

NUTRITION ASSESSMENT REPORT

ADDUN AND HAWD PASTORAL, LIVELIHOOD SYSTEMS

PUNTLAND AND CENTRAL SOMALIA

**Food Security Analysis Unit (FSAU/FAO)
United Nation Children Funds (UNICEF)
Somali Red Crescent Society (SRCS)
Ministry of Health (MOH)**



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EXECUTIVE SUMMARY

Between 29th April and 7th May 2008, FSAU in collaboration with MOH Puntland, UNICEF, and SRCS, conducted an inter-agency nutrition assessment in the Hawd and Addun pastoral Livelihood Zones in Central and Northeast regions of Somalia. Prior to this, a preceding comparable nutrition assessment was conducted in the same region in November 2007. Samples were drawn from the Hawd pastoral population and the Addun population of Balanbal, Cadaado, Cabudwaaq, Ceelbuur, Dhusamareb Galkacyo, Hobyo, Galdogob, Jariban, Garowe, Eyl and Burtinle districts in Central and North East Somalia. This was in response to the need to determine the malnutrition levels for the two livelihoods zones and to inform on appropriate intervention responses for the region. The main objective of the survey was to determine the level of wasting among children aged 6-59 months, analyze the possible factors contributing to malnutrition, dietary diversity, morbidity, care practices and mortality rate in the specific livelihood systems in the regions

Using a two-stage cluster sampling methodology, a total of 683 children from 343 households and 643 children from 313 households from Hawd and Addun pastoral livelihoods respectively, aged 6-59 months were assessed. The mean household size was 6.2±2.4 and 6.1±2.4) respectively in both Hawd and Addun pastoral livelihoods, while the mean number of under fives per household was 2.1 (±0.9) among the Hawd pastoral livelihood, and 2.2(±0.9). among the Addun Livelihood Among the assessed Hawd pastoral populations, the global acute malnutrition (GAM) rate (weight for height <-2 Z score or oedema) was **19.3%** (CI: 15.6-23.02) and severe acute malnutrition (SAM) rate was **2.3%** (CI: 0.92-3.77), with two oedema cases of 0.3% (CI :-0.20-0.69) reported. A GAM rate of **18.4%** (CI: 14.9-21.8) and SAM rate of **2.8%** (CI: 1.2-4.4) with one (0.2% CI: - 0.17-0.48) oedema case was recorded among the Addun livelihood.

Results from both livelihoods indicate a **Critical** nutrition situation, with no statistically significant change from the last nutrition assessments conducted in November 2007. These rates are similar to those from the two most recent previous assessments conducted in the region by FSAU & partners in Nov '07 which reported GAM rates of above 15% in the Hawd (17.2%; (14.1 – 20.5) and Addun (15.9%; (12.8 – 18.9) livelihoods which indicated a **Critical** nutrition situation at the time, with the exception of one assessment conducted by ACF in Dhusamareb district in December 2007 which reported a GAM rate of 12.4% (10.1-14.6) and a SAM rate of 1.3% (0.4-2.1) indicating a **Serious** nutrition situation. When using the WHO Anthro (2005) Reference standards, slightly higher GAM rates and almost double SAM rates were reported from the two study populations as expected, : the Hawd pastoral livelihood zone reported GAM rate of **20.5 %**(17.4-23.0) and SAM of **4.5%** (CI: 2.9-6.2), and Addun livelihood assessment reported GAM of **19.1%** (CI: 16- 22.2) and SAM of **5.8%** (CI: 3.9- 7.6). The Hawd and Addun pastoral livelihoods recorded respective crude and U5 mortality rates of **0.62 (0.43-0.88)** and **1.35(0.82-2.22)**; and **0.65 (0.44-0.95)** and **1.45(0.83-2.52)** in that order. These rates were all within the alert level according to WHO classification.

High morbidity rates in Hawd and Addun continue to compromise the nutrition situation of the populations. The majority (57.1 % and 44.3 %) of children had reportedly suffered from one or more communicable childhood diseases in the two weeks prior to the assessment. The incidence of reported diarrhoea in the Hawd and Addun populations (18.6% and 20.5% respectively) in the two weeks prior to the assessment remained high. High incidences of ARI (35.8% and 29.4% respectively) and febrile illnesses (22.1 % and 11.4% %

respectively) were also reported in the two livelihoods. Results of rapid diagnostic tests (RDT) conducted for malaria confirmed a high prevalence in Addun and Hawd livelihood with rates of 11.9 % and 9.3 % respectively. These rates were more than 50 % higher when compared to the assessment in October 2007, but consistent with seasonal morbidity patterns recorded from the health facilities. The assessment found that there is an association between acute malnutrition and diarrhoea rates among the children in Addun. For instance, in the Addun pastoral livelihood, children who had diarrhoea were 1.5 times more likely to be acutely malnourished compared to those with no diarrhoea (RR=1.50; CI: 1.05-2.14). Even though there is high proportion of children who fell ill in the Hawd livelihood, however no positive statistical association between acute malnutrition and morbidity among the assessed children was found ($P>0.05$). In the two assessed livelihoods a high proportion of 41.1% and 38.9% of the households from (Hawd and Addun respectively) were reportedly not accessing sanitation facilities (latrines) with nearly (50%) of the assessed households not accessing safe water.

Analysis of some of the immunization status revealed levels below the recommended Sphere standards for immunizations, Measles vaccination status was 20.9% and 8.8 % in the Hawd and Addun livelihoods respectively, while polio immunization was 70.1% and 72.6% and vitamin A supplementation was 52.1% and 51.6% among the Hawd pastoral and Addun livelihoods respectively.

Poor feeding practices continue in Northeast and Central regions like in other parts of Somalia, contributing to the critical levels of acute malnutrition especially among the breastfeeding age. For instance, less than one third of the children aged 6-24 months were breastfed at the time of the assessment and more than (82%) prematurely introduced to complementary foods, over 60% within the first three months of birth. Analysis of distribution of acute malnutrition between the different age groups among both livelihoods showed that all the groups had equal risk of acute malnutrition. The age group 6-24 months and the 25-59 months category showed no statistical difference in acute malnutrition rates ($p>0.05$) in Hawd and Addun pastoral livelihoods. Equally there was no statistical difference ($p>0.05$) in acute malnutrition levels among the 6-29 months and 30-59 months age bands in the Hawd and Addun pastoral livelihoods. The majority of the assessed children aged 6-24 months, including 45% of the Hawd pastoral, 58% of Addun pastoral population were fed for 2-3 times in a day. Only 22.5% and 10.9% of the assessed children in both studies fed their children more than five times a day. These practices indicate poor feeding habits which could have contributed to malnutrition considering their increased demand for adequate quality and quantity food. So far, dietary diversity in the assessed Hawd and Addun livelihood households was satisfactory, with both sets of households in the two livelihoods consuming an average of four food groups or more per day. The most commonly consumed foods were cereals, sugars oil and milk. Consumption of diversified diet assists in mitigating the nutrition situation to some extent.

