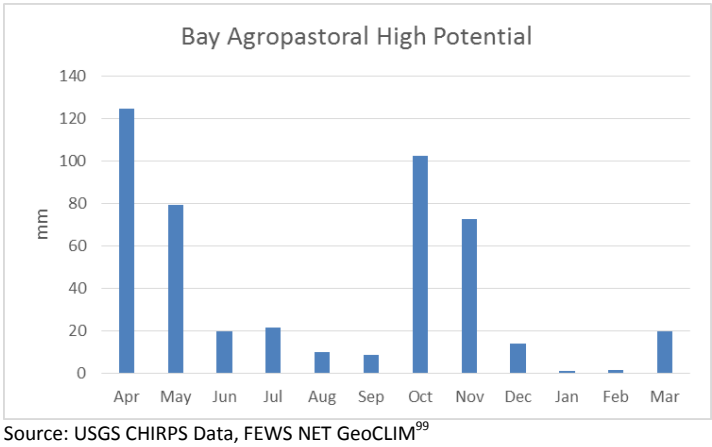
Source: FSNAU



This livelihood zone is distinguished from surrounding zones by its fertile soils and higher annual rainfall levels, which range from 400 - 500 mm during an average year. The higher altitude found in this zone (100 -500 meters above sea level) helps to ensure better rains than in the adjacent lowlands and the more reliable rains and fertile soils combine to make this Somalia's 'Sorghum Basket'. Rain-fed production is the norm here and sorghum is the main cereal crop with only small amounts of maize grown[100]. Cowpeas are an important pulse, grown mainly for home consumption but also as a cash crop; they are inter-cropped with cereals, sesame and groundnuts. Farmers have traditionally grown more cereal crops during the *gu* season than during the *deyr*. However, shifts in rainfall patterns have led to the potential for heavier rains in the *deyr* season, and a more balanced concentration of production across both seasons. It remains to be seen how this changing rainfall pattern will play out in the future.

As a rule, crops serve mainly as a source of food for households and livestock provide the majority of cash income. Crop sales also help to supplement cash income, but the main source of cash injections into the local economy is livestock. Livestock are sold on the hoof and they also provide milk which generates both food and significant cash income. Cattle are the most important of the livestock raised in this zone, with goats particularly vital for poorer households who have very few cattle. Better off households have some camels as well. Although people live in settled communities, livestock are normally taken to pasture-rich areas in the wet seasons. Men and older boys take camels off to browse and graze farther away, while cattle and sheep/goats tend to remain behind with female family members within a 10 to 20 km radius of the home settlements. The men will then return

Figure 1: Estimated average monthly rainfall in mm in the Bay-Shabelle High Potential Agro-pastoral Livelihood Zone



Source: USGS CHIRPS Data, FEWS NET GeoCLIM[99]

[99] Based on USGS CHIRPS data, a combination of satellite-based Rainfall Estimates (RFE) and station data, with data extending more than 30 years (1981-2014). Source, FEWS NET and USGS.

[100] Slightly higher amounts of maize are grown in the fist rainly season (the *gu*) and minimal amounts are grown in the second season (the *deyr*).

during the dry seasons to take advantage of crop residues. During a bad year it is common for livestock to be taken to the Shabelle regions, the Juba Valley and other areas with more favorable pasture conditions.

Households from the poor wealth group complement their crop production and livestock sales with local seasonal labor, working on the fields of better off households during planting, weeding and harvesting periods to earn cash income. They also earn some cash from self-employment activities, especially sales of bush products. All households also purchase grain, sugar and oil to round out their diets.

The market infrastructure is more developed in this livelihood zone than in neighboring zones because of the sorghum trade, which links households to major urban market centers like Baidoa and Mogadishu. Goats and cattle are the predominant livestock traded, and export quality goats and cattle are transported via Baidoa north to the Gulf countries, with goats in particularly high demand during the *Hajj*. A small number of camels are sold by better off households, and Mogadishu is the final destination market for these animals. Local market towns offer up a source of demand for milk and ghee, which provide significant income for the rural population.

The most common source of water for rural populations in Bay are shallow wells (around 12 – 15 meters deep). Shallow wells are mostly used for livestock. Water catchments and boreholes supply around a third of the water needs for the population, relied on for drinking, cooking and bathing. These seasonal sources can last from 2 to 5 months, depending on the level of rainfall and their capacity to hold water. The average distance to a water source during the rainy seasons is 5.6 km. During the dry seasons around 3 to 5 km is added to this distance, making the acquisition of water a very time-consuming task.

The most damaging intermittent hazards in this livelihood zone are droughts, crop and livestock pests and diseases and diminishing pasture conditions. Civil insecurity has been a major constraint to all aspects of development, undermining production, markets and mobility.

Markets

In the *Bay-Shabelle High Potential Agro-pastoral Livelihood Zone* road infrastructure is not well developed and the average distance to a motorable road for most of Bay's rural population's is 6 km. Seasonal flooding and a general lack of maintenance due to the war have led to the deterioration of road conditions, with some roads completely overrun by thick foliage. There are two major tarmac roads within Bay and Bakool regions. The first, known as the "Mogadishu Road", runs northwest from Mogadishu through the *Bay Bakool Low Potential Agro-pastoral Livelihood Zone* and then traverses the *Bay-Shabelle High Potential Agro-pastoral Livelihood Zone* before reaching Baidoa Town. From Baido Town, the road continues northwest through Gedo Region, passing through the town of Luq and then on into Ethiopia and Kenya. The second major road links the central and northern regions of Somalia, beginning from Baidoa and passing through Hudur, Tieglow, and Hiran. Another road from Baidoa Town travels to the southwest town of Bardera, located in southern Gedo. It then connects to a road that runs north to Luuq and south to Buale. All other roads in this zone are earth roads that become impassable during the rainy seasons. A major airstrip is located in Baidoa town, providing access to humanitarian supplies. There are smaller, but not fully functioning, airstrips in all district capital towns.

Cereal markets

This livelihood zone produces a large part of the Somalia's sorghum supply. During the reference year, Bay Region generated over 60% of the annual sorghum supplied by Somalia, and much of this came from the area within this livelihood zone. Sorghum trade routes originating in Bay Region extend throughout much of the country. Baidoa market within the Bay region is the main trading center for sorghum and other cereals. Sorghum is taken by local traders to Baidoa, and then transported to regional and district markets in the south such as Hudur, Tieglow, Bardera and Luq, Buale, and the Shabelle regions. Another main destination market for sorghum is Mogadishu, but this depends on the security situation. Hiran and the central regions of Galgadud and Mudug and up north to Puntland provide alternative markets when Mogadishu is inaccessible.

After the harvest, farmers either sell to wholesale traders who travel to local producing villages to purchase, bag and transport sorghum or they sell to 'assemblers', who - along with porters - are hired by the trader to travel to the village and conduct transactions on the trader's behalf. The sorghum is then transported to various markets, where it is sold to retailers, who in turn sell it to consumers.

Casual labor markets

The labor market for this zone is mainly comprised of local seasonal agriculture. Better off and middle households cultivate extensive fields of 5 to 9 hectares, requiring a significant extra-household labor force to manage. Planting, weeding and harvesting times are the most labor-intensive periods, and households on the upper end of the wealth spectrum hire extra help, sourced from members of poor households, to work on their farms.

Livestock markets

Major intermediary markets for Bay and Bakool's livestock trade are Baidoa, Beletweyn and the Kenyan town of Garissa. From Baidoa, trekkers will transport cattle through Qansah Dhere, Bardera, and Afmadow and eventually to Garissa. From Hudur, cattle travel through Mandera, Wajir and then to Garissa. Export quality cattle and goats are also trekked from main markets to Beletweyn town of Hiraan region from which point they are transported to Bossasso and Berbera ports to the Gulf countries. The primary destination for camel from the Bay and Bakool regions is Mogadishu. With its large population, demand for camel meat is always high in Mogadishu. Camel is typically trekked from Baidoa and other smaller markets to Mogadishu as well as to some other regional markets. In the past, Mogadishu served as the primary destination for camel. However, due to increased levels of insecurity since 1995, traders have shifted trade to the town of Afgoi, which is located approximately 30 km from Mogadishu

Credit

Most households take out credit from traders and shop-keepers in the main towns and villages. Better off households typically take out credit to purchase additional livestock. Poorer households take out loans to cover their immediate food needs, which means they have an increasing debt burden during the hunger seasons when terms of trade are poor and during droughts when livestock production declines. Poor wealth groups in the Bay Agro-pastoral High Potential zone typically use their bi-annual cereal harvests to repay their debts.

Conflict

In 1991 Siad Barre was ousted from Mogadishu by forces of the United Somali Congress (USC). This began a period of conflict, instability, food crisis and famine that continues in parts of Somalia today. In the months following the collapse, the country was torn apart by clan-based warfare and factions competing for what remained of the state's assets and power. In 1991 and 1992, four months of fighting in Mogadishu alone killed an estimated 25,000 people, and caused 1.5 million people to flee the country, displacing within the country a further 2 million. At the same time a drought that year added to the effects of the conflict and by the end of 1992 an estimated 250,000 people had died. The worst-affected came from areas of the south where waves of invasions by armed militias occurred.[101]

From 2006 to 2012 the country became caught up in the 'global war on terror'; Islamist military groups swept into the vacuum of leadership which led to an invasion by neighboring Ethiopia. The subsequent strengthening of the Union of Islamic Courts (ICU) and the emergence of *Al-Shabaab* have been major forces in Somalia over the past decade. Southern Somalia has been especially affected by the violence and disruption related to the conflict between *Al Shabaab* and the Transitional Federal Government (TFG), which has been supported at different times by a number of external countries (Kenya and Ethiopia being the most prominent). Echoing the devastation of 1991 and 1992, the three years from 2006-08

[101] http://www.c-r.org/accord-article/endless-war-brief-history-somali-conflict, Sally Healy and Mark Bradbury

were catastrophic in Somalia. Military occupation, a violent insurgency, rising jihadism and massive population displacement reversed the minimal political and economic progress achieved in the late 1990s. During 2007 alone fighting between the TFG and the insurgency resulted in the displacement of up to 700,000 people from Mogadishu. In 2011, the plight of the Somali people was exacerbated by the worst drought in six decades, which left millions of people on the verge of starvation and caused tens of thousands to flee to Kenya and Ethiopia in search of food.

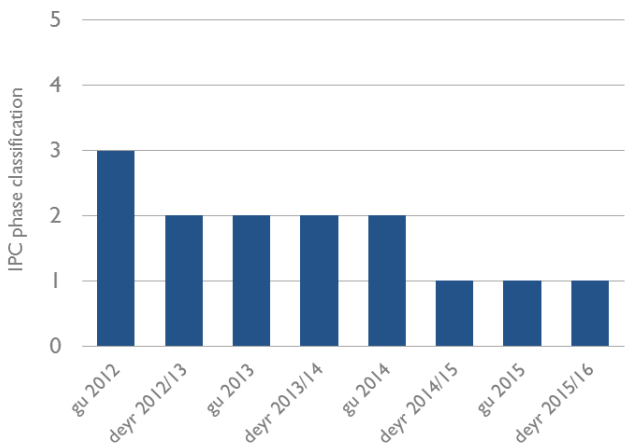
The formation of a post-transition Federal Government brought back some stability to the country in 2012. However, fighting over territory in southern Somalia continues to this day as the National Armed Forces (with support from the African Union Mission in Somalia/AMISOM) try to regain strategic cities and towns from *Al Shabaab*. Frequent market disruptions have resulted from continued conflict as commercial supply routes are interrupted. In turn, supply shortages have led to price increases for local producers and consumers.

Most areas in this livelihood zone have been directly affected by the conflict. Bay and Bakool Regions in general, and Baidoa in particular, were arguably the worst hit during the first and second decades of armed conflict.[102] For instance, in early 2009, the al-Shabaab group launched a major offensive to take Bakool Region. Battles for control over Mogadishu and Baidoa, as well as battles for control over much of the territory in southern and central Somalia continued into 2010. Mogadishu itself remained the center of fierce battles until 2011 when the TFG and AMISOM troops won control of the city from Al-Shabaab.[103] Subsequently, Al-Shabaab retreated to Baidoa, which meant continued insecurity in Bay and Bakool Regions.[104]. Baidoa was eventually taken from Al-Shabaab in February 2012, and in 2015, AMISOM, with support from Ethiopian National Defense and Kenyan Defense Forces, carried out a major operation to force *Al-Shabaab* out of its last strongholds in southern Somalia, including Baardheere. However, *Al Shabaab* are still active in the area carrying out guerrilla style attacks in Baidoa and along the main Baidoa-Mogadishu road. Several administrations recently created by clan militias loosely allied to the TFG are fighting back against *Al-Shabaab* insurgents in several parts of Somalia including lower Shebelle, Lower Juba, Gedo and Bay and Bakool areas. The main roads are risky for traveling or for transporting goods and sporadic violence creates an environment of continued insecurity.

Food access history

The effect of ongoing conflict has been devastating over the years. Inter-annual drought compounds the many negative outcomes of war, which include a collapsed industrial base, the breakdown of infrastructure, especially roads, the loss of state services, like schools and health clinics, lawlessness which results in violence towards women, supply shortages, price hikes, population displacement, disrupted trade, and impeded movement to seasonal grazing areas. Fields have been abandoned and livestock diseases left untreated as pastoralists lacked access to veterinary care. All these effects have had devastating consequences for the food and livelihood security of the local people. Over the years this has meant that parts of Somalia, and especially southern Somalia, where so much of the conflict has centered, has witnessed over twenty years of food and livelihood insecurity.

Figure 2: Recent trends in IPC phase classification, with 1 as best and 5 as worst



Source: FSNAU

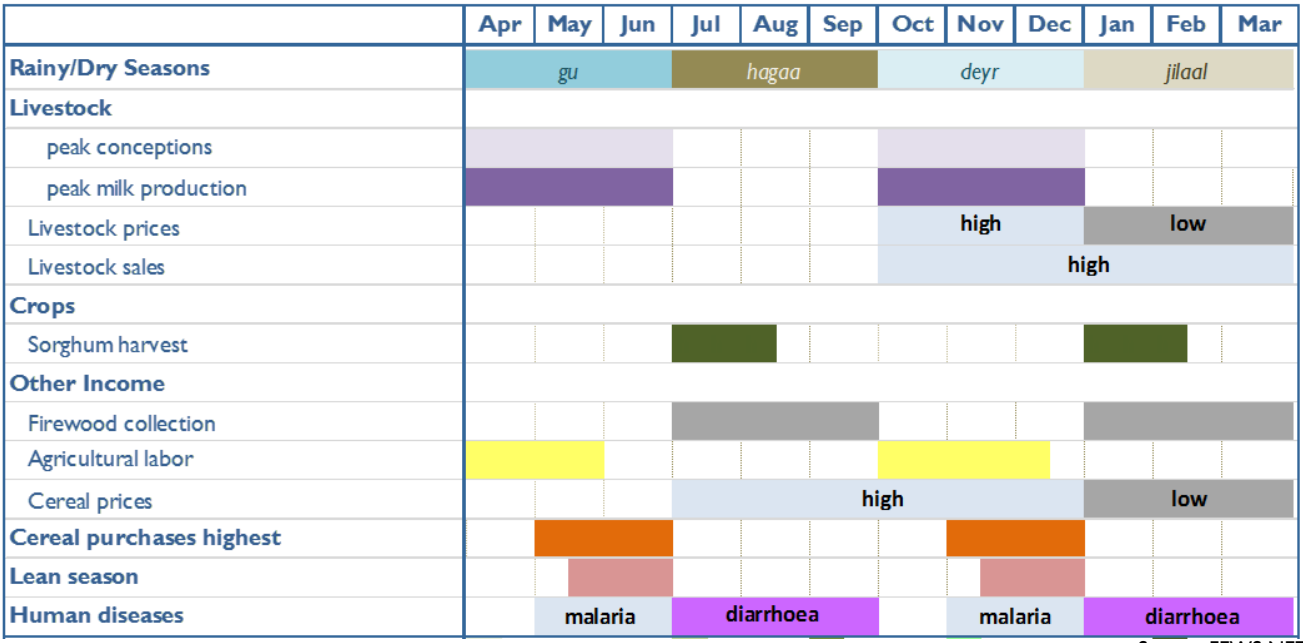
[102] OCHA. 2002: *Internally Displaced Persons. Combined Report on Somalia* 1. 1 August 2002.
[103] AMISOM stands for the African Union Mission in Somalia
[104] Al-Shabaab continued to lose territory over the next couple of years. In late 2012, for example, Kenyan troops assisted the Somalia National Army and AMISOM to take control of Kismayo from Al-Shabaab. This move cut off a major source of income for Al-Shabaab: the export of charcoal.

Throughout the conflict, timely and effective interventions have been severely constrained due to insecurity. A major international emergency effort ensued in response to the country-wide famines of 1991-1992, 2005-2006 and 2011, and in 2008 and 2009 the country received the largest amounts of international food aid since the famine of 1992-93, however in late 2009 all US-funded food aid *to Al Shabaab*-controlled southern Somalia was halted. With continued insecurity in southern Somalia, the inability to provide adequate services and humanitarian support in times of drought has led to major displacements of populations and a major refugee crisis. For example, during the May to July 2011 period around 46% of the refugees who fled into Ethiopia are estimated to have come from Bay Region in Somalia.[105]

Seasonal calendar

In this livelihood zone, as in many other parts of Somalia, there are two distinct rainy seasons followed by two dry seasons. The first rainy season, called the *gu*, usually occurs from April through June. The second, called the *deyr*, occurs from October through December. This is a time when agricultural activities, such as planting and weeding, are most pressing and better off households need extra help on their fields to accomplish these tasks. As such, labor wage rates are highest during these periods. The harvest of crops planted during the *gu* season occurs in July and those planted in the *deyr* season are harvested in January/February. The harvest period also requires significant amounts of labor in the fields. In the past the majority of sorghum was grown in the *gu* season, but in recent years this balance has shifted. *Deyr* season rains have become more reliable, allowing for an increased concentration of production during that part of the year. Nevertheless, as shown in the rainfall graphs, *gu* season rains tend to be higher, allowing for the cultivation of maize in that season. *Quelea quelea* birds can cause serious damage to sorghum crops in the *gu* season, which has also led to a higher emphasis on maize during the *gu* season. The sorghum that does get planted during the *gu* was traditionally not uprooted after harvest but left in the ground until the *deyr* and grown as a ratoon crop. With increased rainfall during the *deyr* in recent years, however, farmers have begun replanting sorghum to bring in higher yields.

Figure 3: Seasonal calendar for the Bay-Shabelle High Potential Agro-pastoral Livelihood Zone



Source: FEWS NET.

[105] FEWS NET, *Internal and External Displacement among Populations of Southern and Central Somalia Affected by Severe Food Insecurity and Famine during 2010-2012*, 2014

Livestock prices and sales peak during the *deyr* season when demand for goats (especially), driven by the *Hajj* (pilgrimage), is highest. The *jilaal* season is another time when livestock sales are high because many livestock are gathered around water points close to market centers, making it a convenient time to sell. However, because of the high supplies on the market, livestock prices are low at this time.

Poorer agro-pastoralists have to buy sorghum during the wet seasons because their stocks from the previous harvest have run out and the coming harvest crops are still growing in the fields. This is also a time when cereal prices tend to be highest. The heavy labor demand at this time (both on their own fields and as hired labor in the fields of others) combined with relative food scarcity and the higher incidence of malaria at the end of the wet season, makes this a particularly difficult time of year for poor households in this zone. Cropping activities revolve around the two periods of rainfall. Men and elder sons are responsible for land preparation and all active household members help with planting. The gu harvest takes place in July/August and the deyr harvest occurs in January/February. The father or older son is responsible for selling off unused stocks before the beginning of the next harvest.

The dry season has its own challenges. Water is hard to come by and people need to walk long distances to find it. This is also a time when Acute Respiratory Infection (ARI) is highest, particularly during the jilaal dry season. Livestock diseases also tend to occur during the dry season, when livestock are concentrated around watering points.

Livestock conceptions are timed so that animals are born at the beginning of the wet seasons, when pasture conditions start to peak, providing sufficient fodder for newly lactating animals. Milk production reaches a high point in April, May, and June and then again in October, November and December. Animals benefit from the crop residues left behind from the deyr harvest and can continue generating high milk yields through January some years.

Wealth breakdown

Wealth is determined in this agro-pastoral zone both by the number of livestock owned and by the amount of land cultivated. Cattle and goats are the most commonly owned livestock, with camels the most valuable animals, both in terms of direct sales value and in terms of the food and cash income they are able to generate for the household. As you move up the wealth spectrum, you see an increase in the number of livestock owned, the amount of land cultivated, and the household size. Poor households comprise around a third of the households, although these households are also the smallest in size (typically around 6 people per unit) whereas better off households have the most people (around 10 people per unit). Better off households make up around 15% of the households in this livelihood zone, and those in the middle wealth group make up 55% of the households.

Table 2: Wealth group characetristics in Bay-Shabelle High Potential Agro-pastoral Livelihood Zone

	Poor	Middle	Better-off
Household percentage (%)	30	55	15
Household size (#)	6	8	10
Typical area cultivated (ha)			
	3	5	9
Typical livestock holding (#)			
Camels	0	0	10
Cattle	3	9	22
Goats	5	11	28
Sheep	1	1	2
Donkeys	0	1	2

Source FSNAU
Note: The figures in the table are the mid-point of a range.

Middle and better off households cultivate more land, in part because they have more productive household members within the homestead; and in part because they are able to recruit more labor by hiring poorer household member in exchange for cash, food or access to their oxen and ploughs. They are also able to host collective working parties providing food for the day to a group of neighbors and relatives who come to help with weeding, planting and harvesting activities. These households are also able to maintain larger herd sizes, allocating household labor among herding and cropping activities. Milk production from their animals and direct sales of animals along with crop production from their land allows these households on the upper end of the wealth spectrum to cover all of their own food and cash income requirements in a year like the reference year.