The food security and overall humanitarian situation for all livelihoods in the central regions has deteriorated since *Deyr* '07/08 due to complete rain failure during *Gu* '08, and previous seasons of successive poor rainfall. Since April '08, the number of people in **Humanitarian Emergency (HE)** has increased by 64% from **110,000** to **180,000**. The number of the people in **Acute Food and Livelihood Crisis (AFLC)** has increased by 24%, from **125,000** to **155,000**, with early warning levels of Watch for all livelihoods. Similarly the food security situation of pastoralists in the northeastern regions has also deteriorated since *Deyr* '07/08 due to poor

seasonal rainfall performance, hyperinflation and other market disruptions. The worst affected livelihoods zones (LZs) are Hawd which were Borderline Food Insecure (BFI) during *Deyr '07/08*, but have now deteriorated to **Acute Food and Livelihood Crisis (AFLC)** with **Moderate** risk of **Humanitarian Emergency (HE)** (FSAU technical series V.15 post Gu'08)

Overall, poor access to health services, insecurity, unemployment, stressed livelihoods, poor child feeding, and poor access to water and sanitation remain the main underlying causes of malnutrition in Central and north east regions. The critical nutrition, health and food security situation in Hawd and Addun livelihood zone calls for continued intervention efforts to address both immediate life saving needs in addition to developing longer term strategies to enhance the provision of basic services, sustainable strategies for livelihood support and social protection mechanisms. Specific recommendations include:

Immediate Interventions

- Improve the coverage for health programmes, especially for measles vaccination and vitamin A supplementation. Outreach immunization campaigns are required in both Hawd and Addun households.
- Rehabilitation of acutely malnourished children through existing selective feeding programs in the central and north east regions and include targeted outreach supplementary feedings programs where possible
- Capacity building of the existing MCH staffs and the community to manage acutely malnourished children could be explored.
- Provision of programmes that improve and sustain dietary diversity and consumption of micronutrient rich foods.
- Intervention programmes on malaria, particularly to target malaria hot spot areas such as Galdogob, Bursalah and Hasbahale of Eyl district, as well as Elbur, Abudwaaq and Balanbale districts.
- Intervention programmes on promoting safe water, provision of sanitation facilities and hygiene promotion s including health education are essential to address the underlying causes.

Long term Interventions

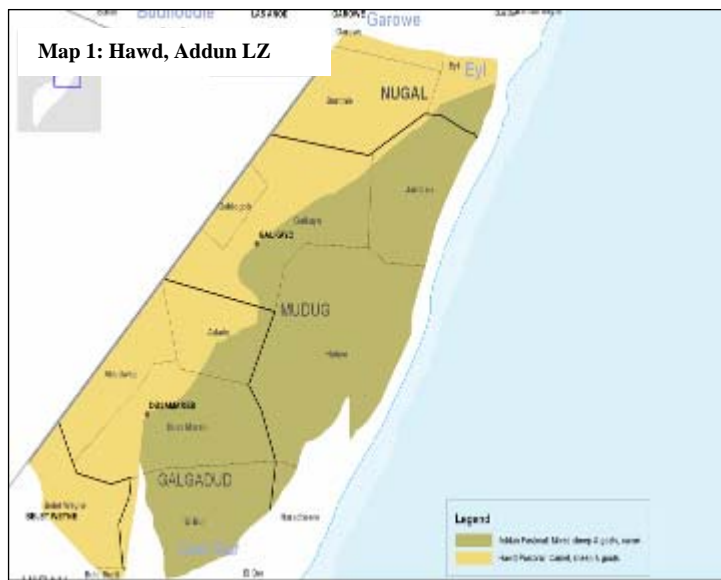
- Encourage comprehensive and effective strategies to tackle the chronic rates of acute malnutrition through a participatory fashion with community members and representatives from the public and private sectors in the region.
- Address the issues of limited access to safe water, through rehabilitation/protection of water systems including the wells and water catchments.
- Provision of veterinary services : There is also a need to urgently provide veterinary services for the livestock in the community to control the spread of the reported livestock diseases.
- Establish or expand the health facilities and satellite services especially in the pastoral villages with no health facilities.
- Intensify health and nutrition education activities at the household level to address care concerns, targeting mothers, and other caregivers. The main areas of focus should include promoting exclusive breastfeeding, appropriate young child feeding, diet diversification, and improvements in household hygiene including health care.

Table 1.1 THE HAWD& ADDUN ASSESSMENT FINDINGS	Hawd		Addun	
Indicator	N	%	N	%
Total number of households surveyed for anthropometry	343	100	313	100
Mean household size	6.2		6.1	
Total number of children assessed	683	100	643	100
Child sex:				
Males (boys)	338	49.5	342	53.2
Females (girls)	345	50.5	301	46.8
Global Acute Malnutrition (WHZ<-2 or oedema)	132	19.3 15.6-23.02	118	18.4 14.9-21.8
Severe Acute Malnutrition (WHZ<-3 or oedema)	16	2.3 0.92-3.77	18	2.8 1.2-4.4
Oedema	2	0.3 -0.20-0.69	1 0.16	0.16 -0.17-0.48
GAM estimates by WHO Anthro (2005) Standards:	132	19.3 (16.3- 22.4)	123	19.1 16- 22.2
SAM estimates by WHO Anthro (2005) Standards:	37	4.2 (2.7- 5.8)	29	5.8 (3.9- 7.6)
Global Acute Malnutrition (WHM<80% or oedema)	65	9.5 6.6-12.4	63	9.8 6.6-12.9
Severe Acute Malnutrition (WHM<70% or oedema)	5	0.7 0.01-1.4	6	0.9 -0.1-1.98
Proportion of acutely malnourished (MUAC<12.5 cm or oedema))	28	4.1 2.0-5.9	25	3.9 2.47-5.4
Proportion of severely malnourished (MUAC<11.0 cm or oedema))	7	1.0 0.4-2.3	2	0.3 (-0.13-0.75)
Proportion of stunted children (HAZ<-2)	94	13.8 10.7-16.8	88	13.7 10.1-17.3
Proportion of underweight children (WAZ<-2)	199	29.2 23.8-34.5	210	32.7 28.3-36.9
Proportion of acutely malnourished pregnant women (MUAC≤23.0)	19	22.6 14.2-33.0	21	27.3 17.7-38.6
Proportion of severely malnourished pregnant women (MUAC≤20.7)	4	4.8 1.3-11.7	2	0.3-9.1
Proportion of children reportedly with diarrhoea in 2 weeks prior to assessment	127	18.6 13.4-23.7	132	20.5 13.9-27.1
Proportion of children reportedly with ARI within two weeks prior to assessment	245	35.8 28.2-43.6	189	29.4 19.7-39.0
Children with fever/ suspected malaria in 2 weeks prior to assessment	151	22.1 17.7-26.5	73	11.4 7.8-14.9
Proportion confirmed with malaria (Plasmodium falciparum) (RDT positive)N=1208&1230)	111	9.3%	146	11.9
Suspected measles within one month prior to assessment	21	3.2 0.94-5.5	12	1.2 -016-4.1
Children (9-59 months) immunised against measles	135	20.9 14.1-27.6	54	8.8 2.7-14.9
Children who have ever received polio vaccine	479	70.1 58.7-81.5	467	72.6 61.5-83.8
Children who received vitamin A supplementation in last 6 months	356	52.1 39.8-64.4	332	51.6 38.8-64.5
Proportion of households who consumed ≤3 food groups	41	12.0 6.4-17.1	52	16.6 10.8-22.
Proportion of children 6-24 months who are breastfeeding	71	38.1 82.4-37.8	74	33.5 27.3-40.1
Under five Death Rate (U5DR) as deaths/10,000/ day	1.35 (0.4-2.30)		1.45 (0.72-2.18)	
Crude Mortality rate (CMR) as deaths/10,000/day	0.62(0.30-0.93)		0.65(0.39-0.91)	
Total no Household assessed for mortality	1000		852	