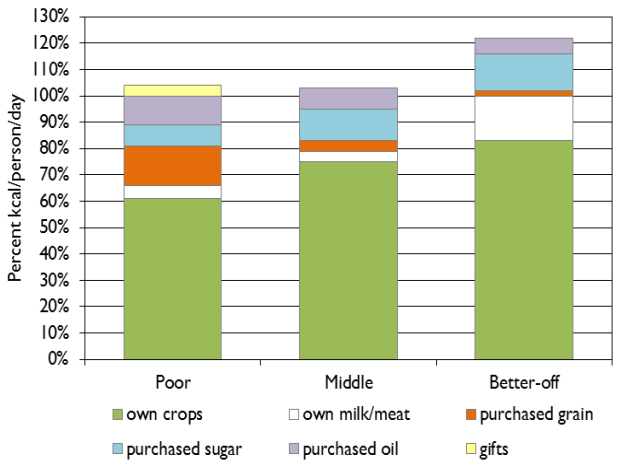
Poor households are not able to cover all of their basic food and non-food requirements by relying on their livestock herds and crop production alone. These households tend to cultivate around 3 hectares of land. They own around 3 cattle, 6 goats/sheep and no donkeys or camels. Poorer households provide agricultural labor for middle and better off households in exchange for the use of plough oxen and/or for food. These households usually have fewer productive members, which is one of the limits on their ability to cultivate larger land sizes and maintain more livestock.

Farmers, who require agricultural labor but cannot afford it, can rely upon family members, neighbors and fellow clan members to provide that labor. Also common in this livelihood zone is the lending of donkey carts for the transport of harvested crops. Animals are also loaned or given as *zakat* to poorer households.

Sources of food and income and expenditure patterns

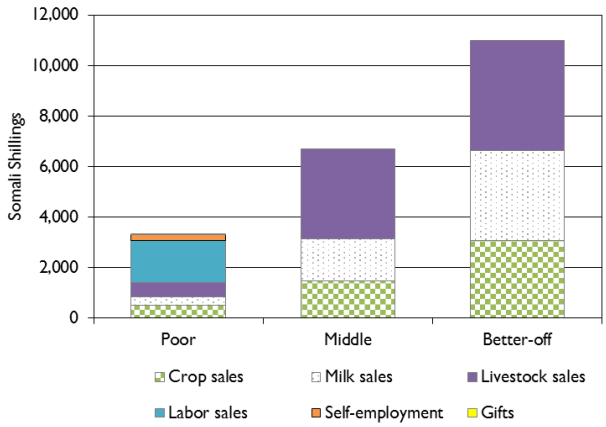
There are three main sources of food in this livelihood zone: own crop production, milk from households' own livestock and food purchases make up the bulk of the year's calories. Poor households also depend on gifts of food from middle and better off households. Depending on the rains, these three main sources – own crops, milk and purchase – are balanced out against each other to meet annual needs. In years when rains are poor and crops and milk production contract, the reliance on purchased food expands; likewise, when crop and milk production are higher, households purchase less food. In a year like the reference year, which was relatively good, own crop production provided 60 – 83% of minimum calorie needs for households, with the contribution increasing in line with wealth. Sorghum is the most important crop; in the reference year it contributed around 1200 kg of grain for poor households and 4650 kg for better off households, with the other two wealth groups falling in between. Well over half of this came from the *deyr* harvest, which was especially good in the reference year. Cowpeas and maize were also harvested in much smaller amounts.

Figure 4: Food sources by wealth group, Bay-Shabelle High Potential Agro-pastoral Zone



Source: FSNAU, BAP BSS, 2009.

Figure 5: Cash income sources by wealth group, Bay-Shabelle High Potential Agro-pastoral Zone



Source: FSNAU, BAP BSS, 2009.

Milk is a second major source of food produced by these agro-pastoral households. Only better off households owned camels in the reference year. Camels offer the most reliable and plentiful source of milk. Poor households typically have only 1 milking cow, producing around 245 liters in a year like the reference year (most of this produced in the *gu* season). Around a third of this is sold, but the rest is consumed. This, along with the milk obtained from around 3 milking goats, supplies just under 5% of the calories poor households needed in the reference year. Milk yields for cattle are around 2 liters in the wet season and 1 liter in the dry season; goat milk yields are just under ½ liter. Better-off households, on the other hand, had 1 camel milking throughout the reference year and 6 cows, producing a total of around 1,980 liters in the wet season and 675 liters in the dry. Around a quarter of the camel's milk and over half the cows' milk was sold. Dry season

milk prices are higher than wet season prices, so even though only around half as much milk is sold in the dry season, cash income earned from milk during the dry season is, liter for liter, more valuable than that in the wet season. Milk from all animals (camels, cows, goats) provides around 15% of the calories that better off households needed in the reference year.

For middle and better off households, all the remaining calorie requirements for the households came from the market. Staple grains (mainly sorghum, with small amounts of maize and wheat) are purchased throughout the year, with the heaviest reliance during the *jilaal* season. Purchased sugar and oil also contributed substantially to the annual calorie intake. Purchased grain covered 15% of calorie requirements for poor households, and only 2% for better off households. Meanwhile, sugar accounted for 14% of minimum calories for better off households and 8% for poor households; purchased oil added another 6 - 11% of household calories. Poorer households purchased more of their calories in the form of oil than better off households because they have less ghee from their own milk. Oil from the market makes up for a lower supply of milk.

The most common form of support for households is *zakat* (charity) either in the form of cash, food or live animals. Zakat is an obligatory 10% tax that is paid by those households that can afford it (crop and cash). It is typically distributed to the poorest of families. The payment of crop zakat usually occurs immediately after the harvests during the months of July (post *gu*) and January/February (post *deyr*). Middle and better off households usually give 10% of their produce to the poor. *Zakat* distributions decline when the harvest is poor. During the reference year poor households obtained around 4% of their annual calories from *zakat*.

The main sources of cash income in this agro-pastoral zone are crop sales, milk sales, livestock sales and labor sales. At the upper end of the wealth spectrum crop, milk and livestock sales predominate. Poor households, unable to cover their minimum cash requirements with crops and livestock, turn to casual labor and self-employment activities and rely additionally on gifts of cash.

Crop production in this livelihood zone provides food for consumption as well as cash, although its value in cash terms is limited for most households. Livestock and milk are more important cash generators, and they supplied the majority of income in the reference year.

Livestock sales and milk sales were the most important sources of cash income for middle and better off households in the reference year with cattle are most valuable animals, bringing in 1,130 – 1,600 SoSh per head in the reference year. Middle and better off households each sold around 2 cattle in the reference year, although better off households were able to obtain more per head, keeping their animals in better condition and selling in markets where they garnered the best deals. Poor households had only goats to sell, and they tended to get less per animal than middle and better off households. As a result, better off households earned over 7 times more from livestock sales than poor households.

Milk sales made up around a third of the annual cash income for better off households, a quarter of the cash income for middle households, and just under 10% of the cash income for poor households. Cow milk brings in the bulk of this, with only a minor contribution made by camel milk for better off households. Milk yields are higher in the *gu* season, but milk prices are higher in the *deyr*. Given the importance of milk sales, keeping track of conception rates, birth rates and grazing potential is a critical indicator of household welfare in this zone.

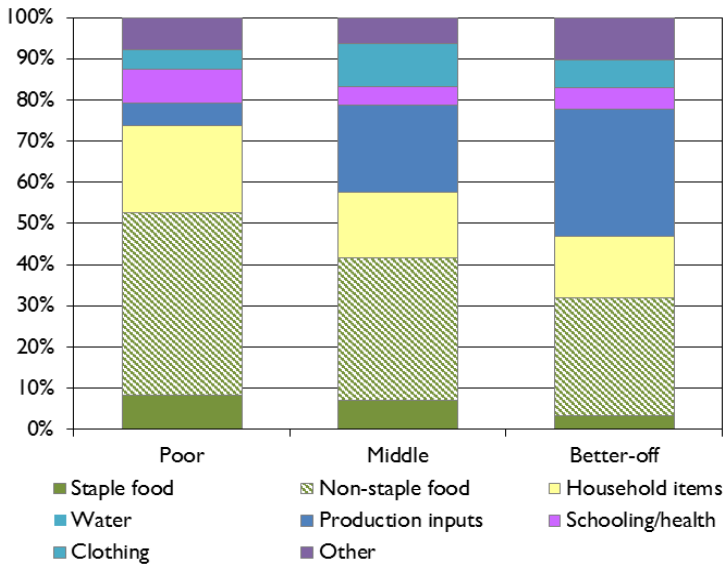
Poor households depend heavily on cash income earned from casual labor, which makes up around half of their annual cash supply. Most of this income comes from doing seasonal agricultural labor for others locally, helping to plant, weed and harvest. Poor households also earn a small amount of cash from self-employment activities, which include mainly collecting and selling firewood and making and selling charcoal – an activity that is mostly pursued during the dry seasons. Gifts of cash from better off neighbors and relatives make up the remaining cash income source for poor households, although this is a very small amount. These last two sources – self-employment and gifts – accounted for under 10% of cash income for poor households in the reference year.

Remittances from family members that have migrated to urban centers such as Bossaso, Baidoa and Mogadishu may also provide cash for some households, but this is not considered a typical source of income across the board.

The last point to make is that absolute cash income for better off households is just over three times higher than that of poor households. At the same time, herd sizes for better off households are around five to seven times higher than poor households' herd sizes, which indicates that much of the wealth in this zone is retained 'on the hoof', and converted into cash only when required.

As we see from the expenditure graph, the poorer the household, the more of its annual cash income it spends on food. Relative expenditure on staple food decreases significantly as you move up the wealth spectrum. The need to purchase food is related to the amount of milk and crops generated by the household on its own. Better off and middle household produce more of their food than poor and very poor households, leaving them with less of a requirement to buy staple grain. Expenditure on non-staple food, including sugar and oil, is high across all wealth groups, and in absolute terms increases with wealth. Better off households spent more than twice as much on non-staples as poor households in the reference year, with most of this allocated to sugar. Better off households consume, on average, .75 kg of sugar a day. At 8 SoSh per kg (compared to 1.4 SoSh/kg for sorghum) this high-cost commodity eats up a significant amount from the household budget every year.

Figure 6: Allocation of expenditures by wealth group, Bay-Shabelle High Potential Agro-pastoral Zone



Source: FSNAU, BAP BSS, 2009.

The relative expenditure on household items, which includes tea, salt, soap, kerosene, payment for grinding, and utensils, is also high for poor households. These are small weekly or monthly outlays on household essentials, but over the year as a whole they add up to around 20% of annual expenditure for poor households and 15% for better off households. In particular, the high spending on tea and kerosene is notable.

Another thing to note is that spending on production inputs (both in relative and absolute terms) increases substantially as you move up the wealth spectrum. Both crop production and livestock production require inputs, and the double demands in this agro-pastoral area are reflected in this component of the chart. Better off households, with more land and more livestock, need to spend more to maintain production in both categories. These households spend money on seeds, tools and labor to help in their fields. The money better off households spend on labor alone is equivalent to more than nine times the amount that poor households spend on all of their production inputs combined. Maintaining livestock also requires an investment; in the reference year better off households spent around 25 times more than poor households on animal drugs; they also spent money on salt for their animals, water for their animals and on livestock purchases to restock.

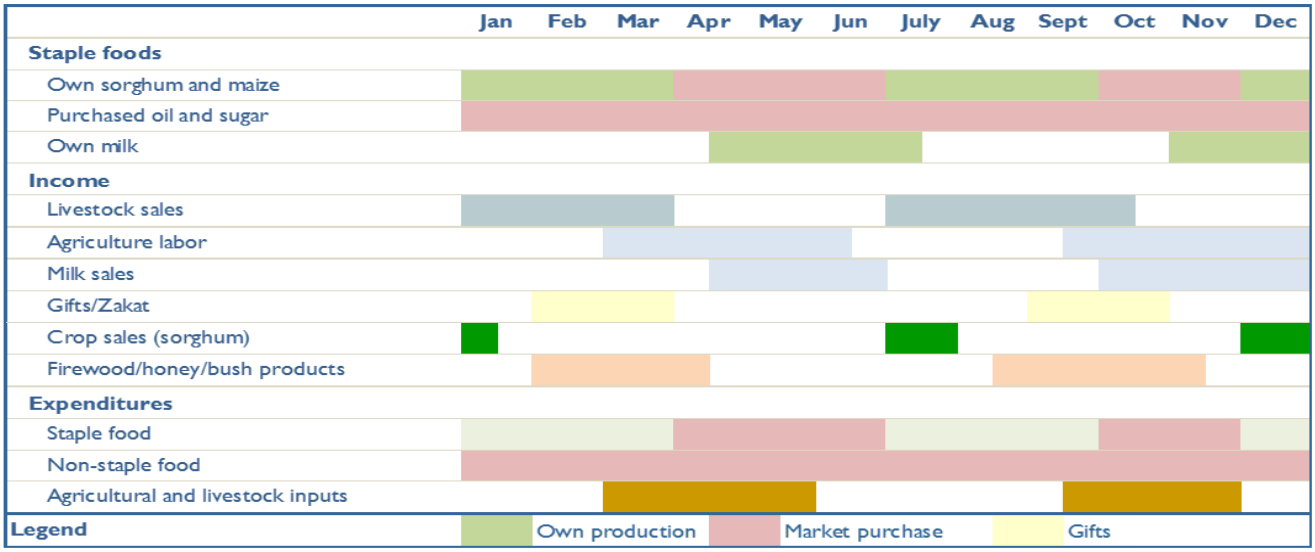
Social services, which in this case includes spending on school, madrasa, and medicine, is higher in absolute terms for better off households, who have larger household sizes and even on a per person basis invest more in schooling and medicine. Poorer households have less to spend and are more likely to keep their children out of school so that they can contribute to the household economy by herding small stock, carrying water, gathering gums and resins for sale, or a multitude of other tasks that require attention.

The 'other' category on the graph above includes items like taxes, gifts, clan contributions, transportation and other non-essential expenditures that could potentially be reduced in a bad year to help cover food and essential livelihood-related items. This expenditure, both in absolute and relative terms, increases with wealth.

Calendar of major sources of food and income for poor households

If we combine the information shown in Figure 3 (the seasonal calendar above) with the information presented in the section on food, cash and expenditure, we get a fuller picture of households' seasonal access to food and cash income, and their time-specific requirements to spend money. As discussed above, people here survive on a combination of food they grow themselves, food they purchase from the market, and milk from their own herds. Staple grains from own crop production are consumed from July through September and again from December through March, corresponding to the two main harvest periods. In the intervening months, staple grains are purchased from the market. Milk from households' own production is highest during the rainy seasons, from April to July (the *gu* seasons) and from November through December (the *deyr* season).

Figure 7: Consumption and income calendar for the Bay-Shabelle High Potential Agro-pastoral Livelihood Zone



Source: FSNAU

Cash from livestock sales is highest during the two dry seasons (from January through March and again from July until October). Milk sales are highest when milk is most available – in the rainy seasons. Most households do not migrate too far inland to reach wet season grazing areas and therefore still have the opportunity to sell milk at the main settlements. Agricultural labor income for poorer households is highest from March to June and then again from September through December. These are periods of high agricultural labor demand on the bigger local farms. Poorer households also depend on gifts/zakat in February and March and then again in September and October. At this same time, these households generate income from natural product sales, such as firewood, honey and other bush resources. Households use the cash from these various pursuits to help fund their expenditures on agricultural and livestock inputs, which usually occur during the two rainy seasons.

Hazards, response, and monitoring variables

Drought is the most damaging hazard in this livelihood zone. Given the dependence on rain fed agriculture for food and the critical role that livestock play in providing cash income, drought can devastate the local economy. Droughts cause a

cascade of negative effects: inadequate rainfall causes reductions in crop yields, which lowers demand for agricultural labor and decreases the amount available not just for local consumption, but also for gifts (zakat). An increase in staple food prices accompanies most droughts, especially in these areas where market integration tends to be poor. The main source of cash income – livestock - is also affected; reduced pasture and water lead to a deterioration in livestock body conditions, lower conception rates, higher abortion rates, lower milk yields, and declining livestock prices. Therefore, just as people need more money to cover the increasing purchase requirement and higher food prices, their source of cash income is seriously constrained.

Civil insecurity and market closures have been major hazards in southern and central parts of Somalia. Sporadic fighting between Federal Government of Somalia forces supported by the African Union Mission in Somalia (AMISOM) forces on the one hand and anti-government insurgents on the other hand has at times restricted the flow of food and other basic items, which in turn has increased food prices and the cost of living. Disrupted trade flows, restricted movement of people and animals to pasture and water points and the loss of assets have seriously undermined local livelihoods. Displacement to neighboring regions within Somalia or Kenya and Ethiopia has been common. Cereal prices can shoot up in the event of regional market disruptions leading to localized food gaps.

Crop and livestock diseases are another major problem. Tick-borne diseases and Contagious Caprine Pleura Pneumonia (CCPP) cause significant losses in income since they undermine livestock body conditions in the dry seasons and reduce viable livestock sales. Internal parasites (*Gooriyan*), diarrhea (*Shuban*), lumpy skin disease, and *diif* (a respiratory diseases affecting shoats) are also present. Limited pest control services, restricted supplies of veterinary medicines and a poor animal health infrastructure reduces local capacity to manage these problems.

Flash floods can destroy farmlands and livestock herds in this zone. During the rainy season areas can be inundated when runoff from upland areas and heavy rainfall combines to exceed to capacity of seasonal riverbeds. There are positive effects from these floods as waters recede, leaving behind fertile ground for replanting; but the losses sustained in the floods are challenging for households to overcome.

Table 3: Coping strategies in response to shocks in Bay Agro-pastoral High Potential

Poor	*Middle/better off*
Shift expenditure to essential items and reduce expenditure on non-essentials.	Shift expenditure to essential items and reduce expenditure on non-essentials.
Male household members will migrate to agricultural areas within Bay Region or to urban areas in search of work.	Increased livestock sales
Increased collection of firewood and charcoal for sale and other bush products	Increased crop sales, with better off waiting to sell stocks until prices are highest, taking advantage of the low supply of grain
Increased sale of livestock	Increased migration of livestock
In extreme cases, there will be an outmigration of the entire household in search of assistance.	
Seeking increased gifts and social support	

Source: FSNAU and FEWS NET reports.

In bad years, households employ time-worn survival strategies, aiming to reduce their non-essential consumption, increase cash income where possible and change their expenditure patterns. The better-off and middle households have more assets and diverse sources of income than the poor, which enable them to recover much faster from shocks like droughts. Poor households try to expand their reliance on labor, sending male members to urban areas or other agricultural zones to find work. They also increase their collection and sale of bush products and sell as many livestock as they can while still retaining a viable herd. Given the already low livestock numbers in this area, this strategy has limited usefulness for poor households. These households also try to seek additional support from better off households in the form of gifts, or sometimes sending some of household members to live with others; but drought does not discriminate, and in the worst

years the ability of better off households to give gifts is also reduced. Middle and better off households try as well to sell livestock and will save as much of their extra food stocks as possible to sell when prices are higher during the dry season.

Table 4: Key parameters to monitor in the Bay Agro-pastoral High Potential Livelihood Zone

Item	Key Parameter – Quantity	Key Parameter – Price
Crop production	*Gu* season maize – amount produced *Gu* season sorghum – amount produced *Deyr* season sorghum - amount produced *Deyr* season cowpeas – amount produced	*Gu* season maize – producer price *Gu* season sorghum – producer price *Deyr* season sorghum - producer price
Animal production	Camels' milk – yields (season 1) Cows' milk – yields (seasons 1 & 2) Cattle – herd size Goats – herd size	Camels' milk – producer price Cows' milk – producer price Cattle – export & local price Goats – export & local price
Other	Cultivation labor – availability of seasonal jobs Harvest labor – availability of seasonal jobs Firewood – amount sold	Cultivation labor – wage rates for planting/weeding Harvest labor – wage rates Firewood – prices
Expenditure		Sorghum – consumer price Sugar – consumer price Oil – consumer price

Source: FSNAU, BAP BSS, 2009.