1.0 INTRODUCTION

Historical Context

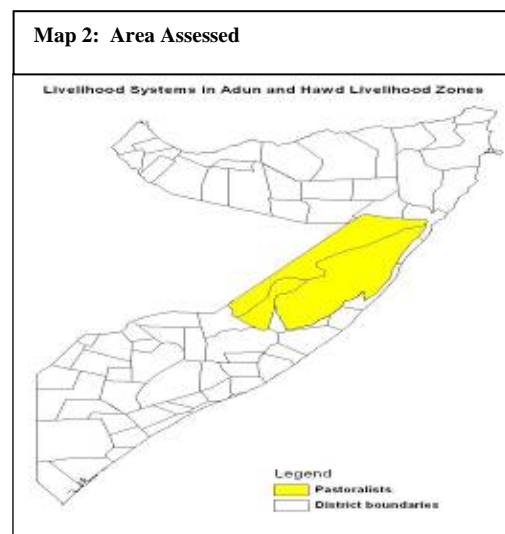
The Addun and Hawd Pastoral Livelihood zones cut across Galgadud, Mudug and Nugal Regions in the Central and parts of the North East regions in Somalia (See Map 1). The regions border the Indian Ocean to the East, Zone five of Ethiopia to the east, Bari and Sool regions to the north and Hiran region to the south. Galgadud Region comprises six districts (Balanbal, Cadaado, Cabudwaaq, Ceelbuur, and Dhusamareb), Mudug region has five districts (Galkacyo, Hobyo, Xaradheere, Galdogob, and Jariban) and Nugaal Region comprises three districts (Garowe, Eyl and Burtinle). The total population of the three regions is 805,166 and the two livelihood zones² Addun and Hawd pastorals cover most parts of these regions.



Since the collapse of the Somali Central Government in 1991, Central and northeast Somalia including the Galgadud, Mudug and Nugal Regions have faced a series of both natural (floods and droughts) and man-made (poor governance, sporadic armed conflict and widespread human rights abuses) disasters. The aftermaths of which have been limited resilience for parts of the population to recover from shocks.

The Food Security Context

The **Addun** Pastoral Livelihood Zone comprises mixed herds of sheep and goats (60% goats, 40% sheep), camel and few cattle. The area known as 'Guri Ari' (home for sheep and goats), (see map 2), cuts across Galgaduud, Mudug and Nugal Regions with a percentage population distribution of 43%, 40%, and 11% respectively in the regions. The Addun landscape is flat and sandy with low lying vegetation and few trees. Vegetative variety is limited, reducing livestock productivity; nevertheless the vegetation found is drought resistant. The main source of income is sale of livestock products (milk, ghee; meat) as well as live animals particularly small ruminants. A key factor determining its vulnerability is its inaccessibility and isolation from major markets and roads, which imply poor terms of trade for herders; lower livestock prices and higher food prices. Increasing and expanding settlements and berkads, particularly over the past 20 years, are increasing environmental degradation and reducing livestock productivity. Dry season water is



¹ Galgadud has a population size of 330, 057. Mudug 350,099 and Nugal of 125, 010

² The Baseline Profiles are currently being revised by FSAU

obtained mainly from boreholes, Credit is a vital part of the local economy (due in large part to the homogenous clan located in the area), and allows livestock sales to be concentrated in the peak *Hajj* season when prices are highest.

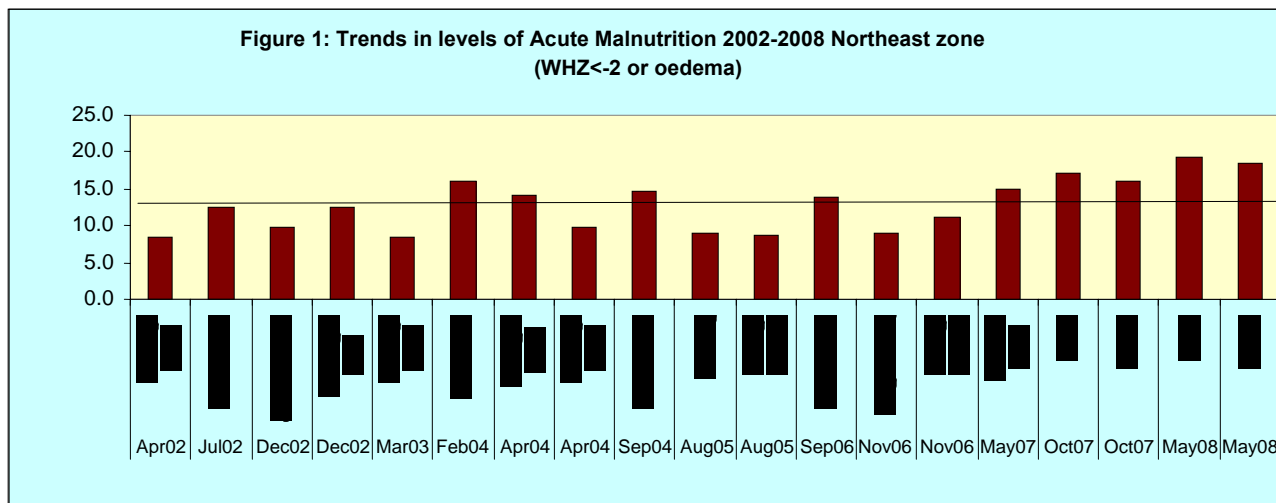
The Hawd livelihood zone is an area of prime browsing and good grazing, a higher area that stretches north towards the border with Sool Plateau and Nugal Valley and east to the border with Addun Livelihood. The Hawd plateau merges with the wider Hawd zone in Ethiopia. The Hawd Livelihood Zones cuts across Galgaduud, Mudug and Nugal Regions with a distribution in percentage population of 33%, 55%, and 62% respectively in these regions. These plateaus have no permanent natural water sources and rely on man-made berkads and balleys (water catchments). Pastoralists make up 80-90% of the population, with camels and goats the major animals. Cattle and sheep are less dominant, though cattle rearing have become more common with the increase of berkads – cattle need less herding and promote good ghee production. In the dry season, the herd is divided, with smaller ruminants and less hardy animals (pregnant and lactating) staying with the core family near villages and berkads, while hardy and mobile animals are led to distant ranges and water points. Cattle and goat milk is consumed fresh, especially in the wet season and also converted into ghee. Camel milk is consumed sour, and lasts longer for storage and sale. Meat is eaten fresh and preserved using traditional methods. Only the better-off and some middle wealth group households own berkads and sell water in the dry season. *Kalilil* is the hunger season just before the *Gu* rains and is a time of high labour needs for collecting water. Poor pastoralists, with small livestock herd sizes and high water needs and expenditure in dry times are a particularly vulnerable group. Remittances are an important part of household income, from urban relatives and the Diaspora.

The FSAU Post *Deyr* '07/08 Food Security analysis indicated a significant deterioration in the food security situation in the Hawd and Addun pastoral populations in Central regions (Galgadud and South Mudug) due to the effects of two consecutive rain failures, market disruptions and the ongoing population influx from Mogadishu as a result of insecurity. Central regions were classified in the **Acute Food & Livelihood Crisis (AFLC)** phase with a *high risk* to deteriorate further. In parts of Central Region (Adado, Dusamareb and El Bur districts), most berkads and water catchments dried up due to rain failure, and water trucking has continued for two consecutive seasons, with associated increased prices of water. Declining rangeland resources have also increased the risk to resource based conflicts, which occur frequently.

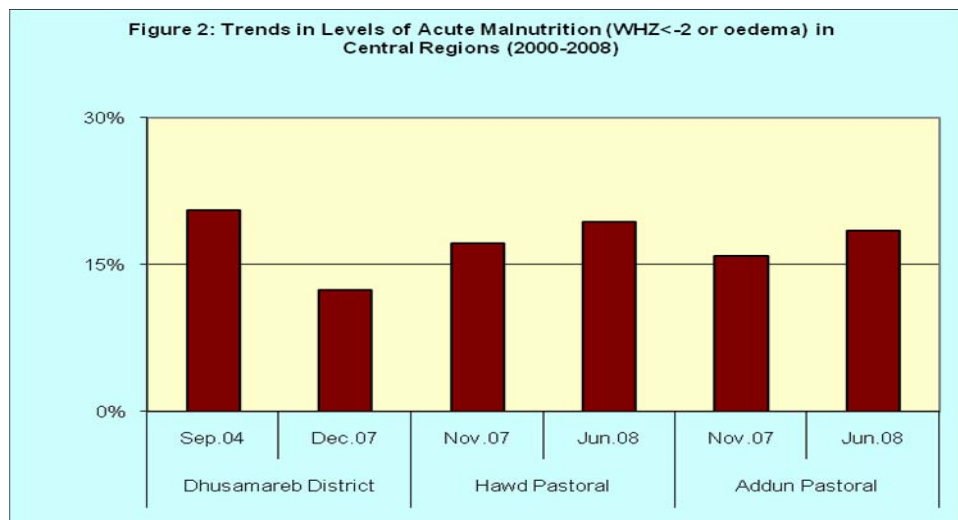
The FSAU Post *Gu* '08 indicates most of Central to be in **Humanitarian Emergency (HE)**, while the pastoral livelihood zones of Hawd, Nugal and adjoining parts of Addun in Northeast regions has been classified as **AFLC** with moderate risk to worsen. This indicates a deterioration in the North Mudug and Nugal from **Generally Food Insecure (GFI)** phase in the Post *Deyr* '07/08 and sustained **AFLC** in the other central region sections. Prolonged dry conditions (*Jilaaal*), increased food and non food commodity prices, poor *Gu* seasonal rains, out-migration of livestock, water and pasture unavailability, reduced livestock production and declining terms of trade are the main factors limiting access to dietary intake and directly contributing to the worrying nutrition situation in the area.

The Nutrition Situation Context

Historical data on nutrition surveys conducted in the north east regions indicates serious to critical nutrition situations (WHO classification) with global acute malnutrition (GAM) levels ranging from 8.3-19.3%, using Weight for height z scores, WHZ, or presence of bilateral oedema (See Chart 1).



Whereas a direct comparison between earlier assessments is not possible due to the varying location and timings of the assessments, with the exception of Goldogob town assessment (April 2004), these trends illustrate a persistent serious - critical nutrition situation with results of >10% GAM, being reported throughout 2004 to date.



Assessments conducted in May/June '08 reported GAM rates of **19.3%** (15.6-23.0) and **18.4%** (14.9-21.8) in the Hawd and Addun pastoral areas respectively. These rates are similar to those from two recent previous assessments conducted in the region by FSAU & partners in Nov '07 which reported GAM rates of above 15% in the Hawd (17.2%; (14.1 – 20.5) and Addun 15.9%; (12.8 – 18.9) livelihoods indicating a *Critical* nutrition situation at the time with the exception of one assessment conducted by ACF in Dusamareb district in December 2007 which reported a GAM rate of 12.4% (10.1-14.6) and a SAM rate of 1.3% (0.4-2.1) indicating a *Serious* nutrition situation in this area at the time. Nevertheless, the results are consistent with historical data on nutrition surveys conducted among Hawd and Addun populations in the central regions (See Figure 2). These areas currently have limited

access to food (due to rain failure from three consecutive seasons, high inflation and exchange rates and increased food prices among other factors), host a large population of displaced persons and face situations of civil insecurity, which have hindered humanitarian interventions that were in place during the *Deyr* '07/08. Humanitarian agencies have also had to scale down in these areas due to a deteriorating insecurity situation.

The Historical timeline of events in the South Mudug and Central Regions and their potential contribution to the sustained serious nutrition situation is provided in the table below.

Table 2: Historical Timeline of Events, Central Region Since February 2007 and their potential contribution to the nutritional outcome