Estimated population for the Bay-Shabelle High Potential Agro-pastoral Livelihood Zone (SO15)

Zone	Region	District	Livelihood	Population 2012 UNFPA
South	Shabelle Dhexe (Middle)	Jowhar	Bay-Shabelle High Potential Agro-pastoral	44,819
South	Shabelle Dhexe (Middle)	Balcad	Bay-Shabelle High Potential Agro-pastoral	79,078
South	Shabelle Hoose (Lower)	Marka	Bay-Shabelle High Potential Agro-pastoral	4,203
South	Shabelle Hoose (Lower)	Afgooye	Bay-Shabelle High Potential Agro-pastoral	117,226
South	Shabelle Hoose (Lower)	Qoryooley	Bay-Shabelle High Potential Agro-pastoral	37,660
South	Shabelle Hoose (Lower)	Wanla Weyn	Bay-Shabelle High Potential Agro-pastoral	45,295
South	Bay	Baydhaba/Bardaale	Bay-Shabelle High Potential Agro-pastoral	180,903
South	Bay	Buur Hakaba	Bay-Shabelle High Potential Agro-pastoral	72,106
South	Bay	Diinsoor	Bay-Shabelle High Potential Agro-pastoral	88,746
South	Bay	Qansax Dheere	Bay-Shabelle High Potential Agro-pastoral	60,279
South	Gedo	Baardheere	Bay-Shabelle High Potential Agro-pastoral	42,575
South	Juba Dhexe (Middle)	Bu'aale	Bay-Shabelle High Potential Agro-pastoral	20,927
South	Juba Dhexe (Middle)	Saakow/Salagle	Bay-Shabelle High Potential Agro-pastoral	17,942
SO18 Population 2012 total				**811,759**

BAY BAKOOL LOW POTENTIAL AGRO-PASTORAL (SO16)

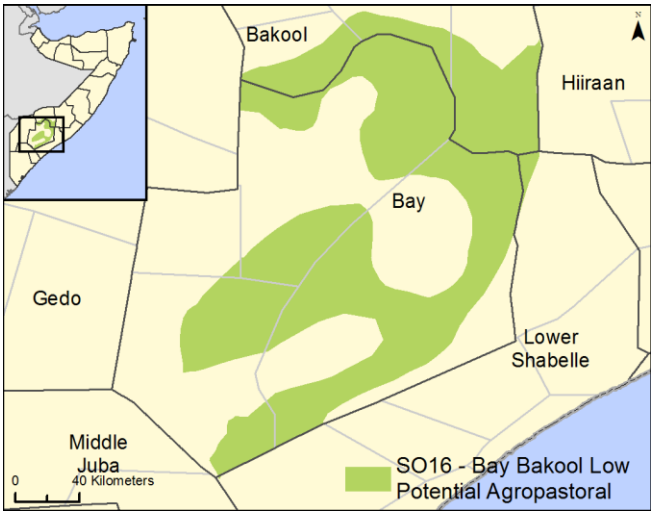
General Livelihood Zone Description

Table 1: Summary of data supporting the Bay Bakool Low Potential Agro-pastoral livelihood profile

Field data collection	2009
Consumption year	April – March
Reference year	April 2006 – March 2007
Initial estimated validity	Through 2012

Source: FSNAU

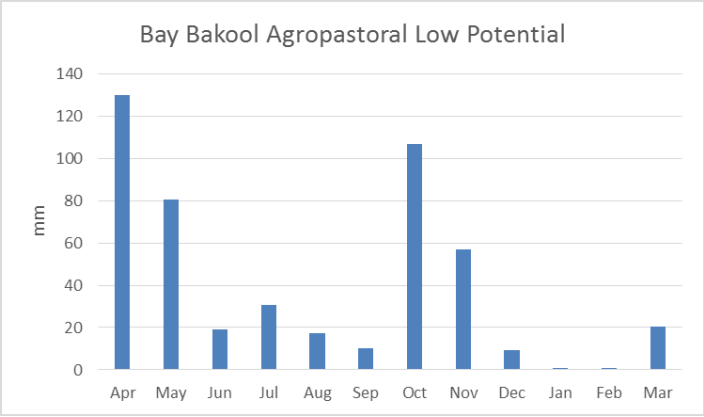
The Bay Bakool Low Potential Agro-pastoral Livelihood Zone (SO16) is located in the Southern Zone of Somalia and it covers parts of Bay and Bakool regions. The boundaries of the current zone are generally the same as the ones drawn in 2009 when it was determined that the previous pastoral zone needed to be refined to reflect a growing dependence on agricultural production, shifting away from a total reliance on livestock. The most recent population estimate for this zone is 343,531 (UNFPA 2014).



This zone consists of open shrub land which provides extensive grazing and browsing opportunities. Grazing areas are communal and shared peacefully in years of adequate rainfall; however, during times of drought, conflict over scarce pasture resources often breaks out. Water is sourced from shallow wells and water catchments, which are communally shared. Normally, there is sufficient water supply, and water is free; however, during the dry seasons, when water availability is low, there is some payment for water, especially by middle and better off households. Poorer households spend more of their limited time searching for water at this time.

The local economy now depends on both agriculture and livestock, with crop production serving mainly to meet household food needs, and livestock covering cash requirements as well as food needs (in the form of milk/ghee and meat). Crop production is rain-fed, but people also take advantage of flood-recession agriculture along seasonal streams and in lowland areas that benefit from run-off from neighboring upland areas. Based on an analysis of long-term (over 30-year) rainfall data, average annual precipitation levels are around 485 mm per year[106], but large inter-annual fluctuations are the norm, and many years see well-below average production potential. Figure 1 shows the timing of these rains, which occur in two main seasons, from April to June (*gu*) and from October to December (*deyr*).

Figure 1: Estimated average monthly rainfall in mm in the Bay Bakool Low Potential Agro-pastoral Livelihood Zone



Source: USGS CHIRPS Data, FEWS NET GeoCLIM

Households here plant sorghum and cowpeas; very little maize is planted because conditions are too dry for this water-thirsty crop. Camels, cattle, goats and sheep are raised in this livelihood zone. One thing that distinguishes this zone from the *Bay-Shabelle High Potential Agro-pastoral Livelihood Zone* is the presence of camels, albeit in smaller numbers than in the *Southern Inland Pastoral Livelihood Zone*. Camels are

[106] Based on USGS CHIRPS data, a combination of satellite-based Rainfall Estimates (RFE) and station data, with data extending more than 30 years (1981-2014). Source, FEWS NET and USGS.

by far the most valuable animal in any herd, providing a dependable source of milk and relatively high sale prices. Camels' milk is used for both consumption and sale and this alone brings in a good portion of annual cash income. The relative distribution of different animals varies across the livelihood zone; in general cattle are dominant everywhere, camels are more numerous in Bay Region, and goats and sheep are more numerous in Bakool. Although people live in settled communities, there is a regular pattern of seasonal migration with livestock being taken to pasture-rich areas in the wet seasons. Men and older boys take camels off to browse and graze farther away, while cattle and sheep/goats tend to remain behind with female family members within a 10 to 20 km radius of the home settlements. The men will then return with the livestock during the dry seasons to take advantage of crop residues.

The number of livestock owned is the main determinant of wealth, but the area cultivated is an important secondary factor. At the root of both of these is the amount of labor a household has on hand, or is able to mobilize. Large livestock herds take many people to manage; and the labor demands of agricultural production are heavy as well. Better off households, with more livestock and land, are also typically larger, with more productive members. These households often hire additional labor to help with seasonal activities. Poorer households tend to have fewer productive members, and in turn smaller herds and land areas. All wealth groups derive the majority of their food through a combination of own crop production, market purchases and the production of milk and milk products. Poor households also rely on gifts and food aid. The main cash income sources include milk/ghee sales, livestock sales and – for poor households – labor sales. Poor households also earn cash from self-employment activities, such as collecting and selling bush products.

Major urban market centers like Baidoa and Mogadishu provide a source of demand for local livestock. Goats and cattle are the predominant livestock traded, and export quality goats and cattle are transported via Baidoa north to the Gulf countries, with goats in particularly high demand during the *Hajj*. A small number of camels is sold by better off households, and Mogadishu is the final destination market for these animals. Local market towns offer up a source of demand for milk and ghee, which provide significant income for the rural population.

Markets

People in the *Bay Bakool Agro-pastoral Low Potential Livelihood Zone* depend heavily on selling two main commodities for cash: livestock and milk/ghee. Households do not generally sell significant amounts of their harvest. What little is sold tends to be very localized and opportunistic. The road infrastructure is not well developed and the average distance to a functioning road for most of Bay's rural population's is 6 km. Thus most people walk to markets using well-worn foot-paths and dirt roads and trekking alongside camels or donkeys laden with goods. Seasonal flooding and a general lack of maintenance have led to the deterioration of road conditions, with some roads completely overrun by thick foliage. To bring major supplies of commodities into the zone traders use two major tarmac roads within Bay and Bakool regions. The first, known as the "Mogadishu Road", runs northwest from Mogadishu through the *Bay Bakool Agro-pastoral Low Potential Livelihood Zone* and then traverses the *Bay Agro-pastoral High Potential Livelihood Zone* before reaching Baidoa Town. From Baido Town, the road continues northwest through Gedo Region, passing through the town of Luq and then on into Ethiopia and Kenya. The second major road links the central and northern regions of Somalia, beginning from Baidoa and passing through Hudur, Tieglow, and Hiran. Another road from Baidoa Town travels to the southwest town of Bardera, located in southern Gedo. It then connects to a road that runs north to Luuq and south to Buale. All other roads in this zone are earth roads that become impassable during the rainy seasons. A major airstrip is located in Baidoa town, providing access to humanitarian supplies. There are smaller, but not fully functioning, airstrips in all district capital towns.

Livestock market

Goats and cattle are traded most frequently, and export quality goats and cattle from this zone are transported north to the Gulf countries. In the Bay region, Baidoa is the primary market for goat and cattle traders and in Bakool, Hudur, Burdhuhunle, El Berde and Tieglow serve as the region's major livestock markets. Milk is sold in local towns and market centers throughout the zone. Traders in the primary markets arrange for livestock to be taken to intermediary markets by trekkers. Major intermediary markets for Bay and Bakool's livestock trade are Baidoa, Beletweyn and the Kenyan town of Garissa. From Baidoa, trekkers will transport cattle through Qansah Dhere, Bardera, Afmadow and eventually to Garissa.

From Hudur, cattle travel through Mandera, Wajir and then to Garissa. Export quality cattle and goats are also trekked from main markets to Beletweyn town of Hiraan region from where they are transported to Bossasso and Berbera ports to the Gulf countries. The primary destination for camel from the Bay and Bakool regions is Mogadishu, where the demand for camel meat is always high. Camel is typically trekked from Baidoa and other smaller markets to Mogadishu as well as to some other regional markets. In the past, Mogadishu served as the primary destination for camel. However, due to varying levels of insecurity since 1995, traders sometimes use alternative markets, like the town of Afgoi, which is located approximately 30 km from Mogadishu.

Labor market

The labor market for this zone is mainly comprised of local seasonal agriculture. Better off and middle households cultivate extensive fields of 3 to 5 hectares, requiring extra-household labor to manage. Planting, weeding and harvesting times are the most labor-intensive periods, and households on the upper end of the wealth spectrum hire extra help, sourced from members of poor households, to work on their farms.

Credit

Most households take out credit from traders and shop-keepers in the main towns and villages. Better off households typically take out credit to purchase additional livestock. Poorer households take out loans to cover their immediate food needs, which means they have an increasing debt burden during the hunger seasons when terms of trade are poor and during droughts when livestock production declines. Poor wealth groups in the Bay Agro-pastoral High Potential zone typically use their bi-annual cereal harvests to repay their debts.

Conflict

Most areas in this livelihood zone have been directly affected by the conflict that has plagued Somalia since 1991. Bay and Bakool Regions in general, and Baidoa in particular, were arguably the worst hit during the first and second decades of armed conflict.[107] In 2009, the *Al-Shabaab* group launched a major offensive to take Bakool Region. Battles for control over Mogadishu and Baidoa, as well as battles for control over much of the territory in southern and central Somalia continued into 2010. Mogadishu itself remained the center of fierce battles until 2011 when the TFG and AMISOM troops won control of the city from Al-Shabaab.[108] Subsequently, Al-Shabaab retreated to Baidoa, which meant continued insecurity in Bay and Bakool Regions.[109]. Baidoa was eventually taken from Al-Shabaab in February 2012, and in 2015, AMISOM, with support from Ethiopian National Defense and Kenyan Defense Forces, carried out a major operation to force *Al-Shabaab* out of its last strongholds in southern Somalia, including Baardheere. However, *Al Shabaab* are still active in the area carrying out guerrilla style attacks in Baidoa and along the main Baidoa-Mogadishu road. Several administrations recently created by clan militias loosely allied to the TFG are fighting back against *Al-Shabaab* insurgents in several parts of Somalia including lower Shebelle, Lower Juba, Gedo and Bay and Bakool areas. The main roads are risky for traveling or for transporting goods and sporadic violence creates an environment of continued insecurity.

Food access history

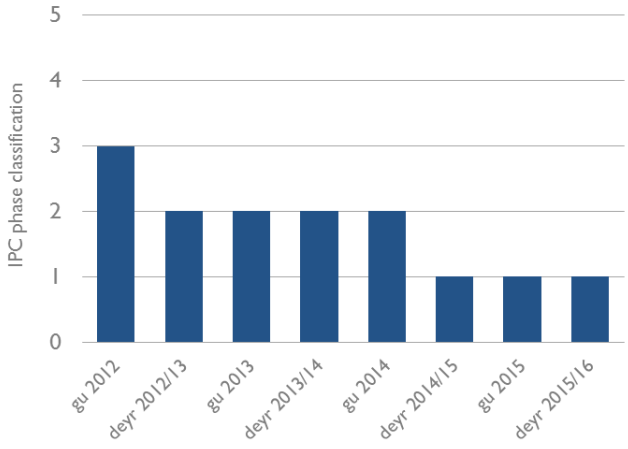
The effect of ongoing conflict has been devastating over the years. Inter-annual drought compounds the many negative outcomes of war, which include a collapsed industrial base, the breakdown of infrastructure, especially roads, the loss of state services, like schools and health clinics, lawlessness which results in violence towards women, supply shortages, price hikes, population displacement, disrupted trade, and impeded movement to seasonal grazing areas. Fields have been

[107] OCHA. 2002: *Internally Displaced Persons. Combined Report on Somalia* 1. 1 August 2002.
[108] AMISOM stands for the African Union Mission in Somalia
[109] Al-Shabaab continued to lose territory over the next couple of years. In late 2012, for example, Kenyan troops assisted the Somalia National Army and AMISOM to take control of Kismayo from Al-Shabaab. This move cut off a major source of income for Al-Shabaab: the export of charcoal.

abandoned and livestock diseases left untreated as pastoralists lacked access to veterinary care. All these effects have had devastating consequences for the food and livelihood security of the local people. Over the years this has meant that parts of Somalia, and especially southern Somalia, where so much of the conflict has centered, has witnessed over twenty years of food and livelihood insecurity.

Throughout the conflict, timely and effective interventions have been severely constrained due to insecurity. A major international emergency effort ensued in response to the country-wide food security emergencies of 1991-1992, 2005-2006 and 2011, and in 2008 and 2009 the country received the largest amounts of international food aid since the food crisis of 1992-93, however in late 2009 all US-funded food aid *to Al Shabaab*-controlled southern Somalia was halted. With continued insecurity in southern Somalia, the inability to provide adequate services and humanitarian support in times of drought has led to major displacements of populations and a major refugee crisis. For example, during the May to July 2011 period around 46% of the refugees who fled into Ethiopia are estimated to have come from Bay Region in Somalia.[110]

Figure 2: Recent trends in IPC phase classification, with 1 as best and 5 as worst



Source: FSNAU

Nevertheless, as shown in Figure 2, the level of food insecurity in this zone has been steadily improving over the past few years. The last three seasons have seen relatively few numbers of people requiring emergency assistance, down substantially from the gu season of 2012, when over 73,000 people were facing a humanitarian crisis.

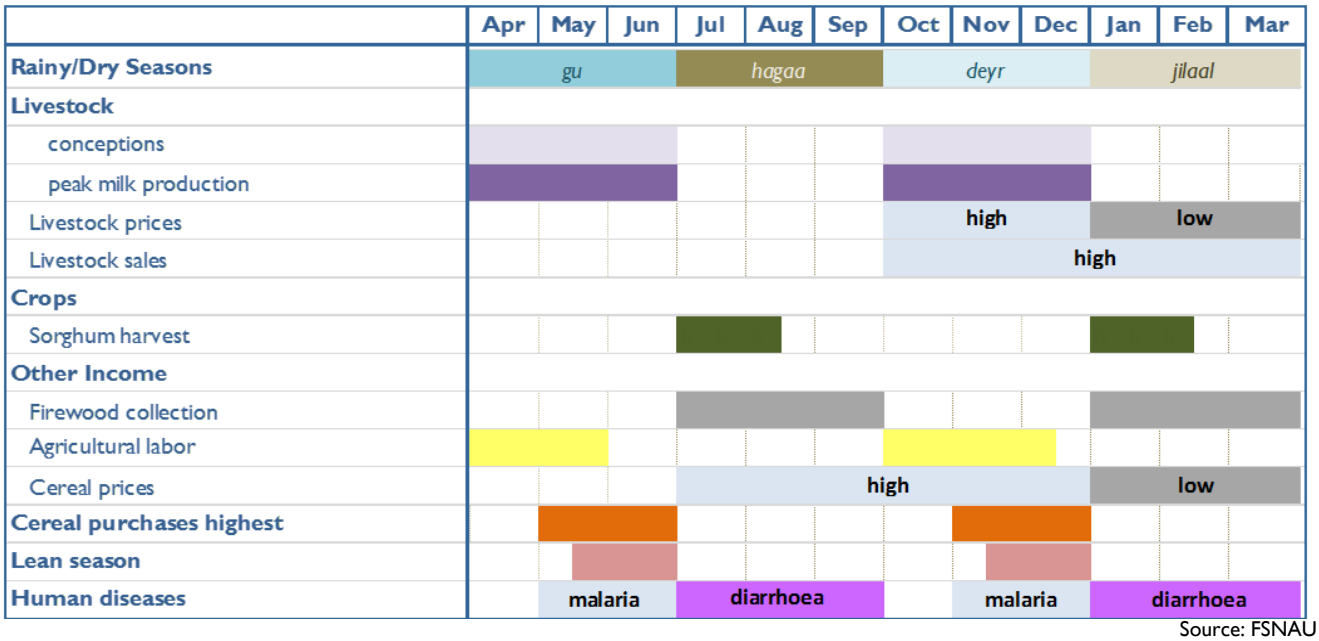
Seasonal calendar

In this livelihood zone, as in many other parts of Somalia, there are two distinct rainy seasons followed by two dry seasons. The first rainy season, called the *gu*, usually occurs from April through June. The second, called the *deyr*, occurs from October through December. This is a time when agricultural activities, such as planting and weeding, are most pressing and better off households need extra help on their fields to accomplish these tasks. As such, labor wage rates are highest during these periods. The harvest of crops planted during the *gu* season occurs in July and those planted in the *deyr* season are harvested in January/February. The harvest period also requires significant amounts of labor in the fields. In the past the majority of sorghum was grown in the gu season, but in recent years this balance has shifted. *Deyr* season rains have become more reliable, allowing for an increased concentration of production during that part of the year. Nevertheless, as shown in the rainfall graphs, gu season rains tend to be higher, allowing for the cultivation of maize in that season. *Quelea quelea* birds can cause serious damage to sorghum crops in the *gu* season, which has also led to a higher emphasis on maize during the *gu* season. The sorghum that does get planted during the *gu* was traditionally not uprooted after harvest but left in the ground until the *deyr* and grown as a ratoon crop. With increased rainfall during the *deyr* in recent years, however, farmers have begun replanting sorghum to bring in higher yields.

Livestock prices and sales peak during the *deyr* season when demand for goats (especially), driven by the *Hajj* (pilgrimage), is highest. The *jilaal* season is another time when livestock sales are high because many livestock are gathered around water points close to market centers, making it a convenient time to sell. However, because of the high supplies on the market, livestock prices are low at this time.

[110] FEWS NET, *Internal and External Displacement among Populations of Southern and Central Somalia Affected by Severe Food Insecurity and Famine during 2010-2012*, 2014.

Figure 3: Seasonal calendar for the Bay Bakool Agro-pastoral Low Potential Livelihood Zone



Source: FSNAU

Livestock conceptions are timed so that animals are born at the beginning of the wet seasons, when pasture conditions start to peak, providing sufficient fodder for newly lactating animals. Milk production reaches a high point in April, May and June, and then again in October, November and December. Animals benefit from the crop residues left behind from the deyr harvest and can continue generating high milk yields through January some years.

Wealth breakdown

Two factors determine wealth in this agro-pastoral zone: the number of livestock owned and the amount of land cultivated. Livestock numbers are a more important determinant here because agriculture is practiced opportunistically to take advantage of years with decent rainfall, but it is not relied upon as a source of guaranteed income.

Table 2: Wealth group characecteristics in Bay Bakool Low Potential Agro-pastoral Livelihood Zone

	Poor	Middle	Better-off
Household percentage (%)	35	45	20
Household size (#)	6	8	9
Typical area cultivated (ha)			
	2.5	3.25	4.5
Typical livestock holding (#)			
Camels	0	11	17
Cattle	5	10	25
Goats	5	17	31
Donkeys	0	0-1	0-1

Source FSNAU, BAPLP BSS, 2009
Note: The figures in the table are the mid-point of a range.

Cattle and goats are the most commonly owned livestock, with camels the most valuable animals, both in terms of direct sales value and in terms of the food and cash income they are able to generate for the household. As you move up the wealth spectrum you see an increase in the number of livestock owned, the amount of land cultivated, and the household size. Poor households comprise around 35% of the households, although these households are also the smallest in size (typically around 6 people per unit) whereas better off households have the most people (around 9 people per unit). Better off households make up around 20% of the households in this livelihood zone, and those in the middle wealth group make up 45% of the households.

Middle and better off households cultivate more land, in part because they have more productive household members within the homestead; and in part because they are able to recruit more labor by hiring poorer household member in

exchange for cash or food. They are also able to host collective working parties providing food for the day to a group of neighbors and relatives who come to help with weeding, planting and harvesting activities. In this way middle households are able to cultivate around 3.25 hectares and better off households cultivate around 4.5 hectares.

These households are also able to maintain larger herd sizes, balancing out household labor to meet the needs of both herding and cropping activities. Milk production from their animals and direct sales of animals along with crop production from their land allows these households on the upper end of the wealth spectrum to cover all of their own food and cash income requirements in a year like the reference year.

Poor households are not able to cover all of their basic food and non-food requirements by relying on their livestock herds and crop production alone. These households tend to cultivate around 2.5 hectares of land. They own around 5 cattle, 5 goats/sheep and no donkeys or camels. Given the importance of camels in providing milk for consumption and sale, and animals that garner a higher sales price, poor are in many ways poor precisely because they do not own camels. Poorer households provide agricultural labor for middle and better off households in exchange for cash or for the use of plough oxen and/or for food. These households tend to have fewer productive members, which is one of the limits on their ability to cultivate larger land sizes and maintain more livestock.

Farmers, who require agricultural labor but cannot afford it, can rely upon family members, neighbors and fellow clan members to provide that labor. Also common in this livelihood zone is the lending of donkey carts for the transport of harvested crops. Animals are also loaned or given as *zakat* to poorer households.

Sources of food and income and expenditure patterns

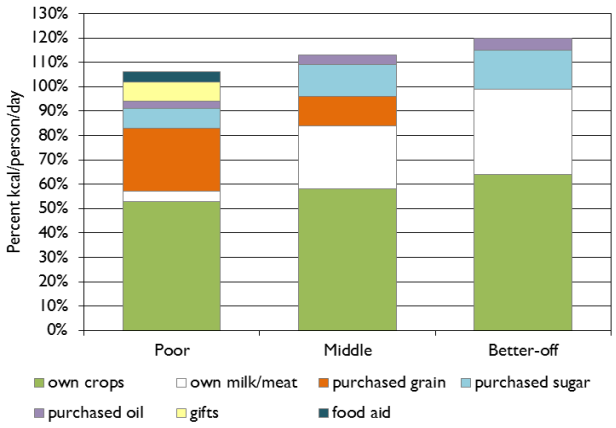
Households here balance three main sources of food – crops from their own fields, milk from their own livestock and food that they purchase from the market. In years of adequate rainfall, when crop production is possible, own crops can play a significant role in meeting household food needs. But in years when rainfall is poorly timed or insufficient, people increase their reliance on the market to offset declines in crop production as well as losses in milk yields. The reference year, which is illustrated in the graphs below, was an average year, with sufficient rainfall for crop and milk production.

One thing that distinguishes this zone from the Bay-Shabelle High Potential Agro-pastoral Livelihood Zone is a higher dependence on camels, which provide a more reliable source of milk for both consumption and sale, and higher levels of cash income since camels are more valuable than cattle. Calories from milk covered around a quarter of the energy needs for middle households and over a third of energy needs for better off households. Of these calories, camel milk provided the majority (18% and 20% of calorie needs for middle and better off households, respectively). Middle households had 2- 3 camels milking throughout the reference year, and better off households had 3 – 4. In addition, 1-2 cows and 7 – 8 goats provided milk for middle households, and 4 cows and 13 goats were milked by better off households. Poor households only garnered around 4% of their annual calories from milk because they had no camels and far fewer cattle and goats. More milk is generated for consumption in the *gu* season than the *deyr* since pasture conditions tend to be better then.
Households relied on their own crop production to make up an additional 50 – 65% of households' minimum calorie requirements. These calories came almost entirely in the form of sorghum. A typical poor household produced a total of around 840 kg of sorghum on their 2 ½ hectares in the reference year; typical middle households took in around 1,075 kg and better off households produced around 1,500 kg. The *deyr* season was more productive than the *gu* season in the reference year (although not always), and roughly 2/3 of the annual production was harvested in the second season. A very small amount of food also came from home-grown cowpeas, but this represented less than 5% of household energy needs. Crop production is used almost entirely for household consumption (not for sale) and it enables people to retain as much of their livestock herd as possible. Without their own crops, households would have to sell more livestock in order to raise the cash necessary to buy food. The more they can defer these purchase requirements, the more they invest in building their herds.

All households rely on the market to procure the majority their remaining calories and these purchases covered between 21% and 37% of minimum calorie requirements during the reference year. As a rule, poorer households buy more staple

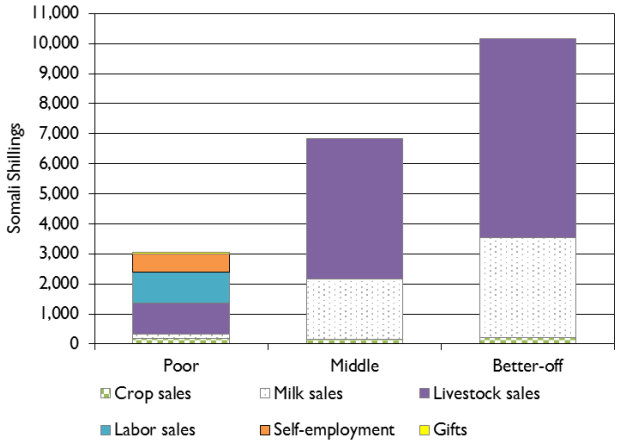
grains than better off households because they produce less of their own crops and milk. These households bought sorghum and maize for at least 3 – 4 months of the reference year, bringing in around 330 kg of grain in this manner; middle households bought around half that much and better off households did not buy grain at all. Those at the upper end of the wealth spectrum purchased sugar and oil, which contributed substantially to their annual calorie intake. Purchased grain covered 26% of calorie requirements for poor households, 12% for middle households and none for better off households. Meanwhile, sugar accounted for 16% of minimum calories for better off households, 13% for middle households and 8% for poor households; purchased oil added another 3 - 5% of household calories.

Figure 3: Food sources by wealth group, Bay Bakool Low Potential Agro-pastoral Zone



Source: FSNAU, BABLP BSS, 2009.

Figure 4: Cash income sources by wealth group, Bay Bakool Low Potential Agro-pastoral Zone



Source: FSNAU, BABLP BSS, 2009.

Two additional sources of food contributed to poor households' annual needs in the reference year – gifts and food aid. *Zakat*, an obligatory 10% tax paid by those households that can afford it (paid in both crops and cash), is typically distributed to the poorest of families. The payment of crop zakat usually occurs immediately after the harvests during the months of July (post *gu*) and January/February (post *deyr*). During the reference year middle and better off households had relatively good harvests, which meant that *zakat* levels were higher; as such, poor households obtained around 8% of their annual calories from *zakat*. Food aid distributed by the World Food Programme provided an additional 4% of calorie needs.

Food is only one of the crucial requirements for living; people also need cash to purchase essential goods and services. The cash income graph above highlights the main difference between this zone and the neighboring *Bay-Shabelle High Potential Agro-pastoral* zone: crop sales are not a significant source of cash income here as they are in the more fertile upland zone; rather livestock sales and milk/ghee sales are the main drivers of the local economy. Crop sales only occur in relatively good years, and they make up less than 5% of cash income across the board. Milk/ghee and livestock sales are dominant at the upper end of the wealth spectrum; and casual labor and self-employment activities combined are most important for poor households.

The importance of camels shows up again here because milk from camels provides a steady source of cash income, and the selling even one camel a year brings with it substantial cash rewards. Around 40 – 50% of camels' milk was sold by middle and better off household in the reference year, compared to only 10 – 11% of cows' milk. None of the goats' milk was sold. For the upper two wealth groups, sales of camels' milk accounted for almost a quarter of their total cash income. Poor households, with only cows' milk to sell, earned over 26 times less from milk sales than better off households. Given the importance of milk sales, and the particular importance of camel milk, keeping track of camel conception rates, birth rates and grazing potential is a critical indicator of household welfare in this zone.

In addition, most better off households sold at least one camel in the reference year; middle households sell a camel once every other year. At 2,000 SoSh, one camel is worth over three times the price of a local cattle and eight times more than a local goat. Middle and better off households each sold around 1 export grade cow and 1 local grade cow in the reference

year along with 2-3 goats. Better off households were usually able to obtain more per head, keeping their animals in better condition and selling in markets where they could get the best prices. Poor households had only local cattle and goats to sell, and they tended to get less per animal than middle and better off households. As a result, better off households earned around 6 times more from livestock sales than poor households and middle households earned over 4 times more.

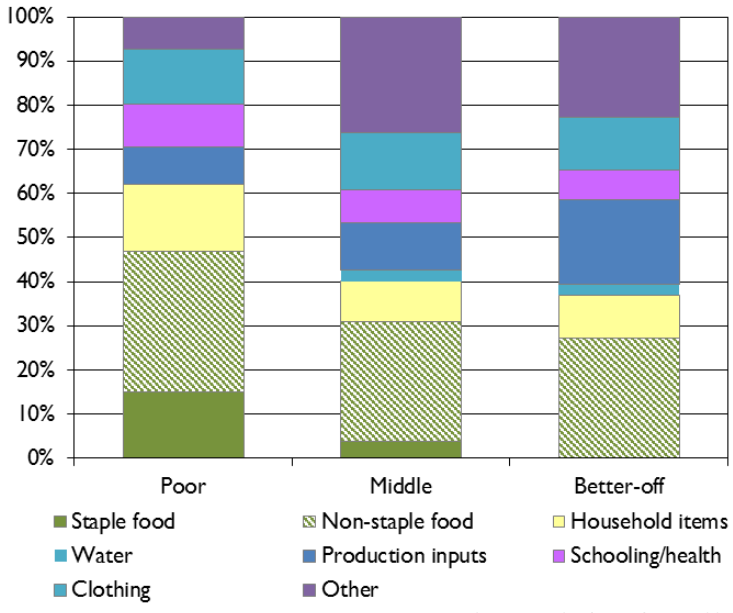
Because poor households earn so much less from milk/ghee sales and from livestock sales, they need to make up the gap through other means. As a result, poor households depend on cash income earned from casual labor and from self-employment activities. Around 15% of poor households' cash income in the reference year came from working on the fields of middle and better off households during the cultivation period. They provided extra help with land preparation, planting and weeding, earning cash in exchange for their work. The degree to which they can depend on this source of cash is more limited in this livelihood zone than in the high potential zone (where poor households can cover around half of their annual cash needs with labor sales) because agriculture is not as profitable here as it is there. Poor households also earn a small amount of cash from self-employment activities, which include mainly collecting and selling bush products – an activity that is mostly pursued during the dry seasons. Gifts of cash from better off neighbors and relatives make up the remaining cash income source for poor households, although this accounted for a very small amount in the reference year. These last two sources – self-employment and gifts – accounted for just around 20% of cash income for poor households in the reference year.

During the reference year, remittances that originated from outside the country were minimal to non-existent, but local remittances, mainly from big towns in the north like Bosaso and even in the south (Mogadishu), are common. These are sent mostly during the crop planting season. However, the contribution of these local remittances was not well-captured in the baseline assessment. It is worth keeping in mind that some households are receiving this outside funding in most years.

It is also important to note that absolute cash income for better off households is just over three times higher than that of poor households. Herd sizes for these better off households in the reference year were around five to ten times higher than poor households' herd sizes, which suggests that much of households' wealth is retained 'on the hoof', and converted into cash only as needed.

The cash that households generate in this zone is used to cover a range of expenses, including food, household items, water, production inputs, school and health services, clothing and other items. The proportion of income that needs to be devoted to each of these categories tells us something about difference in absolute cash income levels among the three wealth groups as well as their different priorities and needs. As the expenditure graph shows, the poorer the household, the more of its annual cash income it spends on staple food. Better off households purchased no staple food at all during the reference year. Households purchase staple grains to cover a gap if they cannot produce enough of their own milk and crops to cover the year's calorie requirements. In the reference year better off households were able to produce enough of their own food to cover all of their needs, whereas poor households had to fill a two-month gap. Middle households bought grain to cover less than a month's calorie needs.

Figure 5: Allocation of expenditures by wealth group, Bay Bakool Low Potential Agro-pastoral Zone



Source: FSNAU, BABLP BSS, 2009.

Non-staple food expenditures are comprised of sugar and oil, and this spending tends to be high across all wealth groups, increasing in absolute terms with wealth. Better off households spent around three times more on these items than poor households in the reference year, with the majority of this spending allocated to sugar. Better off households consume, on average, .75 kg of sugar a day and poor households consume around .25 kg a day. At 8 SoSh per kg (compared to 1.4 SoSh/kg for sorghum) this high-cost commodity comprises a large part of the annual household budget.

In the expenditures graphs, the category called 'household items' includes tea, salt, soap, kerosene, payment for grinding, and utensils, is also high for poor households. These small weekly or monthly outlays add up over the year, accounting for around 15% of annual expenditure for poor households in the reference year and 10% for middle and better off households. Within this category, the most money is spent on kerosene, utensils and tea (in that order).

Water for drinking is scarce in the dry seasons (especially the *jilaal*), and middle and better off households purchase some of the water they rely on during these times, but spending on this item did not exceed 3% of total cash income in the reference year. Poor households spend more time collecting water rather than spending their limited money.

Expenditure on production inputs (both in relative and absolute terms) increases directly with wealth. Better off and middle households, who have more land and more livestock than poor households, need to invest in both their fields and their herds in order to ensure adequate returns. In relation to crop production, these households did not generally buy seeds or fertilizers in the reference year, but did spend money on tools and on hiring labor to help in their fields. The money better off households spend on labor alone is equivalent to 4 ½ times the amount that poor households spent on all of their production inputs combined. Maintaining livestock also requires an investment; in the reference year all wealth groups bought animal drugs, and middle and better off households also spent money on water for their livestock. Over the year, better off households spent around 10 times more than poor households on livestock-related inputs.

Spending on school and medicine is another requirement. Better off households tend to have more members, which means their spending in absolute terms is already higher than poorer households. They do not appear to invest more on a per capita basis than poor households on schooling, perhaps because the opportunities for schooling outside the madrasas (which are free) is so limited. However, when it comes to spending on health, better off households spend significantly more than poor households, equivalent to around 8 times what poor households spend on a per capita basis.

The 'other' category on the graph above includes items like taxes, gifts, clan contributions, transportation and other non-essential expenditures that could potentially be reduced in a bad year to help cover food and essential livelihood-related items. This expenditure, both in absolute and relative terms, increases with wealth.

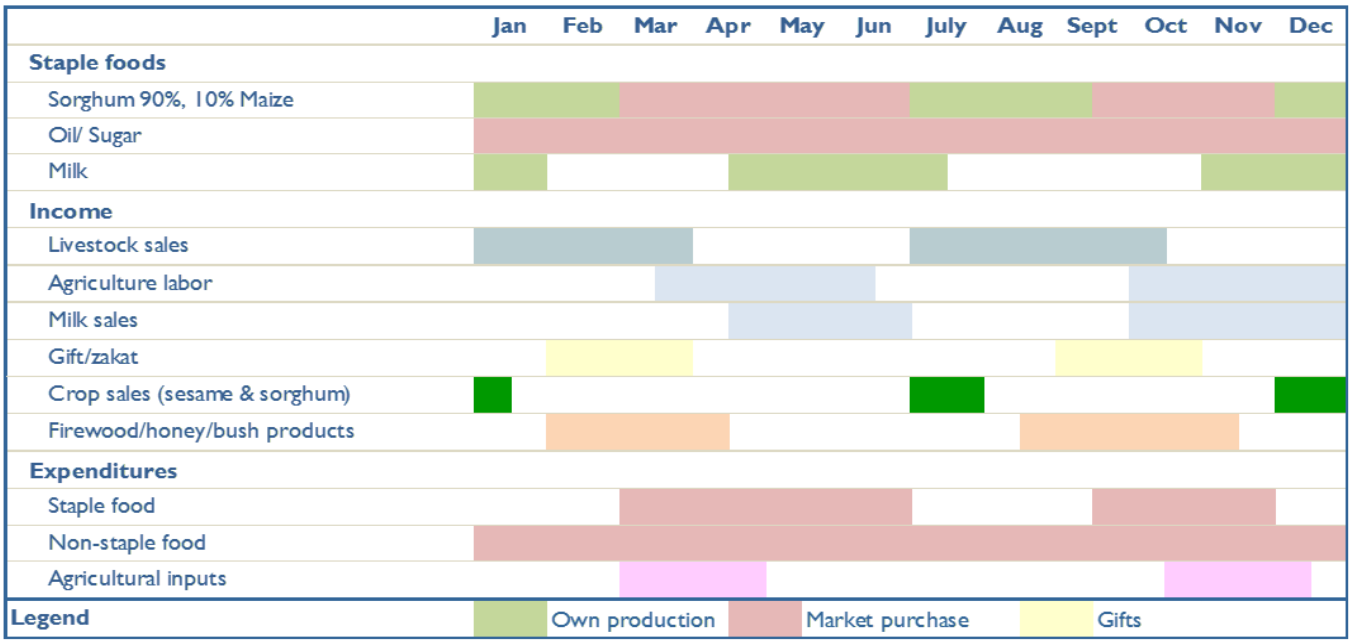
Calendar of major sources of food and income for poor households

The calendar above provides an illustration of households' seasonal access to food and cash income, and their time-specific requirements to spend money. As discussed above, households in this zone survive on a combination of food they grow themselves, food they purchase from the market, and milk from their own herds. Staple grains from own crop production are consumed from July until September and again from December through February, corresponding to the two main harvest periods. In the intervening months, staple grains are purchased from the market. Better off households in the reference year were able to produce enough sorghum so that they did not need to purchase grains any time in the year. Milk from households' own production is highest during the rainy seasons, from April to July (the *gu* seasons) and from November through December (the *deyr* season).

Cash from crop sales flows in just after each harvest. Livestock sales are highest during the two dry seasons (from January through March and again from July until mid-October). Milk income is available in the rainy seasons. Most households do not migrate too far inland to reach wet season grazing areas and therefore still have the opportunity to sell milk at the main settlements. Agricultural labor income for poorer households is highest from March to June and then again from October through December. These are periods of high agricultural labor demand on the bigger farms in the neighboring high potential agro-pastoral zone. Poorer households also depend on gifts/zakat in February and March and then again in

September and October. At this same time, these households generate income from natural product sales, such as firewood, honey and other bush resources. Households use the cash from these various pursuits to help fund their expenditures on agricultural and livestock inputs, which usually occur during the two rainy seasons.

Figure 7: Consumption and income calendar for the Bay Bakool Low Potential Agro-pastoral Livelihood Zone



Source: FSNAU

Hazards, response, and monitoring variables

Drought is the most damaging hazard in this livelihood zone. Given the dependence on rain fed agriculture for food and the critical role that livestock play in providing cash income, drought can devastate the local economy. Droughts cause a cascade of negative effects: inadequate rainfall causes reductions in crop yields, which lowers demand for agricultural labor and decreases the amount available not just for local consumption, but also for gifts (zakat). An increase in staple food prices accompanies most droughts, especially in these areas where market integration tends to be poor. The main source of cash income – livestock - is also affected; reduced pasture and water lead to a deterioration in livestock body conditions, lower conception rates, higher abortion rates, lower milk yields, and declining livestock prices. Therefore, just as people need more money to cover the increasing purchase requirement and higher food prices, their source of cash income is seriously constrained.

Civil insecurity and market closures have been major hazards in southern and central parts of Somalia. Sporadic fighting between Federal Government of Somalia forces supported by the African Union Mission in Somalia (AMISOM) forces on the one hand and anti-government insurgents on the other hand has at times restricted the flow of food and other basic items, which in turn has increased food prices and the cost of living. Disrupted trade flows, restricted movement of people and animals to pasture and water points and the loss of livestock and other assets have seriously undermined local livelihoods. Displacement to neighboring regions within Somalia or Kenya and Ethiopia has been common. Cereal prices can shoot up in the event of regional market disruptions leading to localized food gaps.

Crop and livestock diseases are another major problem. Tick-borne diseases and Contagious Caprine Pleura Pneumonia (CCPP) cause significant losses in income since they undermine livestock body conditions in the dry seasons and reduce viable livestock sales. Internal parasites (*Gooriyan*), diarrhea (*Shuban*), lumpy skin disease, and *diif* (a respiratory diseases

affecting shoats) are also present. Limited pest control services, restricted supplies of veterinary medicines and a poor animal health infrastructure reduces local capacity to manage these problems.

In bad years, households employ time-worn survival strategies, aiming to reduce their non-essential consumption, increase cash income where possible and change their expenditure patterns. The better-off and middle households have more assets and diverse sources of income than the poor, which enable them to recover much faster from shocks like droughts. Poor households try to expand their reliance on labor, sending male members to urban areas or other agricultural zones to find work. They also increase their collection and sale of bush products and sell as many livestock as they can while still retaining a viable herd. Given the already low livestock numbers in this area, this strategy has limited usefulness for poor households. These households also try to seek additional support from better off households in the form of gifts, or sometimes sending some of household members to live with others; but drought does not discriminate, and in the worst years the ability of better off households to give gifts is also reduced. Middle and better off households try as well to sell livestock and also have the labor to move their livestock to areas where pasture conditions are more favorable.

Table 3: Coping strategies in response to shocks in Bay Bakool Low Potential Agro-pastoral

Poor	*Middle/better off*
Shifting of expenditure to essential items, especially cheaper staple grains, and reduction of expenditure on non-essentials.	Shifting of expenditure to essential items, especially cheaper staple grains, and reduction of expenditure on non-essentials.
Men will migrate to far away locations either to graze livestock or to seek labor opportunities, while other family members will migrate to small villages and towns in order to sell water and bush products or to seek additional employment opportunities.	Increased livestock sales, with males sold in higher numbers at the early stages of the crisis, and females increasingly sold as the crisis continues.
Increased collection and sale of construction materials, gums, grasses and incense.	Increased migration of livestock.
Increased sale of livestock, but this is limited due to small herd sizes.	
Increased consumption of wild foods, such as *jinaw* (wild leaf), *garas* (the outer coat of *garas* seeds is removed, and the thin sweet film is consumed). The bean part of the *garas* plant has to be boiled for an entire day before it becomes tender enough to be eaten. Households will also hunt game, including dik (small antelope), guinea fowl and occasionally deer.	
Seeking increased gifts and social support	

Source: FSNAU and FEWS NET reports.

Table 4 Key parameters to monitor in the Bay Bakool Agro-pastoral Low Potential Livelihood Zone

Item	Key Parameter – Quantity	Key Parameter – Price
Crop production	*Gu* season sorghum – amount produced *Deyr* season sorghum - amount produced	Sorghum – producer price
Animal production	Camels' milk – yields (season 1 & 2) Cows' milk – yields (seasons 1) Cattle – herd size Goats – herd size	Camels' milk – producer price Cows' milk – producer price Camels – local price Cattle – export & local price Goats – export & local price
Other	Cultivation labor – availability of seasonal jobs Harvest labor – availability of seasonal jobs Bush products – amount sold Gifts – amount given	Cultivation labor – wage rates for land preparation/planting/weeding Harvest labor – wage rates Bush products – prices

Expenditure		Sorghum – consumer price Sugar – consumer price

Source: FSNAU, BABLP BSS, 2009.