Year	Events And Potential Risk Factors for Acute Malnutrition	Nutritional Status Outcome
Jan-August 2008	<p>The region is in a poor state of food insecurity and humanitarian situation and facing multiple hazards of natural and man-made disasters including successive extreme below normal season followed by total failure of <i>Gu</i> '08 performance (10%) of the normal, which further deepened scale of the humanitarian emergency. The percent of the affected population number in need of urgent humanitarian assistance has further increased since <i>Deyr</i> '07/08. <i>Source: FSAU Technical Series report-august'08</i>)</p>	<p>Assessments conducted in May/June '08 reported GAM rates of 19.3% (15.6-23.0) and 18.4% (14.9-21.8) in Hawd and Addun pastoral areas, respectively. These rates are similar to those from the two most recent assessments conducted in the region by FSAU & partners in Nov '07 which reported GAM rates of above 15% in the Hawd (17.2%; (14.1 – 20.5) and Addun 15.9%; (12.8 – 18.9) livelihoods indicating a <i>Critical</i> nutrition situation at the time, with the exception of one assessment conducted by ACF in Dusamareb district in December 2007 which reported a GAM rate of 12.4% (10.1-14.6) and a SAM rate of 1.3% (0.4-2.1) indicating a <i>Serious</i> nutrition situation in this area at the time</p>
Aug-Nov 2007	<p>The <i>Deyr</i> '07 rainy season performance has been mixed with some regions receiving good rains while in others, little or no rains. Of particular concern are parts of Galgaduud and Mudug regions in Central Somalia hosting large numbers of IDPs, where there are early indications of below normal rains, in both amount and distribution. (<i>FSAU, Food Security and Nutrition Brief, Nov'07</i>)</p>	<p>Two nutrition assessments conducted in the Hawd and Addun pastoral livelihood zones in November 2007 by FSAU and partners indicate:</p> <ul style="list-style-type: none"> • Addun Pastoral: GAM rate of 15.9% (12.8-18.9) and a Severe Acute Malnutrition (SAM) rate of 1.7% (0.76-2.6); CMR: 0.82 (0.38-1.25) per 10,000 per day • Hawd Pastoral with a GAM rate of 17.2% (1-20.5) and a SAM rate of 1.3% (0.55-2.1). CMR: 0.36 (0.14-0.58) per 10,000 per day
Feb-July 2007	<p>Post Gu 2007 Food Security Analysis: Pastoral and agro-pastoral livelihoods in Galgaduud and south Mudug remain in the same phase of Chronically Food Insecure as identified in the Post <i>Deyr</i> '06/07 analysis. This is due to the positive gains in recovery achieved during the last <i>Gu</i> '07 and <i>Deyr</i> '06/07. However as a result of below normal <i>Gu</i> 07 rains (20-40% of long Term Mean), rangeland conditions are deteriorating and are of special concern in Ceeldheer, Xaradheere, Dhusamareeb, Cadaado and Cabudwaaq districts. Water trucking has started two months ahead of normal (from June instead of August07) with increased prices. The early level of watch in the last <i>Deyr</i> '06/07 has changed to a level of moderate risk between July and December due to increased food prices, early water trucking at increased costs and overall prices increases as a result of devaluation of the Somali shilling. (<i>Source: FSAU Technical Series V. 13 September 21, 2007</i>)</p>	<p>Post Gu 2007 Food Security Analysis: The nutrition situation in Galgaduud and South Mudug is <i>Serious</i> with some pockets of a <i>Critical</i> situation. The <i>Critical</i> pockets also host a high number of recent IDPs following the insecurity in Mogadishu. While the nutrition situation has remained similar to that observed in the post <i>Deyr</i> '06/07 analysis in most areas, a deterioration was noted in the Coastal Deeh and Cowpea belt mainly attributed to the acute watery diarrhoea outbreak, presence of recently displaced populations and the unstable security situation especially in Hobyo area. <i>The key nutrition findings in these areas are as follows:</i></p> <ul style="list-style-type: none"> • Nutrition Assessments: Although not fully completed due to insecurity therefore is not fully representative, a study by ACF in April 2007 among 418 under five children in Dhusamareb and Guriel Districts reported 15.3% of the children as acutely malnourished using weight for height Z-Score or oedema and 1.9% as acutely malnourished using MUAC • Sentinel Site Data: Trends in levels of acutely malnourished children from the sentinel site data indicates a decline in levels of acutely malnourished children in most sites in Addun and Hawd pastoral with the exception of selected sites (Waberi and Eldhere) that indicate an increase. In the Coastal Deeh a steady increase in the levels of acutely malnourished children is observed in Howaldur site. • Selective Feeding Centre Data: Trends in admissions of severely malnourished children from Galgaduud indicate low and stable levels. • Rapid MUAC Assessment: Rapid assessments by FSAU in June 2007 in the Hawd pastoral among 169 children aged 1-5 years, identified 1.7% as acutely malnourished (MUAC of <12.5cm or oedema), in the Addun pastoral 1.4% were identified as acutely malnourished from a sample of 206 children screened and finally 2.5% of 474 IDPs screened were also identified as acutely malnourished. Health Information System: The levels of acutely malnourished children screened at health centre level remains low and stable (<i>FSAU Technical Series V. 13 September 21, 2007</i>)

2.0 ASSESSMENT OBJECTIVES

The overall objective of the two livelihood-based assessments was to establish the extent and severity of acute malnutrition, determine the causes of malnutrition and to monitor the trends of malnutrition in Hawd and Addun Pastoral livelihoods of Galgadud, Mudug and Nugal regions.

Specific Objectives were:

1. To estimate the level of acute malnutrition and nutritional oedema among children aged 6-59 months in the two livelihood groups of Hawd and addun in Central and North East regions
2. To estimate the level of acute malnutrition among women aged 15-49 years in the two livelihood groups of Hawd and Addun in Central and North East regions.
3. To identify factors influencing nutrition status of the children in the two livelihood groups of Hawd and Addun in Central and Northeast regions.
4. To estimate the prevalence of some common diseases (measles, diarrhoea, febrile illnesses and ARI) in the two livelihood groups of Addun and Hawd in Central and Northeast regions.
5. To estimate the prevalence of malaria using Rapid Diagnostic Test for *Plasmodium falciparum* in the two livelihood groups of Hawd and Addun in Central and Northeast regions.
6. To estimate the measles and polio vaccination and Vitamin A supplementation status among children in the two livelihood groups of Hawd and Addun in Central and Northeast regions.
7. To assess child feeding and care practices in the two livelihood groups of Hawd and Addun in Central and Northeast regions.
8. To estimate the crude and under-five mortality rates in the two livelihood groups of Hawd and Addun in Central and Northeast regions.

3.0 METHODOLOGY

Two cross-sectional assessments were conducted among the Addun and Hawd Livelihood populations in Northeast and Central regions. The assessments covered the populations in Balanbal, Cadaado, Cabudwaaq, Ceelbuur, Dhusamareb Galkacyo, Hobyo, Galdogob, Jariban, Garowe, Eyl and Burtinle districts.

A two stage cluster (Hawd 25 by 40 households and Aduun 25 by 34 households) sampling methodology was used to select 343 households in Hawd livelihood and 313 households in Addun livelihood respectively. A list of all settlements/villages/towns within each of the assessed livelihoods in the region with their respective populations formed a sampling frame from which the clusters were selected randomly using EPinfo-ENA software (See appendix).

Retrospective mortality data was collected from 1000 households in the Hawd livelihood, while from the Addun livelihood the mortality data was collected from 852 households, this data was collected from even those households that did not have children aged 6-59 months. For the respective estimated malnutrition/mortality rates, population sizes, desired precision, design effects and the sample size for each livelihood performed using EPinfo-ENA software.

Both qualitative and quantitative data collection techniques were used. Quantitative data was collected through a standard household questionnaire for a nutrition assessment and a standard mortality questionnaire (see appendix: 2). Quantitative data collected included household characteristics; child anthropometry, morbidity; vitamin A supplementation, measles and polio immunization status; dietary diversity; and water and sanitation. Qualitative data was collected by an interagency team comprising of assessment supervisors and coordinators through focus group discussions and key informant interviews to provide further understanding of possible factors influencing nutritional status.

A four-day training of enumerators and supervisors was conducted covering interview techniques, sampling procedure, inclusion and exclusion criteria, sources and reduction of errors, taking of measurements (height, weight and MUAC), standardisation of questions in the questionnaire, levels of precision required in measurements, diagnosis of oedema and measles, verification of deaths within households, handling of equipment, and the general courtesy during the assessment.

Standardisation of measurements and pre-testing of the questionnaire and equipment were carried out in a village not selected as a cluster for the actual assessment. Quality of data was also ensured through (i) monitoring of fieldwork by a coordination team, (ii) crosschecking of filled questionnaires on daily basis and recording of observations and confirmation of measles, severe malnutrition and death cases by supervisors. All households sampled were visited and recorded including empty ones (iii) daily review was undertaken with the teams to address any difficulties encountered, (iv) progress evaluation was carried out according to the time schedule and progress reports shared with partners on regular basis, (v) continuous data cleaning and plausibility checks (vi) monitoring accuracy of equipment (weighing scales) by regularly measuring objects of

known weights and (vii) continuous reinforcement of good practices. All measurements were loudly shouted by both the enumerators reading and recording them to reduce errors during recording. Household and child data was entered, processed (including cleaning) and analysed using EPI info software. Mortality data was entered and crude and under five mortality rates generated in Nutrisurvey software.

4.0 ASSESSMENT RESULTS

4.1 Household Characteristics of Study Population

The two livelihood-based nutrition assessments covered a total of 656 households (343 from Hawd and 313 from Addun livelihoods) with mean household sizes of 6.2 ± 2.4 and 6.1 ± 2.6 persons respectively in the Hawd and Addun Pastoral livelihoods. A total of 1326 children (683 from Hawd and 643 from Addun livelihoods) aged 6-59 months were assessed with a respective mean number of 2.1 ± 0.92 and 2.2 ± 0.94 under fives per household in Hawd and Addun. The household characteristics by livelihood are presented in Table 4.1 below.