Estimated population for the Bay Bakool Agro-pastoral Low Potential Livelihood Zone (SO16)

Zone	Region	District	Livelihood	Population 2012 UNFPA
South	Bay	Baydhaba/Bardaale	Bay-Bakool Agro-pastoral Low Potential	77,530
South	Bay	Buur Hakaba	Bay-Bakool Agro-pastoral Low Potential	72,106
South	Bay	Diinsoor	Bay-Bakool Agro-pastoral Low Potential	59,164
South	Bay	Qansax Dheere	Bay-Bakool Agro-pastoral Low Potential	32,458
South	Bakool	Xudur	Bay-Bakool Agro-pastoral Low Potential	42,055
South	Bakool	Tayeeglow	Bay-Bakool Agro-pastoral Low Potential	23,317
South	Bakool	Waajid	Bay-Bakool Agro-pastoral Low Potential	36,901
SO16 Population 2014				**343,531**

SOUTHERN RAINFED MAIZE, CATTLE & GOATS (ZONE SO17)

General Livelihood Zone Description

This livelihood zone is located in the far south of Somalia between the lower Juba and Shabelle Rivers and the coast. The zone begins in the district of Marka, south of Mogadishu and stretches as far south as the Kenyan border. Farms in this mixed livestock and agricultural zone are typically located about 20 (or more) km away from the rivers. This is too far away for irrigated riverine agriculture. Instead, famers grow maize and cowpeas in natural depressions where excess river flood water settles and then recedes. This type of agriculture is called *dheshek* farming (i.e., rain fed recession-based agriculture). Dheshek agriculture is particularly common in Lower Juba, especially in Jamame and Kismayo District. Although this zone is not a high-potential agricultural area, it falls within the southern "maize belt" where the *gu* (April-June) season is central to rain fed maize production. This zone has relatively diverse natural resources which households combine to make a living. They grow crops; maintain mixed livestock herds (cattle, goats and some camels); catch fish off coastal waters as well as in dheshek ponds where fish also breed; collect wild food and sell firewood and charcoal gathered from woodland areas.[112] However, it is a grain-deficit zone and the local population also faces chronic problems that particularly affect the livestock sector, including water shortages in the dry season, limited dry season grazing areas, livestock diseases and constraints in access to livestock markets in Kenya. The zone covers parts of 6 districts in 3 regions: Badhadhe, Kismayao and Jamaame Districts (Lower Juba Region); Jilib District (Middle Juba Region); and Marka and Baraawe (also known as Brava) Districts (Lower Shabelle Region). The local population is comprised of people mainly from the Absaame and Rahanweyne groups. The Rahanweyne are known as agro-pastoralists who are not nomadic but who practice more limited migration between wet season and dry season grazing areas. They are concentrated mainly on the east bank of the lower Juba River. Based on recent figures, the rural population for the zone was an estimated 200,290 people in 2014 (UNFPA).

Table 1: Summary of data supporting the Southern Rainfed Maize, Cattle and Goats livelihood profile

Field data collection	2000
Consumption year	July-June
Reference year	1998/99
Initial estimated validity	Through 2009

Source: FSNAU.

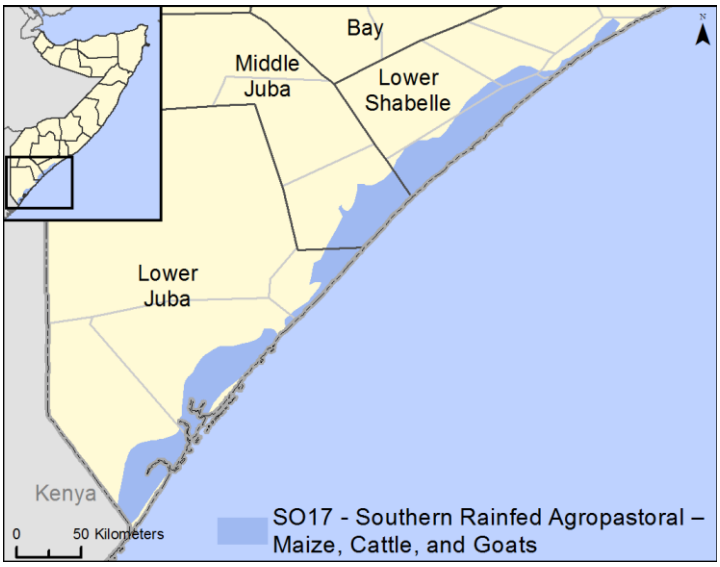
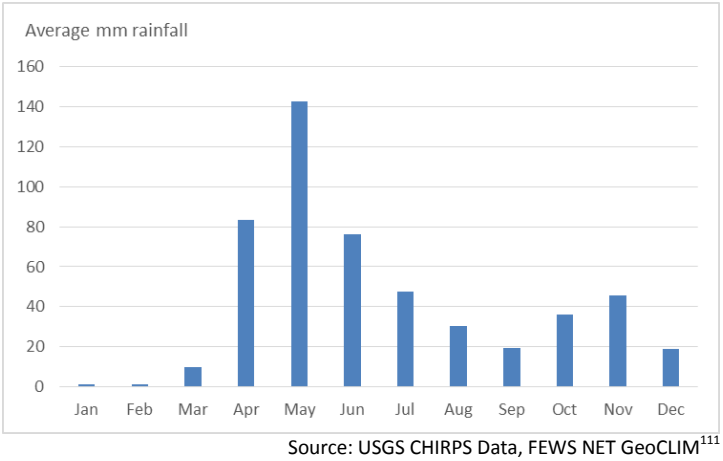


Figure 1: Estimated average rainfall in mm in Southern Rain fed Maize, Cattle and Goats



Source: USGS CHIRPS Data, FEWS NET GeoCLIM[111]

[111] Based on USGS CHIRPS data, a combination of satellite-based Rainfall Estimates (RFE) and station data, with data extending more than 30 years (1981-2014). Source, FEWS NET and USGS.

[112] Dheshek fishing is particularly common in Lower Juba, especially in Jamame and Kismayo Districts.

This long, narrow zone along Somalia's southeastern coastline gives rise to slightly wetter conditions than zones inland although the climate is still considered semi-arid. The climate is considered slightly wetter on the coast than inland due to additional rain during the *hagaa* (July-September) season. Average annual rainfall is in the range of 500-600 mm with average day-time temperatures usually above 25° Celsius throughout the year. Rainfall is often delayed at the start of each season and the gu rains are often low. Soils on the lowland plains are typically sandy especially near the coast. Vegetation in this southern eco-region is mainly scrubland. Toward the rivers, there is thicker woodland. The prevailing climate and natural resources in the zone are suited for Agro-pastoralism. However, other infrastructure is limited and the Agro-pastoralist sector remains one based on small-holder farms and the family herd. The principal city of note near the zone is Kismayo, a coastal seaport which is strategically located between the commercial hub of Mogadishu and markets in Kenya. There is a major road that links the two cities as well as a secondary road that follows the Juba River from Kismayo north to Dolow on the Ethiopian border. The road from Kismayo to Kenya does not follow the coastline but tracks north along the Juba River through Jamaame and Jilib then west through Afmadow to Dhobley (Somalia) and Liboi (Kenya) on the border. Prior to the civil war, there were several industries in Kismayo including a tannery, a meat-tinning factory and a fish factory There were also two sugar refineries in the region (i.e. one near Jilib and the other near Jowhar) but these are no longer operational. As a vital commercial hub for farm produce, livestock exports and fish processing, Kismayo also provided international shipping through its sea port services and was the air hub for international flights. However, more than two decades of fighting for control over the city has left much of the industries' – and the zone's infrastructure damaged and non-operational.[113]

The agricultural system in this livelihood zone is based on a type of rain fed recession farming that is known locally as *dheshek* agriculture. *Dheshek* agriculture takes advantage of natural depressions where river flood water accumulates then recedes leaving moisture for growing maize and cowpeas. In some parts of the zone, the ground is fairly swampy. Prior to recent years, the most important season for maize production was the *gu*. The *gu* (April-June) rains were usually the most substantial. By contrast, the *deyr* season (October-December) rains are lighter and more variable. However, in recent years, the *gu* rains have been unreliable and short although the coastal *hagay* showers from July-September have helped maize production. Farming and herding tasks are usually divided by age and gender. Young girls and boys take care of the goats and milk cows as they graze and browse near the village. Young men are responsible for the non-milking animals. They can herd up to 30 cattle in a group and trek with the cattle between dry season and wet season grazing areas. Adult men and women cultivate the fields. This work is done by hand but villagers often form temporary work groups to cooperatively carry out labor-intensive farm tasks. Better-off households also hire labor to clear encroaching vegetation from fields as well as to do the planting, weeding and harvesting work. One of the most time-consuming tasks is de-silting the water catchments prior to planting, and poor laborers are often hired for this work. In the baseline year (1998-1999), maize yields were an estimated 0.7-0.8 MT/ha. This output is lower than in the irrigated maize fields near to the Juba and Shabelle Rivers where 0.8-1.2 MT/ha were considered the norm in 1998-1999. Cowpeas are intercropped with maize both in the *gu* and the *deyr.* Output in the baseline year, estimated at 0.4-0.5 MT/ha was similar to the higher potential, irrigated zones. In this zone, low output is generally due to variable rainfall from year to year as well as due to crop pests (such as rats and birds). Moreover, agricultural services have been minimal since the state collapse in 1991 and use of inputs is low. Crop production is also affected by farmers' lack of access to agricultural assistance due to restrictions placed by the Al-Shabaab militia on humanitarian activity in the zone.

Livestock production is the second pillar of the economy, providing milk, meat and savings "on the hoof". Cattle and goats are the main species kept and both types of livestock are milked in the dry season and the wet. Yields in the dry season for cattle averages about 1 L/day/cow but double in the wet season to 2 L/day/cow. Goat milk is also consumed but only cow milk is sold. The core milk herd is grazed near the homestead throughout the year. The rest of the herd shifts between wet and dry season grazing areas. The distance between these grazing areas is relatively short and does not involve a long trek for herders and their animals. During the wet season, cattle are taken to areas near the coast and away from the fields and growing crops. Directly after the harvest, cattle are allowed to graze in the fields. As the *jilaal* (hot, dry) season progresses, livestock are moved to the main water points near the rivers. A shortage of perennial water points in dry season grazing areas is one of the chronic problems in this zone and this issue is compounded by relatively limited migration options (and restricted migration routes) for livestock. Livestock diseases such as anthrax and tick-borne diseases, are other problems

[113] AMISOM won control of the city from Al Shabaab in 2012. The port opened soon after. The airport was re-opened in 2014.

facing households in this area. Outbreaks of contagious viral diseases such as Rift Valley Fever occur periodically in this zone as well as in neighboring pastoral zones such as Southern Cattle Pastoral (SO18) and Southern Inland Pastoral (SO11)), and also across the border in Kenya. Outbreaks of RVF in Kenya affect the agro-pastoral communities in southern Somalia as well because the border is closed to livestock trade at these times.

Markets

Commercial activity in the *Southern Rainfed Maize, Cattle and Goats Livelihood Zone* is shaped by two main factors: (1) proximity to the port city of Kismayo and export trade routes to the Middle East.; and (2) relative proximity to the Kenyan border and to the southern cross-border trade route. Both Kismayo/the Middle East as well as Kenya are the two principal destination markets for the zone's livestock. Overall, trade in southern Somalia is dominated by large traders who export livestock and who control the supply of imported goods (sugar, oil, wheat flour and rice). They sell to wholesalers and small retailers who operate in primary and secondary markets. However, civil strife and insecurity both in Kismayo and at the Kenya border has led to many market disruptions since 1991. Market restrictions and trade bans due to livestock diseases and other matters related to the conflict have often occurred over the last 20 years. There was a brief period from 2003-2007 when trade flowed relatively smoothly. However, since 2008, localized and regional insecurity has continued to disrupt transport routes and isolate villages leading to weak market integration. Fluctuating currency valuations (Somali shilling, Kenya Shilling and Ethiopian Birr) also affect the cross-border trade situation.

Cereal markets

The location of this zone near the lower Juba and lower Shabelle River valleys puts the population in proximity to the major grain producing region of the country and to major source markets for maize. This location is important because overall, the *Southern Rain fed Maize, Cattle and Goats Livelihood Zone* is a cereal deficit zone. When demand peaks (prior to the *gu* and *deyr* harvest) local supplies are bolstered by supplies imported from outside the zone, typically from the neighboring riverine farming zones. In general, there is reasonably good market integration in the region. The market hubs for cereals are located in Marka (Lower Shabelle Region), and in Kismayo and Jamame (Lower Juba Region). Sometimes, imported maize from Kenya is found on local markets too, arriving overland through cross-border trade routes and entering Somalia through Dhobley town. Conversely, maize from the Lower Juba Region (although not necessarily from this zone) is also exported cross-border some years to Garissa after the *deyr* harvest.[114] Other cereals, such as rice and wheat flour, which are mainly purchased by middle and better-off households, are imported from outside of Somalia. Large traders control this import business with trading networks in Asia and the Middle East. Sugar is also imported usually through the same market structure.

The zone suffers from high price fluctuations during the year (as well as year to year) due to supply problems as well as to internal trade restrictions. The situation is complicated year to year by civil insecurity. Civil insecurity compounds other problems leading to supply gaps some years. Over the last decade, there have been several recorded instances of supply shortages in staple grains due to transport disruptions from surplus areas to deficit areas. This occurred, for example, during the *deyr* rainy season in 2011 when washed out roads, a poor off-season *gu* harvest, a delayed *deyr* harvest, and civil insecurity led to restricted maize supplies to the lower Juba region despite high demand.[115]

Livestock markets

Southern Somalia's major export is livestock and the *Southern Rain fed Maize, Cattle and Goats Livelihood Zone* is no exception. This export trade of livestock flows toward Kenya through Afmadow as well as to the Middle East via Mogadishu and Bosaso. Demand for camels and goats is particularly high in the Middle East during religious festivities including Eid-ul-adha, Ramadan and Eid-ul-fitri as well as during the Hajj in Saudi Arabia. Saudi Arabia is the principal destination country for Somalia livestock exports but there are many other countries in the Middle East which also import livestock from southern

[114] FEWS NET. Maize Production and Market Flows in the GHA.

[115] FSNAU/FEWS NET. *Special Report: Market Functioning in Southern Somalia*, 15 December 2011. Page 2

Somalia. These countries include Egypt, Yemen, Oman, UAE, Qatar, Bahrain and Kuwait.[116] Demand from Kenya has also grown significantly in the last two decades.[117] The cross-border trade of cattle into Kenya boomed after the collapse of Somalia's central government in 1991 and was highest during the years when the Kismayo port was inaccessible due to civil unrest.[118] Even when the Kismayo port became operational in 2012, the port continued to lack infrastructure for livestock exports including a holding ground. Thus, Nairobi and Mombasa urban demand for beef continues to exert a strong pull on cross-border trade flows. Cattle are typically trekked across the border through Afmadow market to Garissa where they are then loaded onto trucks for transport to Nairobi or Mombasa. The traders who control the cross-border trade are all of Somali ethnicity. The relationship between buyers at the level of primary and secondary markets, the trekkers, and the cross-border traders is clan-based and extremely important.

Livestock prices fluctuate dramatically from year to year depending on whether it is a drought year or year of good rainfall. The main consideration is the staple grain/livestock terms of trade as this affects the purchasing power of Agropastoralists. During the 1998-1999 reference year, the maize / goat terms of trade was one 50 kg sack of maize for one goat. Prices and terms of trade fell drastically in 2010-2011 due to a regional drought which led to very low livestock prices against high staple grain prices. Prices rose and were favorable for agro-pastoralists in the Lower Juba and Lower Shebelle Regions by the 2012 *deyr* season. Several factors influenced those prices including good local supplies of grains due to a good 2011-2012 deyr season; improved livestock conditions from sufficient rain and pasture; and increased demand for livestock during the Hajj period (Middle Eastern markets) as well as the opening of the Garissa market for trade once the drought had broken.

Casual labor markets

Labor opportunities are primarily local and are found in the agricultural or livestock sector. In recent years it is estimated that about 75% of casual work was found within the zone. Better-off farmers hire labor for land clearing, de-silting, planting, weeding and harvesting. A particularly labor-intensive job is de-silting *dheshek* fields prior to the growing season. Laborers are almost always paid in cash. Sometimes, farm work is carried out through cooperative labor sharing called *goob*. A small proportion of workers (25%) migrate out of the zone seasonally in search of work in the riverine zone or in urban areas, such as Kismayo and Mogadishu, where casual work can be found mainly in the construction sector.

Credit

Taking a loan of food or agricultural inputs at the beginning of the growing season, or when an unexpected need arises, is very common in Somalia in general and in this zone in particular. Credit is both in-kind (maize or sugar for instance) or in the form of cash (e.g., from a relative). Many of the loans are from small shopkeepers who will charge a nominal fee in the form of a higher price for the good. Alternatively, they are repaid by the farmer with produce at a lower producer price. In general, loans are expected to be paid off after the harvest when crops are sold and cash is acquired. However, in practice, many households roll over part of their debts for years, paying off a portion in order to keep their access to credit but not paying down the full debt amount.

Conflict

Since the collapse of the state of Somalia in 1991, the lower Juba region has been through terrible conflict for almost 25 years. At the center of much of the long-term fighting has been the city of Kismayo. Kismayo is strategically important as an international seaport. In addition, for those who control Kismayo, there is the opportunity to raise revenue by taxing the city's residents. The back and forth battle for Kismayo has had repercussions for the areas surrounding the city, including much of the *Southern Rain fed Maize, Cattle and Goats Livelihood Zone*. These impacts include population displacement

[116] USAID. *Somaliland Livestock End Market Study*. July 2013

[117] Hussein A. Mahmoud. *Livestock Trade in the Kenyan, Somali and Ethiopia Borderlands*. Chatham House Briefing Paper, September 2010, page 2

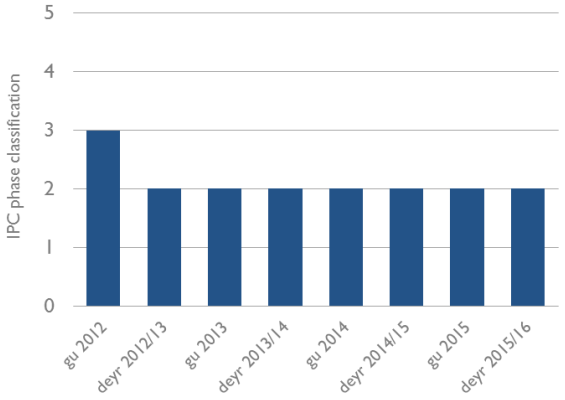
[118] Little, Peter and Mahmoud, Hussein. 2005. *Cross-border Cattle Trade along the Somalia/Kenya and Ethiopia/Kenya Borderlands.* Research Brief 05-03-PARMA

(and consequently the creation of IDP settlements); disrupted trade routes and supply shortages; bans on UN (and western INGO) humanitarian interventions; the collapse of many state services; and violence against women. Conflict and civil insecurity, moreover, have compounded problems associated with drought, flood and disease outbreaks heightening the crises and constraining international response. The reasons for the ongoing conflict in southern Somalia are very complex as they touch on the political, economic and socio-cultural relations between Somalia's various clans as well as with Somalia's neighboring countries (Ethiopia and Kenya) and also with the international community.

Food access history

Protracted political instability together with periodic drought, flood, pest and disease events have strained the coping mechanisms of southern Somalia agro-pastoralists. These complex emergencies have led to several humanitarian crises over the last three decades. For instance, extreme food insecurity in 1991/92 coincided with the fall of Siad Barre's government. This was followed by extreme hunger in 2006 as well as a third episode of hunger in 2011. In all three cases, international response to the warnings of severely stressed population groups in south-central Somalia was constrained by blocked access to affected groups or warlords preventing a full humanitarian response. For example, an evaluation of the response to the 2005-2006 crisis noted the following factors that contributed to the tragedy: (i) break-down of law and order leading to a near total lack of respect for basic human rights in south-central Somalia; (ii) lack of basic social services leading to chronic malnutrition amongst vulnerable sectors of the community; (iii) continual violent confrontations between clans and lawless groups leading to general violence against women and insecurity on transport routes; (iv) destitute groups falling back on making charcoal and selling firewood leading to environmental degradation; and (v) displacement of population groups who were then settled into camps in marginal areas. Violence, lack of services and high levels of forced population displacement all added up to a significant humanitarian need in the area. However, since 2010, international humanitarian agencies have not been able to meet these emergency needs as the Al-Shabaab militia has restricted access to the affected population.