Table 4.1: Household Characteristics

Characteristics	Hawd		Addun	
	N	%	N	%
Total Households	343	100	313	100
Household size (Mean):	6.2	SD=2.4	6.1	SD=2.6
Mean No of Under fives	2.1	SD=0.92	2.2	SD=0.94
<i>Sex of Household Head:</i>				
Male	231	67.5	216	69.0
Female	111	32.5	97	30.9
<i>Has Mosquito net:</i>				
Yes	207	60.3	151	48.1
No	136	39.6	163	51.9
<i>Type of Net:</i>				
GFSOM	61	29.6	60	39.7
Other	128	62.1	81	53.6
Not seen	17	8.3	10	6.6
<i>Main source of Income</i>				
Animal and its products sales	71	20.7	84	26.8
Crop sale	5	1.5	15	4.7
Trade	59	17.2	47	15.0
Casual labour	171	49.8	121	38.6
Salaried /wage employment	17	4.9	12	3.8
Remittance /gifts / zakat	16	4.6	34	10.8
Others(/Destitute)	4	1.2	0	0.0

livelihoods.

The results showed that at least 68% and 69 % of the assessed households were male-headed in Hawd and Addun livelihoods respectively. Nearly two-third (60.2) of the assessed households in Hawd populations had mosquito nets, and nearly one-third of them were distributed by Global Fund Somalia programme. However, only 48.1% of the Addun pastoral households owned mosquito nets. The major source of income for the assessed households in the Addun and Hawd pastoral livelihoods were casual labour instead of sale of livestock and animal products at the time of assessment (See Table 4.1). Trade and casual labour provided significant supplementary income in both

	Hawd (N=343)		Addun (N=313)	
	N	%	N	%
<i>Source of Drinking Water</i>				
Tap/ piped water	98	28.6	52	16.6
Tanker truck	45	13.1	37	28.4
Tube well/Borehole	43	12.5	68	21.7
Spring	5	1.5	3	1.0
Rooftop	0	0.0	1	0.3
Surface Water	152	44.3	152	48.6
<i>Whether water source is safe</i>				
Yes	178	51.9	183	58.5
No	165	48.1	130	41.5
<i>Reasons for not accessing safe water</i>				
Not available	69	41.8	78	60.5
Distance too far	59	35.8	48	37.2
Security concerns	1	0.6	0	0.0
Cannot afford	36	21.8	3	2.3
Others(
<i>Whether water is Reliable</i>				
Reliable supply	189	55.4	160	51.1
Seasonal supply	122	35.8	99	31.6
Occasional problems	13	3.8	22	7.0
Frequent problems	17	5.0	32	10.2
<i>Whether water is treated</i>				
Yes	75	21.9	34	10.9
No	268	78.1	279	89.1
<i>Water treatment methods used</i>				
Boiling	16	21.	11	32.4
Chlorination	0	10.7	2	5.9
Straining/Filtering	50	66.7	21	68.1
Decanting/letting it stand & settle	1	0.0	0	0.0
Others		1.2	0	0.0
<i>Source of water for other domestic use</i>				
Tap/ piped water	106	30.9	53	16.9
Tanker truck	54	15.7	33	10.5
Tube well/Borehole	33	9.6	69	22.0
spring	25	7.3	14	4.5
Surface Water	125	36.4	142	45.4
Rooftop rain water				
<i>Time taken to get water</i>				
<30 minutes	177	51.6	117	37.4
30-60 minutes	135	39.4	156	49.8
1-2 hours	22	6.4	24	7.7
>2 hours	9	2.6	16	5.1

4.2 Health Water and Environmental Sanitation

In the two livelihoods assessed, most households (Nearly 50 %) obtained water for drinking and other domestic use from surface-based sources such as Berkads, streams, open wells and water catchments. Other water sources are listed in table 4.2. Majority of households ((51.6%) among the Hawd livelihood, spent an average of 30 minutes to get water, while most (49.8%) of the Addun households took 30-60 minutes to and from the water points. Most of these water sources were unprotected and hence the water was unsafe. High incidences of diarrhoea have been associated with use of water from unprotected sources³. Majority (>75%) of the Hawd and Addun Pastoral households do not treat drinking water. The most commonly used methods of water treatment are *decanting and* boiling. At the household level, water was mainly stored in a closed plastic container. The results further showed majority, 63.3 % and 55% in the Hawd and Addun of the households owned one or two of water storage containers with capacity of 20 litres preventing their capacity to store water as indicated in Table 4.2.

³ FSAU Hawd & Addun Nutrition Assessment, Nov' 2006

<i>Number of clean water storage containers</i>				
	217	63.3	172	55.0
1 - 2 containers	97	28.3	114	36.4
3 - 4 containers	21	6.1	320	6.4
4 – 5 containers	8	2.3	7	2.2
> 5 containers				
<i>Method of Water storage</i>				
Clean Covered containers	35	10.2	76	24.3
Closed plastic container	273	79.6	207	66.1
Open bucket/ pans	26	7.6	30	9.6
Constricted neck-end (<i>Ashuun</i>)	9	2.6	0	0.0

4.2.2 Sanitation and Hygiene Practice

The results have shown that the majority (58.9 and 61 % of the households in the Hawd and Addun respectively) had access to facilities for human waste disposal; however a significant proportion (41.1% in the Hawd and 38.9% in the Addun) had no access and used the bush (See Table 4.3). The main reason given across both livelihoods for not having sanitation facilities was lack of resources to construct such facilities. Other reasons given were frequent movement especially among the pastoral community and the fact that they did not see the need for sanitation facilities. Where available, the commonly used sanitary facility was open-pit latrines. Sanitation facilities were shared by an average of 2-9 people. The distribution of the sanitary facilities is shown in table 4.3. For the few with access to latrines, the distance between the surface water sources and the latrines for the majority of Hawd (51.6%) and Addun (45.5 %) was 30 metres or more.

Table 4:3 Sanitation & Hygiene

	<i>Hawd (N=342)</i>		<i>Addun(N=313)</i>	
	N	%	N	%
<i>Access to Sanitation facility</i>				
Flush toilets	9	2.6	13	4.2
VIP	4	1.2	31	9.9
Traditional pit latrine /Open pit	189	55.1	147	47.0
No latrine at all (Bush)	141	41.1	122	38.9.
<i>Reasons for not accessing sanitation facilities</i>				
<i>Pastoral/frequent movement</i>	10	7.1	22	18.0
<i>Lack resources to construct</i>	107	75.9	86	70.5
<i>Doesn't see the need</i>	24	17.0	14	11.5
<i>Distance btn latrine & water source</i>				
<i>Between 1 - 30 metres</i>	111	32.4	64	20.5
<i>30 Metres or more</i>	177	51.6	142	45.5
<i>Not applicable (mainly use bush)</i>	55	16.6	106	40.0
<i>Number of people sharing latrine</i>				
<i>One</i>	17	5.0	55	21.8
<i>2- 9</i>	197	57.4	126	61.5
<i>10 or more</i>	129	37.6	24	11.7
<i>Practice Basic Hygiene</i>	310	90.4	217	69.3
<i>Use of washing agent</i>				
Soap	249	73.0	108	48.9
Shampoo	12	3.5	22	10.0
Ash	21	6.2	37	16.7
Plant extract materials	2	0.6	0	0.0
None	57	16.7	54	24.4

On a encouraging note, majority (69.3 – 90.4 %) of the households in the Addun and Hawd were reportedly practising basic hygienic hand washing practises such as before eating, feeding the baby, cooking and after eating. The most commonly used washing detergent across livelihoods was soap. Other washing agents used are indicated in table 4.3. It is also worth noting that 24.5 of Addun pastoral and 16.7 % of Hawd pastoral households did not use any washing agents which can compromise the level

of hygiene.