Figure 2: Recent trends in IPC phase classification, with 1 as best and 5 as worst



Source: FSNAU

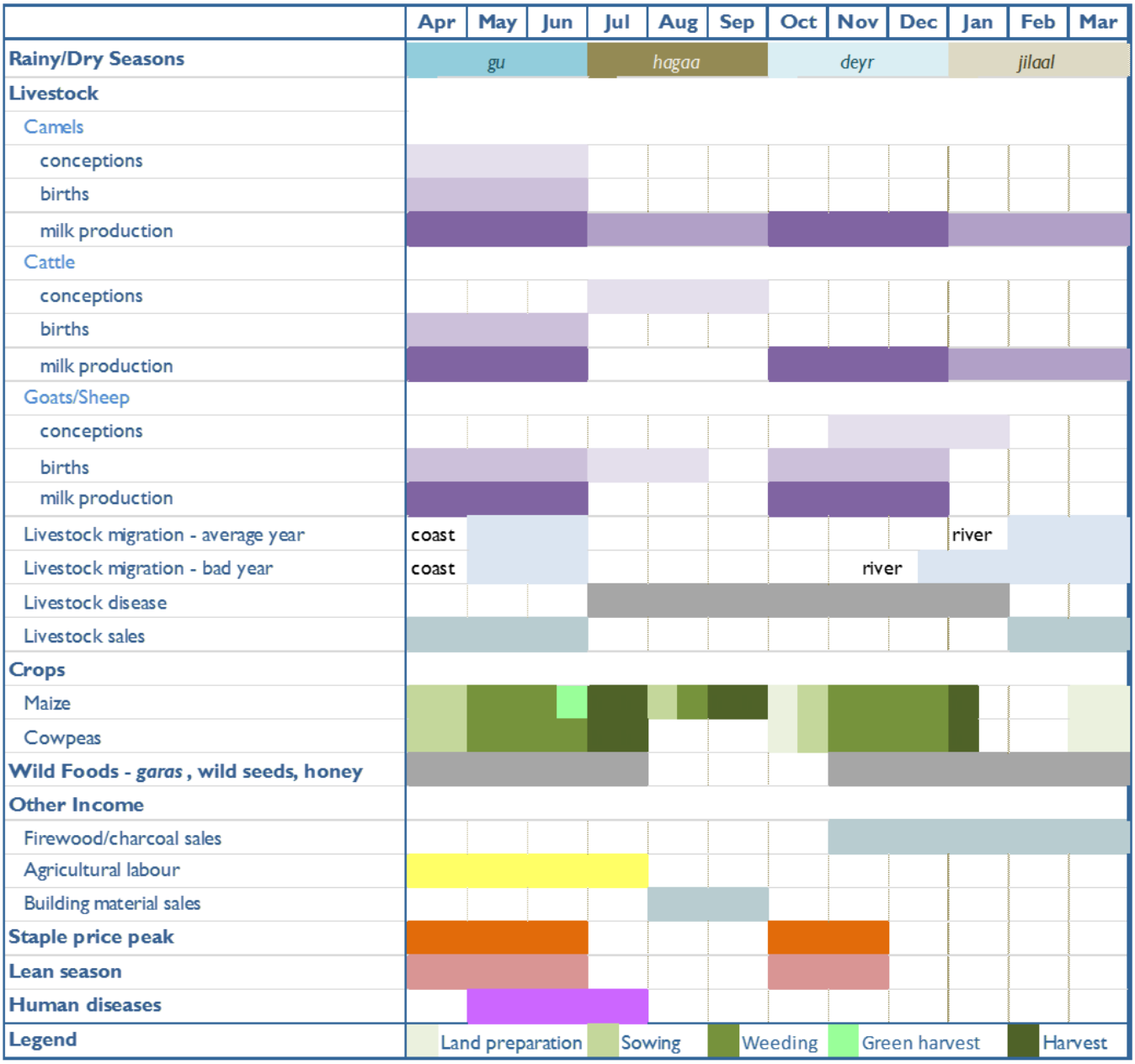
These three cases of recent severe hunger, as well as the year-in, year-out needs of the IDP population and the chronically poor and malnourished groups, have meant that most years there has been need for humanitarian assistance covering nutritional support, food needs, health and hygiene, water and shelter, and livelihood support. In the years following the 2005-2006 drought, there was humanitarian and emergency aid requested to respond to the 2006 *deyr* season floods and disease outbreaks in 2007; drought in 2008; drought leading to severe hunger in 2010/11; severe water shortages affecting livestock in 2014; and predicted drought, flood and disease outbreaks in 2015/16 associated with an El Nino event.

Seasonal calendar

The calendar year in southern Somalia can be broken down into four separate seasons; two wet seasons and two dry seasons. The two wet seasons are the *gu* (April-June) rains and the *deyr* (October-December) rains. There is also a short dry cool season called the *hagaa* which falls from July-September. Near the coast, there are often *hagay* showers during this period. The long, hot dry season from January-March is called the *jilaal.*

These climatic seasons correspond with production seasons in the *Southern Rain fed Maize, Cattle and Goats Livelihood Zone*. For instance, there is a principal *gu* growing season; a secondary *deyr* growing season; and the occasional *hagay* growing season. In addition, there is the milking season which starts with the *gu* rains in April and continues until December.

Figure 3: Seasonal calendar for the Southern Rain fed Maize, Cattle, Goats Livelihood Zone



Source FSNAU SMC BSS SO17 1998/99.

In this southern maize belt, the *gu* season is the principal season for crop production. Farmers prepare their land for planting in the month prior to the rainy season (March). With the arrival of the rains, crops are planted. In this zone, maize is typically intercropped with cowpeas. Weeding takes place over May and June leading up to the *gu* harvest in July. The period before the harvest is called the "lean season". During this time, staple grain prices peak due to high demand as well as supply problems from muddy roads or other transport disruptions. If the area receives *hagay* showers in July/August, then farmers may be able to harvest an off-season crop of maize and cowpeas in September. Otherwise, crops are planted in time for the *deyr* rainy season in October, weeded in November/December, and then harvested in January. Labor opportunities associated with the agriculture sector are highest from March-January and particularly from March-July

during the *gu* season. Milk production peaks during the calving season, which coincides with those months of plentiful pasture and water. In this zone, this is the period of the *gu*. The core milk herd is kept near the homestead at this time although the rest of the herd is taken toward the coast (away from the fields) to their wet season grazing areas. Milk yields are at their highest during the wet seasons (on average 2 L/cow/day) then drop by roughly a half (1 L/cow/day) during the dry seasons. Milk continues to be produced through the *hagaa* and the *deyr* seasons, lasting about 8-12 months in total. After the *gu* harvest, the "dry" (non-milk) herd are brought back near the villages to graze on residue in the harvested fields. During the long, hot, dry *jilaal* season (January-March) the herd is trekked by young men of the village to the wetter riverine areas where cattle can drink directly from river water or use the few permanent wells in the riverine area.

Wild foods and honey are seasonally available during the year both for consumption and for sale. Wild honey production peaks at the end of the rainy seasons and is gathered and sold foremost in the months of July (after the *gu* rains) and in January (after the *deyr* rains). Other wild foods, such as leaves and seeds, are also collected for home consumption and for sale. These foods usually ripen during the *gu* and *deyr* seasons (May/June and November/December). Wild garas is available during the *jilaal* (January-March).

Self-employment activities are typically carried out during the dry season, particularly in the *jilaal* season. Some of these activities involve collecting bush products for sale such as firewood, fodder, grass, construction material and wild *garas*. Charcoal is also made and sold by households in the dry season much of which is destined for Kismayo.

Wealth breakdown

The critical assets in this zone that determine wealth are the size of farmland owned and cultivated, and the size of the herd (especially the cattle herd). Land and livestock represent the twin pillars of the Agro-pastoral economy. The more of these assets owned, the wealthier is the household.

Table 2: Wealth group characteristics in the Southern Rain fed Maize, Cattle & Goats Livelihood Zone.

	Poor	Middle	Better-off
Household percentage (%)	25-30	50-60	15-20
Household size (#)	6-7	7-8	7-8
Land holding (ha)			
Land area owned	0.75-1	3-4	7-10
Land area cultivated	0.6	3-4	7-10
Goats	1-6	10-15	20-30
Cattle	0-6	10-20	40-50
Camels	0	0	5-10
Donkeys	0	0	0

Source: FSNAU, CCP BSS, 1997

The wealthiest households in this zone are those who own up to 50 head of cattle (on average 40-50). In addition to these substantial cattle herds, the better-off also typically own on average 5-10 camels as well as 20-30 sheep and goats (*shoats*). Their farms are also sizeable (on average 7-10 hectares) which are farmed in part with hired labor. Here, the household structure is fairly contained comprising a husband and wife with their 5-6 children. The proportion of households meeting these characteristics was small during the 1998-1999 baseline year. At that time, only 15-20% of households were considered to fall in the better-off wealth group.

Most households (50-60%) are part of the middle wealth group. Middle households differ from the better-off group because they do not own camels. Their other assets are fewer too. The typical middle household in the baseline year owned an estimated 10-20 cattle and 10-15 *shoats*. In the baseline year, the average farm size was 3-4 ha. Like their better-off neighbors, middle households were typically 7-8 members.

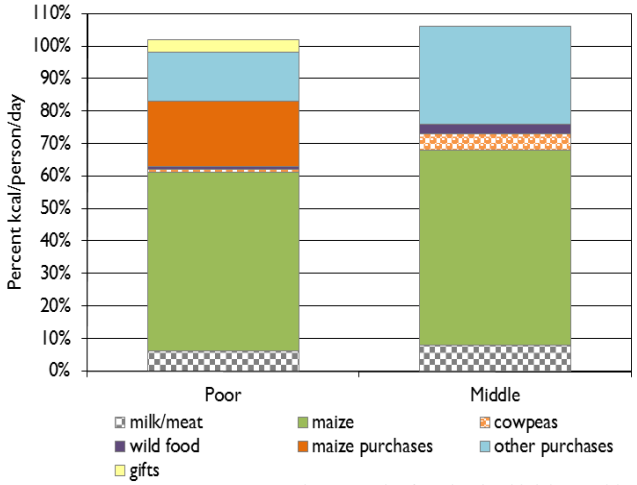
The remaining households fall into the poor wealth group (25-30% of households) and the very poor (2-4%). Poor households are slightly smaller on average than middle and better-off households. In the 1998-1999 baseline year the typical size was 6-7 people. Like middle households, the poor do not own camels. However, they differ from middle households because they own significantly less land and have fewer livestock; in short, they are asset-poor. The typical farm size of the poor was just 0.75-1 ha in 1998-1999 of which an estimated 0.6 ha was cultivated. Not all poor households own livestock but at the time of the baseline, the poor typically owned 0-6 cattle and 1-6 shoats. These low livestock holdings

mean that the poor are less resilient to shocks. Coping with a highly variable climate and semi-arid environment requires a mix of assets, both agriculture and livestock, in order to have fallback income when one sector fails. There is some social support to mitigate seasonal food gaps for the poor even during relatively "normal" years. For instance, in the baseline year, poor households on average received 1 (50 kg) bag of maize from better-off households in their community.

Sources of food and income and expenditures

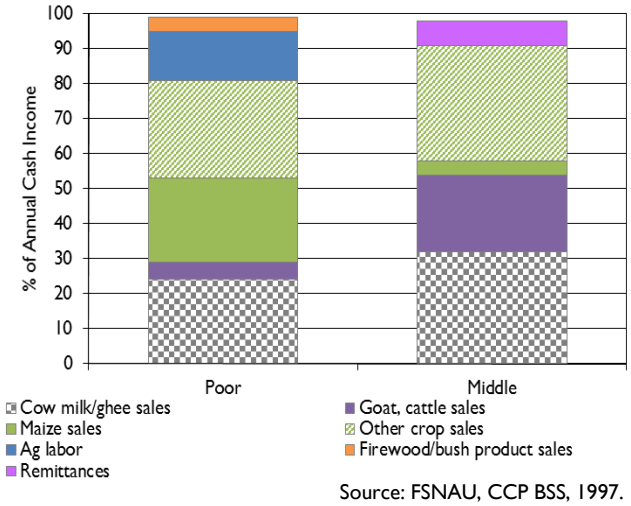
Own-crop production is how most households in this zone secured the majority of their food energy during the reference year. Own-crops was almost entirely comprised of maize. Maize is the staple grain throughout the zone and households put most of their resources into growing this crop. Some cowpeas are consumed as well but the cowpea crop is typically used more for cash income than for home consumption. In the 1998-1999 reference year, for the poor, about 55% of annual household food energy was met through maize production (cowpeas added a further 1%). Middle households produced enough maize to meet 60-65% of their annual food energy needs; and the better-off met most of their food needs through own crops. Thus, in a relatively good year, the poor relied on their own maize for about 6 months.

Figure 4: Food sources by wealth group, Southern Rain fed Maize, Cattle and Goats Livelihood Zone



Source: FSNAU, SMC BSS SO17, 1997

Figure 5: Cash income sources by wealth group, Southern Rain fed Maize, Cattle and Goats Zone



Source: FSNAU, CCP BSS, 1997.

For the other 6 months of the year, poor households purchased food. They also had milk from their cows and goats and in addition they gathered and ate wild food. The poor also had some maize that was given as *zakat* which helped fill seasonal food gaps. Food purchases themselves provided food energy for about 4 months of the year (35% of annual food needs). Maize was the staple food purchased and it was usually purchased daily for about 100 days during the rainy season at the rate of 2.5 kg per day. Sugar and cooking oil as well as small amounts of meat were also bought by the poor. Middle and better-off households grew more maize and hence did not need to buy as much maize during the year. However, like the poor, they bought sugar and cooking oil as well as rice and meat. For middle households, these various food items made up about 3 months of food energy. Staple food consumers are particularly vulnerable to price fluctuations – notably price increases when demand is high – and in this situation, the poor are the most vulnerable as they rely more heavily on the market for their food.

Another important difference between wealth groups in 1998-1999 was milk consumption. Poor households own only a few livestock. Still even with one milk cow and a couple of female goats, milk comprised about 6% of their annual food

energy during the year. In practice poor households consumed about 1 L of milk a day for 8-12 months of the year.[119] Milk consumption for middle and better-off households was higher and typically double the amount of the poor.
Crops, milk/ghee and livestock were the main items sold during the reference year by all wealth groups. The difference between the poor, middle and better-off was the proportional importance of crops and livestock in their annual income. Poor households own few livestock and thus their livestock income is correspondingly lower than for wealthier households. In 1998-1999, the poor typically sold one goat during the year. They also sold roughly 1 L milk per day for about 6 months. This met about 30% of their annual cash income. By contrast, middle households earned about 50-60% of their annual income from the sale of livestock, milk and ghee.

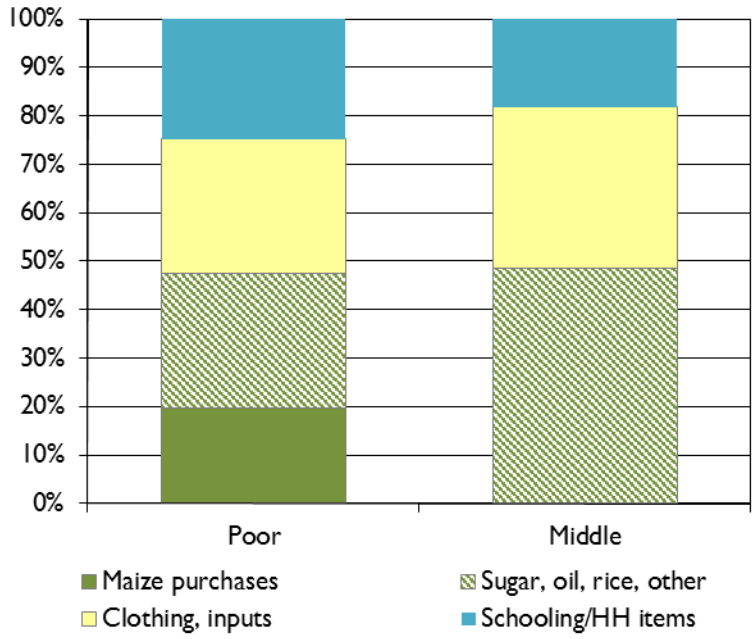
Crop sales were the reversal of livestock sales. Poor households earned approximately 55% of their annual income through sales of maize (25%) and cowpeas (28%). In comparison, middle households earned 25-30% of their income through crop sales.

Middle and better-off households earned sufficient income in the reference year from sales of livestock, milk/ghee and crops to meet most of their cash needs. Cash remittances added to their income during the baseline year. Nowadays, cash remittances are received monthly by middle and better-off households from family members living in Europe or North America.[120] By contrast, the poor did not earn enough money from crops and livestock sales alone nor did they receive remittances. To generate more cash to cover their basic expenses, they juggled other types of paid work such as selling firewood during the dry season and finding casual work weeding crops or de-silting land in the wet season. Money raised through employment and self-employment generated about 20% of their annual income in the reference year. Poor households also may receive some cash gifts (*zakat*) provided by better-off households from the profit from livestock sales.

For poor households, a large proportion (47%) of their annual spending was on food in 1998-1999. Just under half of this spending (20%) was on maize. The other half (27%) was on sugar and cooking oil – essential non-food items in the Somali diet. Likewise, about half of the annual expenditures of middle households was on food. However, the pattern of food spending was different. Middle and better-off wealth groups, for instance, spent little to nothing on maize but instead bought sugar, cooking oil, rice and meat.

Almost all of the poor's remaining cash income was spent on clothes and basic household items. This included salt and tea leaves as well as kerosene and batteries. The remaining 10% of expenditures went on education (Qur'anic school) and livelihood inputs (specifically livestock drugs). This pattern of spending is not too different from middle and better-off households with the exception of livelihood inputs. More cattle and more land requires more inputs including drugs and fodder for the animals, and payment for hired farm labor.

Figure 6: Allocation of expenditures by wealth group, Southern Rain fed Maize, Cattle & Goats Livelihood Zone

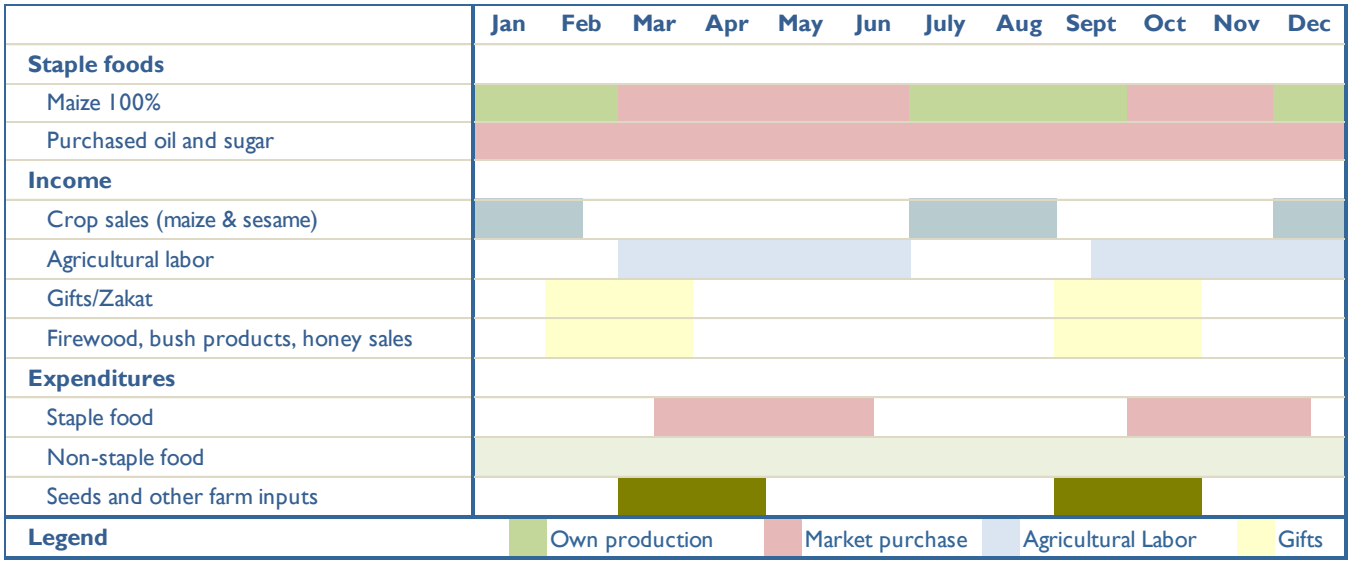


Source: FSNAU, SMC BSS SO17, 1999

[119] During 6 months of peak production, lactating cows produced 2 L/day/cow but usually 50-60% of this milk was sold and the remainder was left for household consumption.
[120] http://www.fsnau.org/downloads/Remittances-and-Livelihoods-Support-in-Puntland-and-Somaliland.pdf

Calendar of major sources of food and income for poor households

Figure 7: Consumption and income calendar for the Southern Rain fed Maize, Cattle, Goats Livelihood Zone



Source: FSNAU

Most years, the poor in this zone secure their food through the production of maize and cowpeas. They also supplement staple grains with milk produced by their own cow(s) and goats. Added to this diet are wild foods collected from the bush. They secure their income primarily through the sale of crops, milk/ghee and livestock.

This combination of crop and livestock production means that food access is relatively good from the *gu* harvest to just after the *deyr* harvest; in short, from July to February. The poor have income options in March/April (mainly selling firewood and other bush products as well as looking for work de-silting farm land and other pre-*gu* seasonal jobs). Food access becomes more insecure as the *jilaal* season ends and the *gu* season begins. The period when food access is most insecure, and when the poor are most likely to take food on credit, is during the *gu* season itself. Crops are being sowed and weeded, and family labor is needed on the farm. Some casual work is available locally, carrying out planting and weeding on other people's farms. However, this work has to be balanced against the tasks required to run their own farms. Thus, any income earned is sporadic rather than daily and loans are often taken in anticipation of paying down the debt when the *gu* maize is harvested.

Hazards, response, and monitoring variables

As in much of Somalia, this southern zone suffers from climatic variability that has led to severe periodic droughts affecting both crop and livestock production. In this part of the country, drought effects have also been compounded by the insecurity generated by the collapse of the central government in 1991. This directly led to a period of severe hunger in 1991-1992 but it also played a role in the drought and food crisis of 2006 and again in 2011. A further compounding factor is livestock disease outbreaks. Historically, the worst outbreaks have occurred during El Nino years. These years are usually wetter than normal and are often accompanied by floods during the *deyr*. Moreover, these floods usually come on the heels of a drought. Subsequently, such flood events have produced a proliferation of mosquitoes and other insects leading to the disease outbreaks. For instance, there were Rift Valley Fever (RVF) outbreaks in 1997-1998 and 2006-2007. Disease outbreaks affect the livestock trade too, leading to border closures and trade bans on cattle exports. It is predicted that

2015-2016 could be an El Nino year with the associated trade disruptions and income shocks. Crop pests (rats, birds and insects) are another periodic problem affecting this zone.

Problems that affect production year-in year-out are mainly associated with the relative lack of water points in dry season grazing areas. Cattle have a limited migration route in this zone and the scarcity of water points is a chronic problem.

Income shortfalls from crop failures are approached in different ways by the different wealth groups. Middle and better-off households sell more livestock to generate cash for additional food purchases. The poor fall back on selling bush products (such as firewood), looking for casual labor and collecting water lilies in *dheshek* and riverine areas for home consumption. If the economic shock is fairly local, the poor will approach relatives or "patrons" in the community for some food or cash support. In a similar way, middle and better-off households seek additional remittances from salaried family members living away from the village in Mogadishu or other major cities in Somalia.

Table 3: Coping strategies in response to shocks in Southern Rain fed Maize, Cattle and Goats LZ

Very poor/poor	Middle/better off
• Sell more firewood and other bush products • Collect wild food (i.e., water lilies from *dheshek* and riverine areas • Seek additional employment • Look for food and cash support from within the community	• Sell livestock • Look for more remittances from family living away in major cities within Somalia

Source: FSNAU SMC SO17 1997

The key parameters listed in the table below are food and income sources that make a substantial contribution to the household economy in the *Southern Rainfed Maize, Cattle and Goats 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.

Table 4: Key parameters in livelihood zone SO17 (Southern Rain fed Maize, Cattle and Goats)

Item	Key Parameter – Quantity	Key Parameter – Price
Crop production	Maize production Cowpea production	Price of maize Price of cowpeas
Animal production	Supply of cattle Supply of goats Supply of milk	Price of cattle Price of goats Price of milk
Other	Supply of farm labor (pre-harvest) Remittances from permanent migrants Supply of fuelwood	Price of farm labor (pre-harvest) Remittances from permanent migrants Price of fuelwood

Source: FSNAU SMC SO17 1997

Estimated Population for Southern Rainfed Maize, Cattle and Goats (SO17)

Zone	Region	District	Livelihood	Population 2012 UNFPA
South	Shabelle Hoose (Lower)	Marka	Southern Rain fed (Maize, Cattle and Goats)	14,019
South	Shabelle Hoose (Lower)	Baraawe	Southern Rain fed (Maize, Cattle and Goats)	43,322
South	Shabelle Hoose (Lower)	Kurtunwaarey	Southern Rain fed (Maize, Cattle and Goats)	34,513
South	Shabelle Hoose (Lower)	Sablaale	Southern Rain fed (Maize, Cattle and Goats)	521
South	Juba Dhexe (Middle)	Jilib	Southern Rain fed (Maize, Cattle and Goats)	34,587
South	Juba Hoose (Lower)	Kismaayo	Southern Rain fed (Maize, Cattle and Goats)	9,679
South	Juba Hoose (Lower)	Badhaadhe	Southern Rain fed (Maize, Cattle and Goats)	18,224

South	Juba Hoose (Lower)	Jamaame	Southern Rain fed (Maize, Cattle and Goats)	45,425
SO17 Population 2014 total				**200,290**

SOUTHERN CATTLE PASTORAL (SO18)

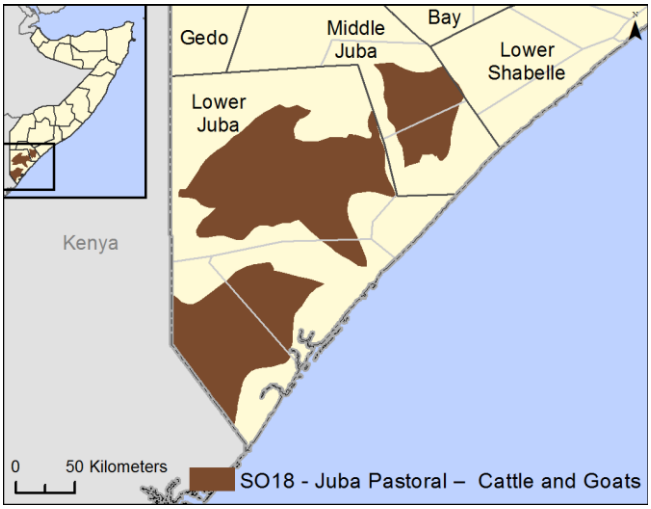
General Livelihood Zone Description

Table1:Summary of data supporting the Southern Cattle Pastoral livelihood profile

Field data collection	2000
Consumption year	April – March
Reference year	April 1998 – March 1999
Initial estimated validity	Should be updated

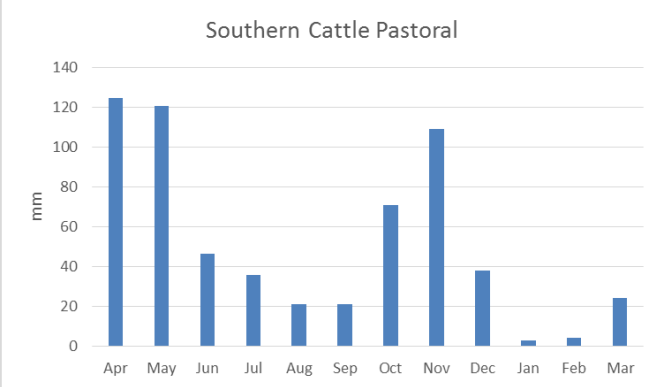
Source: FSNAU

The Southern Cattle Pastoral Livelihood Zone (SO18) (formerly the *Juba Pastoral*, and before that *South East Pastoral*) is located in the Southern Zone of Somalia and it encompasses parts of Middle Juba and Lower Juba, including parts of Jiib, Bu'aale, Kismaayo, Afmadow, and Badhaadhe districts. The 2014 population estimate by UNFPA for this zone is 100,211.



This zone consists of flat savanna or grassland areas. The area that extends southwest of the Juba River to Kenya is low pastureland. The clays are mostly vertisols which have a higher water-holding capacity than the generally sandy soils found elsewhere. The heavy texture and unstable behavior of these vertisols prevents the growth of forests. The weather is hot throughout the year, with mean maximum temperatures of 30–40° C (86–104° F). In a normal year, this livelihood zone receives some of the highest rainfall levels in Somalia. Based on the long term average, annual precipitation averages around 618 mm,[121] when compared to less than 500 mm of rainfall received annually throughout the rest of Somalia this precipitation is impressive. This rainfall is concentrated in two distinct seasons, as shown in the rainfall graph on this page. The combination of relatively high rainfall and extensive grasslands makes this a good area for raising cattle and goats, and because of the proximity to the Kenyan market, which has a heavy bias towards cattle, there is further justification for the concentration of cattle in this zone.

Figure 1: Estimated average monthly rainfall in mm in the Southern Cattle Pastoral Livelihood Zone



Source: USGS CHIRPS Data, FEWS NET GeoCLIM

Pans and seasonal pools are major sources of water in the wet seasons, while in the dry seasons shallow wells and boreholes are used. Grazing areas are communal and shared peacefully for the most part. In drought years, however, conflicts erupt as the competition for scarce resources increases.

The number of livestock owned is the main determinant of wealth. Large livestock herds take many people to manage; better off households, with more livestock are also typically larger, with more productive members. These households often hire additional labor to help with herding. Poorer households tend to have fewer productive members, and in turn smaller herds. All wealth groups derive the majority of their food through a combination of market purchases and the production of milk and milk products. Poor households also rely on gifts and food aid. The sources of income for middle and better off households are entirely

[121] Based on USGS CHIRPS data, a combination of satellite-based Rainfall Estimates (RFE) and station data, with data extending more than 30 years (1981-2014). Source, FEWS NET and USGS.

from their livestock, through selling live animals and milk. The poor wealth group needs to draw on additional source of cash, including: casual employment (including water pan digging, herding and construction) and gifts.

Garissa, across the border in Kenya, is the major livestock market for this zone. Kenyan traders contract with local Somali trekkers to bring cattle to Garissa, where they are loaded into trucks bound for Nairobi and Mombassa. Local market towns offer up a source of demand for milk and ghee, which provide significant income for the rural population. The labor market is entirely local, with poorer household members working as herders for better off households.

Drought is the most damaging intermittent hazard in the zone, but border closures and food price spikes cause enormous hardship as well. Livestock and human diseases are additional burdens for the local population, causing serious losses in both in economic and human terms.

Markets

The livelihoods of people in the *Southern Cattle Pastoral* zone depend entirely on selling two main commodities for cash: livestock and milk/ghee. The road infrastructure in this livelihood zone is not well developed. There are two main roads connecting Kismayo to Garissa in Kenya. The first takes a northern route from the coast via Bilis Qooqaani and then on to Garissa. The second route is more direct, following a southern path from Kismayo to Garissa. Neither road is well-maintained, however, and neither is used by the average pastoralist. Seasonal flooding and a general lack of maintenance due to the war, have led to the deterioration of road conditions. Most people walk to markets using well-worn foot-paths and dirt roads or they hire professional trekkers to take their livestock to market for them. Pack camels and donkeys are used for transporting grains and other commodities from the market.

Livestock market

Livestock is the driver of the local economy, with cattle being an especially important commodity. The main livestock market is across the border in Kenya, and thousands of cattle make their way every year into the Garissa market where they are sold on to other areas in Kenya. Cross-border trade among Ethiopia, Somalia and Kenya has taken place for hundreds of years. In the decades before the civil war, most livestock was sold to the Gulf States, collected in Kismayo or Mogadishu and then transported by ship to Saudi Arabia and other Gulf countries. This trade began to decline in the early 1980s, when competition from Australia and other cattle exporters squeezed out the Somalia exports. The market towards the east was further constrained by the livestock ban imposed by the Gulf States in the late 1990s. After the collapse of the central government in 1991, exports via the Kismayo port virtually came to a halt, leading to a large expansion of trade to the west. Traders inside Somalia had already established a link with the Garissa market before the government in Mogadishu collapsed in 1991, and Garissa has since then grown into a key regional market, with cattle sales increasing by around 600% in the eleven-year period from 1989 to 1998[122].

Livestock make it to market along well-established routes which start in remote areas, where 'bush traders' buy up animals from pastoral households in local village markets. These animals are then trekked to the Garissa market where they are loaded into trucks and taken to the terminal markets of Nairobi and Mombasa. Large Kenyan traders who – before the civil war - used to wait for animals to be brought to Mandera before buying them up now have immediate trading relationships with Somali traders and purchase livestock directly from pastoralists in the *Southern Cattle Pastoral* zone. Livestock are sold in Garissa throughout the year, but volumes slow down during the rainy seasons when pastoralists invest in fattening their livestock in order to get a better price.

Terms of trade in this zone fluctuate throughout the year. They are highest at the beginning of each dry season and lowest in the middle of the rainy seasons. In January, for instance, when the *jilaal* season begins, a head of cattle brings in just

[122] Hussein Mahmoud, *Livestock Trade in the Kenyan, Somali and Ethiopian Borderlands*, Chatham House, September 2010/02

under 750 kg of maize on average. In June, on the other hand – the last month of the *gu* rainy season – the same head of cattle typically garners only around 400 kg of maize[123].

Aside from these seasonal changes in terms of trade, there are inter-annual variations in livestock prices as well. The value of livestock depends on a range of factors that affect the body condition of livestock, including pasture and water conditions within the livelihood zone, access to traditional grazing and watering points, and the incidence of livestock disease. But it is not just what happens within the livelihood zone that matters; political instability and insecurity have led to recent border closures, and regional droughts can cause serious local harm. For example, livestock prices were negatively affected by the poor *deyr* rains in 2010/11 which led to inadequate pasture and critical water shortages along the livestock trekking route to the Garissa market. By the time cattle made it to market they were in such bad condition that the prices they received were far below normal.

Milk market

Milk sales depend on people having ready access to local towns and urban centers, where the demand for milk is high. There are no storage facilities in the zone, and milk products can easily spoil in the high temperatures, so the market for milk is entirely local, with transactions occurring in towns like Kismayo, Badhadhe, Bu'aale and Afmadow. Milk sales are especially high during the *gu* season, when new pastures bring the highest milk yields of the year.

Cereal market

The cereals purchased in this livelihood zone are sourced from the Juba riverine areas, where maize is grown, and the Sakow agropastoral areas, where sorghum is grown. Some grain is also imported from Kenya. District towns such as Bu'aale, Jilib, Jamaame, Kismayo, Badhadhe and Afmadow all have their own market centers and open markets also exist at the village level. Changes in global food prices, taxation on commercial imports, and failed local cereal production can all influence the price of local staple grains. Price spikes, like the one that occurred at the end of 2010, when prices rose to 550% of the five-year average, have devastating consequences for local livelihoods. People here rely on purchased grain to cover the vast majority of their food needs, and when prices go up, real access to food can be severely constrained.

Labor market

The labor market for this zone is entirely based on herding, and transactions occur between better off and poorer households. Better off households have large herds that require a good deal of labor to manage. Boys and young men from poorer households are hired to help with watering and herding, especially during periods of longer migration in the dry season. Young productive labor is a valuable local resource, and competition for it is high. Recruitment into local militias is a serious threat for pastoral systems that rely on the labor power of young men, and this threat has grown in recent years with the emergence of *Al-Shabaab*.

Conflict

The collapse of the central government in Somalia in 1991 began a period of conflict, instability, food crisis and famine that continues in parts of Somalia today. In the months following the collapse, the country was torn apart by clan-based warfare and factions competing for what remained of the state's assets and power. In 1991 and 1992, four months of fighting in Mogadishu alone killed an estimated 25,000 people, and caused 1.5 million people to flee the country, displacing within the country a further 2 million. At the same time a drought that year added to the effects of the conflict and by the end of 1992 an estimated 250,000 people had died. The worst-affected came from areas of the south where waves of invasions by armed militias occurred.[124]

[123] FSNAU, FEWS NET, Deyr 2010/11 Presentation, Juba Regions, Slide 24

[124] http://www.c-r.org/accord-article/endless-war-brief-history-somali-conflict, Sally Healy and Mark Bradbury

From 2006 to 2012 the country became caught up in the 'global war on terror'; Islamist military groups swept into the vacuum of leadership which led to an invasion by neighboring Ethiopia. The subsequent strengthening of the Union of Islamic Courts (ICU) and the emergence of *Al-Shabaab* have been major forces in Somalia over the past decade. Southern Somalia has been especially affected by the violence and disruption related to the conflict between *Al Shabaab* and the Transitional Federal Government (TFG), which has been supported at different times by a number of external countries (Kenya and Ethiopia being the most prominent). Echoing the devastation of 1991 and 1992, the three years from 2006 to 2008 were catastrophic in Somalia. Military occupation, a violent insurgency, rising jihadism and massive population displacement reversed the minimal political and economic progress achieved in the late 1990s. During 2007 alone fighting between the TFG and the insurgency resulted in the displacement of up to 700,000 people from Mogadishu. In 2011, the plight of the Somali people was exacerbated by the worst drought in six decades, which left millions of people on the verge of starvation and caused tens of thousands to flee to Kenya and Ethiopia in search of food.

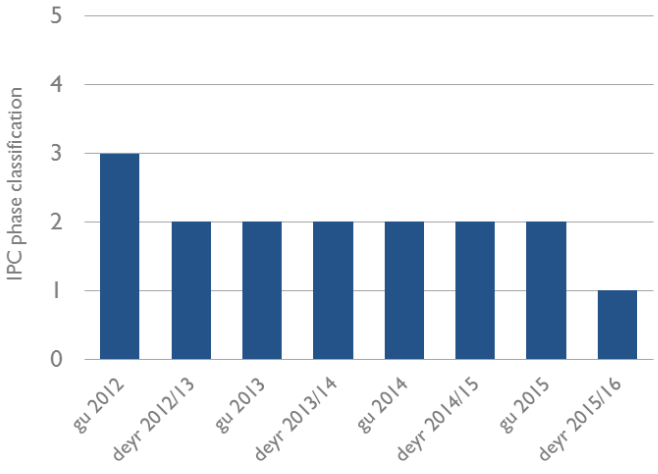
The formation of a post-transition Federal Government brought back some stability to the country in 2012. However, fighting over territory in southern Somalia continues to this day as the National Armed Forces (with support from the African Union Mission in Somalia/AMISOM) try to regain strategic cities and towns from *Al Shabaab*. Frequent market disruptions have resulted from continued conflict as commercial supply routes are interrupted. In turn, supply shortages have led to price increases for local producers and consumers.

This livelihood zone has been especially affected by the recent conflict related to *Al-Shabaab*. The main roads are risky for traveling and for transporting goods and sporadic violence creates an environment of continued insecurity. Border closures with Kenya threaten the livestock trade which is so essential to the local economy. And although advances have been made over the last few years in driving out *Al-Shabaab* from its strongholds in southern Somalia, the group is still active in the area carrying out guerrilla style attacks in along the main roads between Kismayo-Afmadow via Dobley and between Kismayo-Badhaade. *Al-Shabaab* militias also levy illegal taxes and *zakat* collections on pastoralists throughout the zone, which causes significant hardship for cash-constrained households. Several regional administrations recently created and loosely allied to the TFG are fighting back against *Al-Shabaab* insurgents in Lower Juba and Middle Juba regions, where this livelihood zone lies.

Food access history

The effect of ongoing conflict has been devastating over the years. Inter-annual drought compounds the many negative outcomes of war, which include a collapsed industrial base, the breakdown of infrastructure, especially roads, the loss of state services, like schools and health clinics, lawlessness which results in violence towards women, supply shortages, price hikes, population displacement, disrupted trade, and impeded movement to seasonal grazing areas. Fields have been abandoned and livestock diseases left untreated as pastoralists lacked access to veterinary care. All these effects have had devastating consequences for the food and livelihood security of the local people. Over the years this has meant that parts of Somalia, and especially southern Somalia, where so much of the conflict has centered, has witnessed over twenty years of food and livelihood insecurity.

Figure 2: Recent trends in IPC phase classification, with 1 as best and 5 as worst



Source: FSNAU

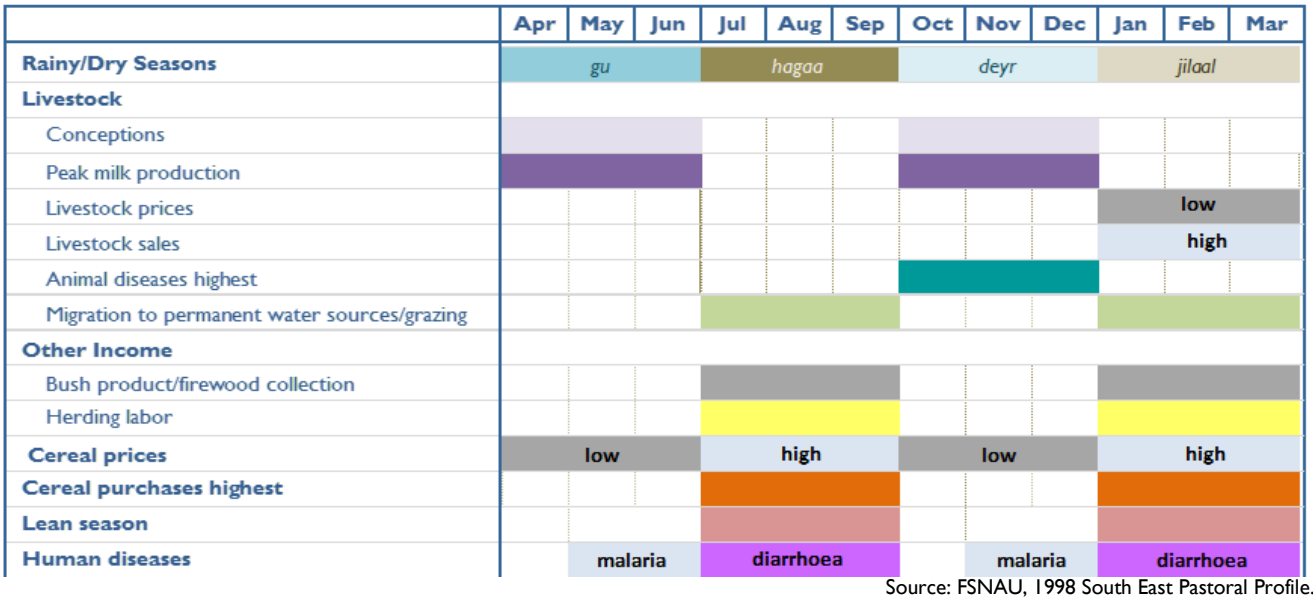
In recent years, however, the food security situation in

this zone has been relatively stable, as shown in Figure 2. The 2015/2016 deyr season saw the lowest level of food insecurity in the past three years, with none of the population facing an emergency.

Seasonal calendar

The rains in the *Southern Cattle Pastoral Livelihood Zone* come in two distinct periods: the first season, from April through June, is called the *gu* and more precipitation tends to fall during this quarter; the second, lasting from October through December, is called the *deyr*. The *deyr* has historically been less reliable and less productive, but in recent years surprising amounts of rain have fallen during this second season. Two dry seasons – the *hagaa*, from July through September, and the *jilaal*, from January through March – interrupt the rains, bringing with them a set of challenges that pastoralists in this area have coped with by migrating seasonally with their livestock and maintaining a highly mobile way of life.

Figure 3: Seasonal calendar for the Southern Cattle Pastoral Livelihood Zone



Source: FSNAU, 1998 South East Pastoral Profile.