4.3 Morbidity, immunization and Health Seeking Behaviour

High morbidity rates (from common childhood illnesses) were reported in the Hawd and Addun livelihoods with more than 57.1 % and 44.3 % of the assessed children being ill in two weeks prior to the assessment respectively .

For the children who reportedly fell sick within two weeks prior to the assessment, the majority (53.1% in the Hawd and 48.1% in Addun) sought medical assistance from private pharmacies or clinics. Only 14.1 % and 20.0% in the Hawd and Addun respectively, sought medical assistance from public health facilities and the rest of the children either sought no assistance, used own medication, or consulted traditional healers (see table 4.3). The incidence of reported diarrhoea in the Hawd and Addun populations (20.5% and 18.6% respectively) within two weeks prior to the assessment was high. High incidences of ARI and febrile illnesses (suspected malaria) were also reported in the two livelihoods (Table 4.5). Results of rapid diagnostic test for *P. falciparum* indicate that malaria is high in Addun and Hawd livelihood with rates of 11.9 % and 9.3 % respectively. These rates indicated a relative increase of more than 50 %, when compared to the last assessment in October 2007, but still consistent with seasonal morbidity patterns recorded at the health facilities. High numbers of positive malaria cases were found in Wabho areas in Elbur, Abudwaaq, Balanbale and parts of Adaado district.

Table 4.3: Health seeking behaviour

	Hawd		Addun	
	N	%	N	%
<i>Child fell sick</i>				
Yes	390	57.1	285	44.3
No	293	42.9	358	55.7
<i>Where health service sought</i>				
No assistance sought	110	28.2	54	18.9
Own medication	10	2.6	25	8.9
Traditional healers	7	1.8	12	4.2
Private pharmacy/clinic	207	53.1	137	48.1
Public health facilities	56	14.1	57	20.0

Table 4.3.1: Morbidity, measles immunisation, polio vaccination and vitamin A supplementation

	Hawd		Addun	
	N	%	N	%
<i>Incidence of major child illnesses</i>				
Proportion of children with diarrhoea in 2 weeks prior to assessment	127	18.6 13.4-23.7	132	20.5 13.9-27.1
Proportion of children with ARI within two weeks prior to assessment	245	35.8 28.2-43.6	189	29.4 19.7-39.0
Children with fever/ suspected malaria in 2 weeks prior to assessment	151	22.1 17.7-26.5	73	11.4 7.8-14.9
Proportion confirmed with malaria (RDT positive)N=1208&1230)	111	9.3	146	11.9
Children who slept under bed net	394	57.8 (45.9-69.6)	249	38.8 (29.7-47.9)
Suspected measles within one month prior to assessment	21	3.2 0.94-5.5	12	1.2 -016-4.1
Children (9-59 months) reportedly immunised against measles	135	20.9 14.1-27.6	54	8.8 2.7-14.9
Children reported to have received polio vaccine	479	70.1 58.7-81.5	467	72.6 61.5-83.8
Children reported to have received vitamin A supplementation in last 6 months	356	52.1 39.8-64.4	332	51.6 38.8-64.5

The suspected measles cases reported were 3.2% in Hawd 1.2% in Addun. Measles vaccination status for eligible children (9-59 months old) was very low at 20.9% and 8.8 % in Hawd and Addun livelihoods, respectively . The assessment found that low numbers

of women received tetanus vaccination, at only 15.7 % and 59.2 % in Addun and Hawd respectively. Similarly, Vitamin A supplementation and polio vaccination was also low at 52.1% and 51.6% respectively. All the immunization status was below the Sphere 2004 recommendation of 95%. Coverage for the health programmes (including polio immunization) fell far below the recommended 95% level (Sphere, 2004) in the two livelihoods.

4.4 Child Care Practices

Approximately 30.2% and 33.5% of the assessed children aged 6-24 months in the Hawd and Addun pastoral livelihoods were breastfeeding at the time of the assessment, with >50 % of the children being breastfed on demand in both assessments. Of those who had stopped breastfeeding in the Hawd and Addun livelihoods, 33.9 % and 29.3 % respectively had stopped before 6 months of age, while 47.3 and 53.7 %

Table 4.4: Breastfeeding and Complimentary Feeding Practices

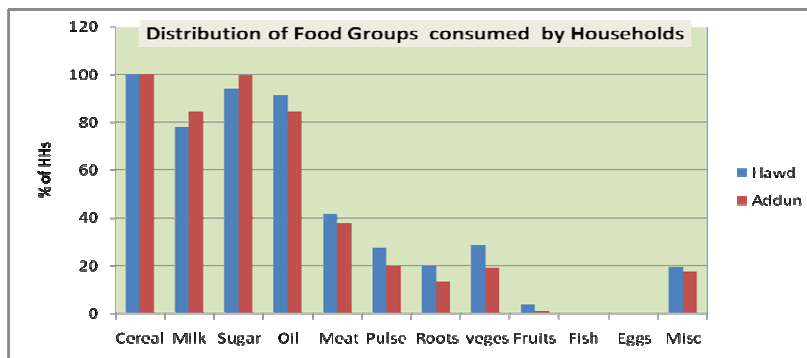
Characteristic	Hawd		Addun	
	N	%	N	%
Breastfeeding (Hawd: n=236)	71	30.1	74	33.5
Breastfeeding frequency	N=71		N=7	
2 times or less	0	0.0	4	2.7
3-6 times	23	32.4	2	43.2
On demand	48	67.6	32	54.1
Breastfeeding Duration	N=165		N=1	
Less than 6 months	56	33.9	47	29.3
6-11 months	78	47.3	43	53.7
12-18 months	25	15.2	79	12.9
≥18 months	3	1.8	19	1.4
Never breastfeed	3	1.8	2	2.7
Introduction of complimentary food	N=236		N=2	
0-3 months	195	82.6	21	61.5
4-5 months	17	7.2	136	21.3
6 months	11	4.7	47	11.3
7 months or more	13	5.5	25	5.9
Complimentary feeding frequency	N=236		N=2	
Once	20	8.5	21	10.9
2-3 times	106	44.9	24	57.9
4 times	57	24.2	128	20.4
5 or more times	53	22.5	45	10.9

respectively had stopped between 6-11 months of age (Table 7). The majority (>80%) of the children aged 6-24 in the two study populations were prematurely introduced to foods other than breast milk between the time of birth and the fifth month of life. A significant proportion (Hawd 82, 6% and Addun 61.5%) were introduced to complementary feeding at 0-3 months

Only 4.7 % and 11.3% of the children in Hawd and Addun livelihoods were correctly introduced to complementary feeding, at the recommended age of 6 month. *Facts for Life (2002)* recommends that children aged 6 – 24 months are fed 5 or more times in a day, only 22.5% and 10.9% of the assessed children in both studies fed their children more than five times a day as recommended. A large proportion of the assessed children were fed two to three times a day. A very small proportion (<10%) were fed only once a day.