The rainy seasons are a time of relative plenty, and pastoralists depend more heavily on the milk from their cattle in these months. Livestock are usually born at the beginning of the wet seasons, when pasture conditions start to peak, providing sufficient fodder for newly lactating animals. Milk production reaches a high point in April, May, and June and then again in October, November and December. During these seasons, water is plentiful, and animals do not require much care. Clans assemble and numerous social functions occur: marriages are contracted, and outstanding disputes are settled or exacerbated. On the flip side, this is also a time when malaria tends to peak and during the *deyr* season, animal diseases are most prevalent.

The *jilaal* season – the long harsh dry period - is a difficult time of year. Milk yields are low, water is scarce and animals are trekked to permanent water points and pasture areas. This is a time of year when livestock sales are high because many livestock are gathered around water points close to market centers, making it a convenient time to sell. However, because of the high supplies on the market, livestock prices are also low at this time. During this long dry season water is hard to come by and people need to walk long distances to find it. This is also a time when Acute Respiratory Infection (ARI) is highest, and diarrhea in children peaks. People need to buy more staple grain than during the rainy season in order to make up for a steep decline in milk availability. Oil is also more frequently purchased at this time to make up for the loss of ghee.

Wealth breakdown

Livestock numbers are the most important determinant of wealth in this pastoral economy. Moreover, the number of cattle owned is a critical indicator because cattle provide the most milk, which provides both calories and cash from milk/ghee sales, and cattle are also the most valuable animal sold.

Table 2: Wealth group characteristicsin Southern Cattle Pastoral Livelihood Zone

	Poor	Middle	Better-off
Household percentage (%)	30	55	15
Household size (#)	6	6	7
Typical livestock holding (#)			
Cattle	10 - 25	30 - 50	>70
Goats/sheep	35-45	60-70	85-150

Source FSNAU, BSummary_SouthEastPast.1, 1998
Note: The household percentage and household size figures are the mid-point of a range.

Cattle and goats are the most commonly owned livestock. Camels were not common in this zone during the reference year. As you move up the wealth spectrum you see an increase in the number of livestock owned and household size. Better off households are also more likely to have multiple wives. Poor households comprise around 30% of the households, and these households are also the smallest in size (typically around 6 people per unit) whereas better off households have the most people (around 7 people per unit) and often more than one wife. Better off households make up around 15% of the households in this livelihood zone, and those in the middle wealth group make up 55% of the households. However, given that better off households have bigger family sizes and multiple wives, the percentage of the *population* falling into the better off wealth group is higher than the percentage of *households* falling into the better off wealth group.

Middle and better off households own more livestock in part because they have more productive household members within the homestead. Maintaining large herds requires a lot of labor. This labor is further split during the dry season, when men and older children migrate with the larger livestock to permanent water sources and pasture. Women tend to stay behind with the goats, lactating animals and smaller children. Poorer household members are often hired by better off households to help with herding during migration times.

Sources of food and income and expenditure patterns

There are two main sources of food for all wealth groups: milk from their own livestock and food that they purchase from the market. In years of adequate rainfall, when pastures are plentiful, milk contributes a significant percentage of annual calories for most households. But the majority of a households' food is purchased every year, with levels increasing or decreasing to account for fluctuations in milk supplies. Wild foods and gifts are two additional food sources for poor households, but these are quite minor in relation to milk and purchased food.

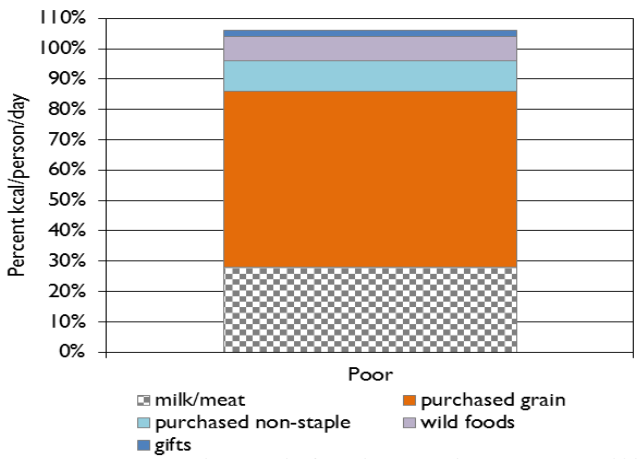
Data from the reference year is only available for the poor wealth group. This is presented below. However, we can extrapolate from the poor group data and combine it with information from the wealth breakdown to make reasonable assumptions about food and cash income for the middle and better off wealth groups.

Calories from milk covered just under 30% of annual needs for poor households in the reference year. This came primarily from their 6 (approx.) milking cows and around 8 milking goats. With an approximate yield of 2 liters per cow in the *gu* and 1 liter per cow in the *deyr*, one might expect these households to generate around 2400 liters of milk over the year (assuming 135 days of lactation in the first season and 90 days in the second). Assuming these households sold about 1/3 of the *gu* season milk, this would leave them with enough calories to cover just about 30% of their annual needs. We know that middle households have about twice as many cows milking, and better off households have around three times as many cows milking. As the total production goes up, however, households tend to sell a higher percentage of this, finding it untenable to consume all of the available milk. Therefore, one cannot assume a linear progression in terms of the relative share taken up by milk. It is reasonable to project that middle and better off households cover a maximum of 40% of their minimum calorie requirements with milk, converting the rest into cash. Thus, as a general statement, milk and meat account for 30 – 40% of annual calorie needs for households in this livelihood zone in a year like the reference year. This share will decrease in drought years, when pastures are poor and milk production declines. Reliance on cattle makes this economy especially vulnerable to droughts since cattle tend to be less able than camels to withstand water shortages.

Although milk is important culturally and nutritionally, providing a crucial source of proteins and fats, the market is where majority of all wealth groups' calories comes from. Staple grains (mostly maize and some sorghum) are purchased throughout the year, but especially during the two dry seasons, when milk production wanes. For poor households, staple grains accounted for over 50% of their required calories. Purchased sugar and oil also contributed substantially to their annual calorie intake. In all parts of southern Somalia sugar intake is high, averaging around 1 kg per day for better off households and around .75 kg per day for poorer households. This makes up 5 – 10% of annual calories for poorer households and upwards of 20% for better off households.

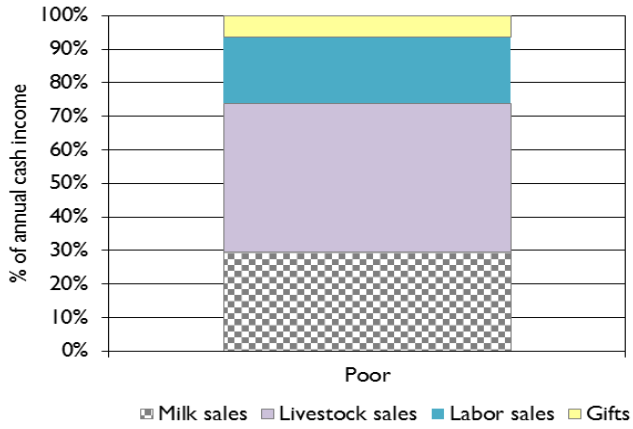
Two additional sources of food contributed to poor households' annual needs in the reference year – wild foods and gifts. It remains a well-established culture in Somali communities that better off households provide support to poorer households in both good and bad years. *Zakat* (annual religious alms to the poor), gifts between relatives and neighbors, remittances from relatives working outside the area, and *irmansi* (loaning a lactating animal to a poor relative) are the common forms of social support. In the reference year this support helped cover less than 5% of poor household food needs. Wild foods, which are widely available in this livelihood zone, helped cover the remaining 5 – 10%. These last two sources (wild foods and gifts) are not typically sources relied on by middle and better off households, who would cover all of their food needs with their own livestock production and market purchases.

Figure 4: Food sources for poor wealth group, Southern Cattle Pastoral Zone



Source: FSNAU, BSummary_SouthEastPast.1, 1998.

Figure 5: Cash income sources for poor wealth group, Southern Cattle Pastoral Zone



Source: FSNAU, BSummary_SouthEastPast.1, 1998.

Food is not the only thing people in this zone require to live; they also need cash in order to purchase essential goods and services. As shown in the graph above, livestock are the main driver of the local economy. In particular, milk/ghee sales and livestock sales cover the majority of cash needs. Milk/ghee and livestock sales will be even more dominant at the upper end of the wealth spectrum, given the larger herd sizes. Casual labor and gifts are important for poor households, but middle and better off households would not rely on these sources.

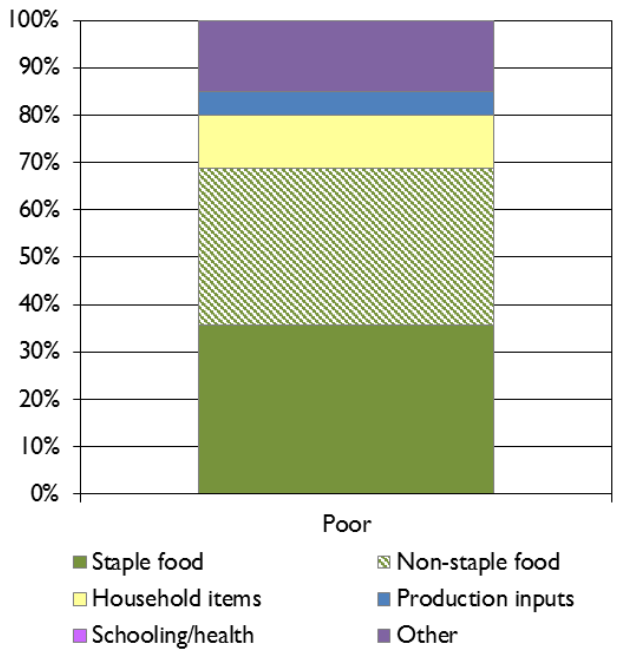
In a year like the reference year, poorer households are likely to be selling 500 – 800 liters of their own milk; middle and better off households could be selling twice or three times this much assuming they are able to transport this amount to market and to find reliable buyers. For poor households, this accounted for around a third of their annual cash income in the reference year. It is reasonable to assume that middle and better off households would derive at least 40 – 50% of their cash needs from the sale of milk/ghee.

Sales of cattle and goats comprise the other main source of cash income for all wealth groups, making up around 45% of annual cash income for poor households in the reference year, and probably 40 – 60% of cash needs for middle and better off households. Because poor households earn less from milk/ghee sales and from livestock sales, they need to make up the

gap through other means. Cash income earned from herding labor is the next most important source, accounting for around a quarter of their cash. Better off and middle households hire people from poorer households to help manage their large herds, especially during the dry seasons, when animals need to be taken to permanent water sources and grazing is scarce. It is likely that these households also derive some cash income from self-employment activities, such as firewood collection and sales, although this does not appear in the 1998 baseline. Gifts is the last sources of cash income for poor households, who the social support provided by neighbors and relatives to make up gaps in their cash flow.

Cash income is used to cover a range of expenses, including food, household items, production inputs, and other items. The patterns of expenditure for poor households are shown in the graph below. The data from 1998 for poor households in this zone appears to be incomplete, as it does not detail expenditure on schooling, health, or clothing. However, from what is there, we can see that the proportion of cash spent on food is very high for poor households, reaching almost 70% of annual expenditure in the reference year. In part this reflects the fact that food is a particular priority in this zone, but it also shows that income levels are quite low for the poor wealth group. Non-staple food expenditures, which means sugar and oil in this case, is an especially large component of expenditure. It is likely that in absolute terms, better off households spend even more on food than poor households given their larger households sizes. Their higher consumption of sugar alone, a high-cost commodity, probably pushes their food budgets to at least twice as much as poor households. However, better off and middle households have more income to spend overall, so the relative amount that food takes out of their annual budget is likely to be lower.

Figure 6: Allocation of expenditures for poor wealth group, Southern Cattle Pastoral



Source FSNAU, BSummary_SouthEastPast.1, 1998.

The category called 'household items' in the graph below includes tea, salt, soap, kerosene, payment for grinding, and utensils. Spending on these items takes up just over 10% of the annual cash income of poor households. It is likely that the relative expenditure for poor households in the reference year is higher than it is for middle and better off households given their higher absolute income. With the data available, it is not possible to see which of these items took the most money in the reference year, but we can say that in neighboring zones, the most money is spent on kerosene, utensils and tea.

Expenditure on production inputs (both in relative and absolute terms) tends to increase directly with wealth. Better off and middle households have more livestock to take care of than poor households, and they need to spend more money on animal drugs, salt for animals, and sometimes water for animals. These households on the upper end of the wealth spectrum also hire poorer households to help with herding, which would be part of their production inputs expenditure. Given that poor households spend around 5% of their annual budget on production inputs, we can assume that this category would be at least twice as large for middle and better off households. In neighboring zones, it is not unreasonable for better off households to spend around 10 times more than poor households on livestock-related inputs. We can expect the same here.

Although we do not have data on schooling and medicine outlays, this is another requirement for households. Better off households tend to have more members, which means their spending in absolute terms is higher than poorer households, but they do not necessarily always invest more on a per capita basis than poor households on schooling, perhaps because the opportunities for schooling outside the madrasas (which are free) is so limited. However, when it comes to spending on

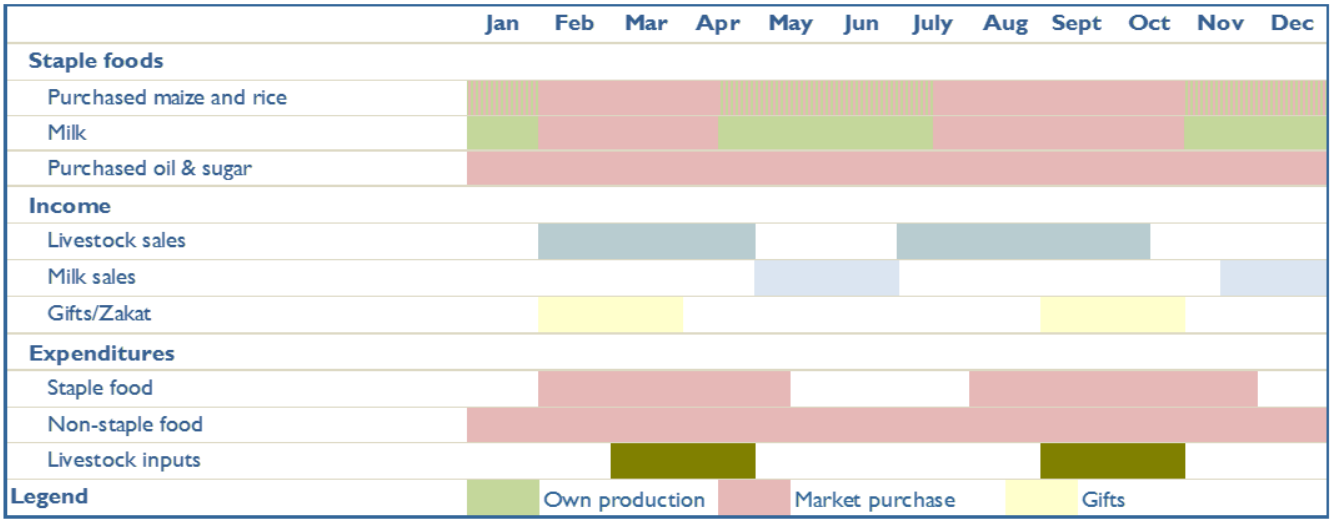
health, better off households usually spend significantly more than poor households, so we can assume this would be the case here.

The 'other' category on the graph above includes items like taxes, gifts, clan contributions, transportation and other non-essential expenditures that could potentially be reduced in a bad year to help cover food and essential livelihood-related items. This expenditure, both in absolute and relative terms, usually increases with wealth.

Calendar of major sources of food and income for poor households

The calendar below provides an illustration of households' seasonal access to food and cash income, and their time-specific requirements to spend money. As discussed above, households in this zone survive on a combination of food they purchase from the market and milk from their own herds. Households purchase staple grains (mainly maize for poorer households, supplemented by rice for better off households) throughout the year, but they can reduce their grain purchases during the

Figure 7: Consumption and income calendar for the Southern Cattle Pastoral Livelihood Zone



Source: FSNAU

high milk production periods, which occurs during the rainy seasons, from April to July (the *gu* seasons) and from November through January (the *deyr* season).

Cash income from livestock sales is generated from February through April and again from July through October, corresponding to the last months of the two dry seasons and into the first month of the rains. Households use the cash from livestock sales to fund their expenditures on livestock inputs, which take place around these same times. Milk income is available in the rainy seasons, from May through June and then from November through December. Poorer households also depend on gifts/zakat in February/March and in September/October.

Hazards, response, and monitoring variables

Drought is the most damaging hazard in this livelihood zone. Livestock play the central role in providing food and cash income, and drought can devastate the local economy. Droughts cause a cascade of negative effects: reduced pasture and water lead to a deterioration in livestock body conditions, lower conception rates, higher abortion rates, lower milk yields, and declining livestock prices. People need to spend more time looking for water for both human and livestock consumption, which reduces the time they can spend on caring for children, which can lead to sickness and malnutrition. An increase in staple food prices accompanies most droughts, especially in these areas where market integration tends to

be poor. Increasing competition for scarce resources leads to a higher risk of conflict. Therefore, just as people need more money to cover the increasing purchase requirement and higher food prices, along with potential illnesses, their source of cash income is seriously constrained.

Civil insecurity and market closures have been major hazards in southern and central parts of Somalia. Sporadic fighting between Federal Government of Somalia forces supported by the African Union Mission in Somalia (AMISOM) forces on the one hand and anti-government insurgents on the other hand has at times restricted the flow of food and other basic items, which in turn has increased food prices and the cost of living. Disrupted trade flows, restricted movement of people and animals to pasture and water points and the loss of livestock and other assets have seriously undermined local livelihoods. Displacement to neighboring regions within Somalia or Kenya and Ethiopia has been common. Cereal prices often shoot up in the event of regional market disruptions leading to localized food gaps.

Livestock diseases are another major problem. With excessive rains in the *deyr* season this is a particular problem. Tick-borne diseases and Contagious Caprine Pleura Pneumonia (CCPP) cause significant losses in income since they undermine livestock body conditions in the dry seasons and reduce viable livestock sales. Internal parasites (*Gooriyan*), diarrhea (*Shuban*), lumpy skin disease, and *diif* (a respiratory diseases affecting sheep and goats) are also present. Limited pest control services, restricted supplies of veterinary medicines and a poor animal health infrastructure reduces local capacity to manage these problems.

Table 3: Coping strategies in response to shocks in Southern Cattle Pastoral Livelihood Zone

Poor	*Middle/better off*
Shifting of expenditure to essential items, especially cheaper staple grains, and reduction of expenditure on non-essentials.	Shifting of expenditure to essential items, especially cheaper staple grains, and reduction of expenditure on non-essentials.
Families will split, with men migrating to far away locations either to graze livestock or to seek labor opportunities, while other family members will migrate to small villages and towns in order to sell bush products or to seek additional employment opportunities.	Increased migration of livestock to areas where water and pasture are better or sometimes trucking in of water to save animals from long treks. With many people pursuing this strategy, resources are quickly depleted. Conflict is also likely to erupt as the competition for scarce resources increases.
Increased collection and sale of bush products.	Increased livestock sales, with males sold in higher numbers at the early stages of the crisis, and females increasingly sold as the crisis continues.
Increased sale of livestock, but this is limited due to small herd sizes.	
Increased consumption of wild foods, such as *jinaw* (wild leaf), *garas* (the outer coat of *garas* seeds is removed, and the thin sweet film is consumed). The bean part of the *garas* plant has to be boiled for an entire day before it becomes tender enough to be eaten. Households will also hunt game, including dik dik (small antelope), guinea fowl and occasionally deer.	
Seeking increased gifts and social support	Increased seeking of remittances and loans to be repaid when situation improves

Source: FSNAU and FEWS NET reports.

In bad years, households aim to reduce their non-essential consumption, increase cash income where possible and change their expenditure patterns. The better-off and middle households have more assets and diverse sources of income than the poor, which enable them to recover much faster from shocks like droughts. Poor households often split up, sending men to

far-away urban areas in search of work, while women and children go to smaller villages or towns to seek help. They also increase their collection and sale of bush products and sell as many livestock as they can while still retaining a viable herd. Given the already low livestock numbers in this area, this strategy has limited usefulness for poor households. These households also try to seek additional support from better off households in the form of gifts, or sometimes sending some of household members to live with others; but drought does not discriminate, and in the worst years the ability of better off households to give gifts is also reduced. Middle and better off households try as well to sell livestock and also have the labor to move their livestock to areas where pasture conditions are more favorable. But with increased numbers of people and livestock converging on the same pasture and water sources, the likelihood of conflict is high.

Table 4: Key parameters to monitor in the Southern Cattle Pastoral Livelihood Zone

Item	Key Parameter – Quantity	Key Parameter – Price
Animal production	Cows' milk – yields (seasons 1 & 2) Cattle – herd size Goats – herd size	Cows' milk – producer price Cattle – export & local price Goats – export & local price
Other	Herding labor – availability of seasonal jobs Bush products – amount sold Gifts – amount given	Herding labor – wage rates Bush products – prices
Expenditure		Staple grain – consumer price Sugar – consumer price

Source: FSNAU, 1998 South East Pastoral Profile & BSummary_SouthEastPast.1.

Estimated population for the Southern Pastoral Livelihood Zone (SO18)

Zone	Region	District	Livelihood	Population 2012 UNFPA
South	Middle Juba	Bu'aale	Southern Cattle Pastoral Livelihood Zone	12,555
South	Middle Juba	Jilib	Southern Cattle Pastoral Livelihood Zone	34,602
South	Lower Juba	Kismaayo	Southern Cattle Pastoral Livelihood Zone	7,259
South	Lower Juba	Afmadow/Xagar	Southern Cattle Pastoral Livelihood Zone	27,572
South	Lower Juba	Badhaadhe	Southern Cattle Pastoral Livelihood Zone	18,224
SO18 Population 2012 total				**100,211**