4.5 Household Food Security

Fig: 4.5.1 Food Consumption



As shown in figure 4.5.1 four of the frequently consumed food groups were cereals, sugar, oil and milk. Cereal-based diets were consumed by all the assessed households. The consumption of meat, pulses, roots, fruits vegetables and fish was low in both Hawd and

Addun livelihoods. Although the contribution of micronutrients to the growth and development of individuals is important, the consumption of micronutrient rich foods like meats, fruits, eggs and fish remained low. This may be due to limited access due to availability and cost in addition to knowledge on the importance of consuming these micronutrients.

4.5.2: Main source of food, Cereals and Milk

	Hawd		Addun	
	n	%	N	%
<i>Main source of food</i>				
Purchasing	273	79.3	235	75.1
Borrowing	53	15.5	63	20.1
Food aid	10	2.9	9	2.9
Gifts	6	1.8	6	1.9
<i>Main source of cereals</i>				
	N=342		N=313	
Purchasing	267	78.1	224	71.6
Borrowing	50	14.7	44	14.1
Food aid	13	3.8	28	8.9
Gifts	9	2.6	8	2.5
Gathering /wild	2	0.6	-	-
Bartered	-	-	1	0.3
<i>Main source of milk</i>				
Purchasing	199	58.4	174	55.6
Borrowing	20	10.6	15	4.8
Own production	36	10.6	72	23.0
Gifts	4	1.2	2	0.6

In both assessments, the household's main source of food was through purchasing, mainly cereals, as shown on table 4.5.2

However a significant proportion also reported accessing food through borrowing (Table 4.3). There were similar high proportions of milk was purchased in the households in both livelihoods. Only 10% and 23 % of the milk consumed in the households in Hawd and Addun respectively was from production.

4.5.3: Dietary Diversity

Table 4.5.3 Dietary Diversity

<i>No of food groups consumed</i>	Hawd		Addun	
	N	%	N	%
1 food groups	0	0	1	0.3
2 food groups	8	2.3	4	1.3
3 food groups	32	9.4	47	15.0
4 food groups	111	32.6	101	32.3
	76	22.3	79	25.2
5 food groups	41	12.0	43	13.7
6 food groups	26	7.6	21	6.7
7 food groups	32	9.4	16	15.1
8 food groups	14	4.1	1	0.3
9 food groups	1	0.3	0	-
10 food groups				
<i>Overall summary</i>				
1-3 food groups (not diverse)	40	11.7	52	16.6
≥ 4 food groups (diverse)	301	88.3	261	83.4
Mean HDDS	5.1(SD=1.7)		4.7 (SD=1.9)	

As reflected in the food consumption pattern, the majority of the households (88.3% and 83.4) in the Hawd and Addun pastoral livelihoods, consumed a diet of more than four food groups reflecting dietary diversity.

The mean household diversity score (HDDS) for the assessed households in the Hawd and Addun pastoral livelihood zones was 5.1± 1.7 and 4.7± 1.9). About 16.8% of the households assessed in the Addun were not consuming a diversified diet (<4 food groups in the 24 hours preceding the assessment), while in the Hawd, 11.7% of the households

were not consuming a diversified diet. Focus group discussions highlighted that recent in-migrant IDPs from Mogadishu lack income and have increased pressure on the precarious food security situation in the Hawd and Addun communities on whom they depend for support.

4.6: Nutrition Status

4.6.1 Malnutrition by Livelihoods

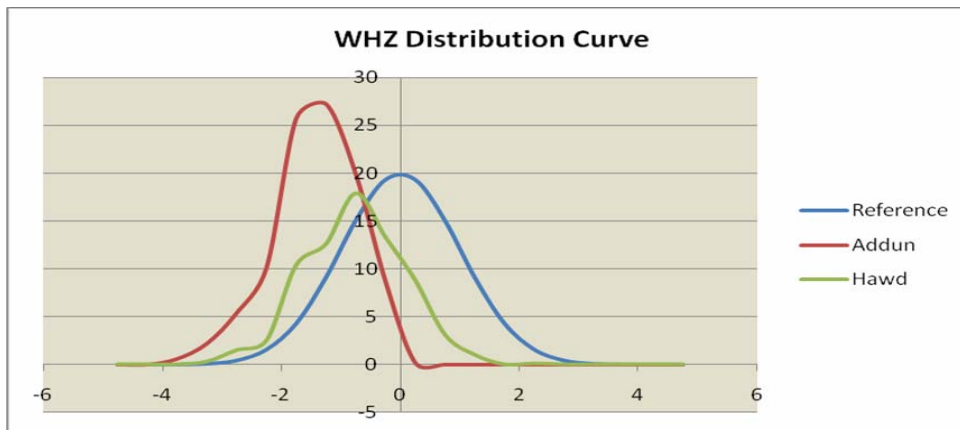
A total of 683 (49.5% boys and 50.5% girls) and 643 (53.2% boys and 46.8% girls) children from the Hawd and Addun pastoral livelihoods were assessed from 343 and 313 households (mean household size=6.2±2.4 and 6.1±2.4) respectively, to determine their nutritional status. The global acute malnutrition (GAM) rate (weight for height <-2 Z score or oedema) for the Hawd livelihood was **19.3%** (CI: 15.6-23.02) with a SAM rate of **2.3%** (CI: 0.92-3.77), and oedema of 0.3% (CI: -0.20-0.69).. In the Addun population, the GAM rate was 18.4% (CI: 14.9-21.8) with a SAM rate, **2.8%** (CI: 1.2-4.4) and one (0.2% CI: - 0.17-0.48) oedema case recorded. Results from both livelihoods indicate a **Critical** nutrition situation, with no statistically significant change from the last nutrition assessments conducted in November 2007. These rates are similar to those from two most recent assessments conducted in the region by FSAU & partners in Nov '07 which reported GAM rates of above 15% in the Hawd (17.2%; (14.1 – 20.5) and Addun (15.9%; (12.8 – 18.9) livelihoods indicating a *Critical* nutrition situation at the time; with the exception of one assessment conducted by ACF in Dusamareb district in December 2007, which reported a GAM rate of 12.4% (10.1-14.6) and a SAM rate of 1.3% (0.4-2.1) indicating a *Serious* nutrition situation in this area at the time.

A summary of the findings for the acute malnutrition rates is given in table 4.6.

Table 4.6: Summary of Malnutrition rates by Livelihood systems

Indicator	Hawd		Addun	
	N	%	N	%
Global Acute Malnutrition (WHZ<-2 or oedema)	132	19.3 15.6-23.02	118	18.4 14.9-21.8
Severe Acute Malnutrition (WHZ<-3 or oedema)	16	2.3 0.92-3.77	18	2.8 1.2-4.4
Oedema	2	0.3 -0.20-0.69	1 0.16	0.16 -0.17-0.48
GAM estimates by WHO Anthro (2005) Standards:	140	20.5 (17.4-23.0)	123	19.1 16- 22.2
SAM estimates by WHO Anthro (2005) Standards:	31	4.5 (2.9-6.2)	37	5.8 (3.9- 7.6)
Globl Acute Malnutrition (WHM <80% and/or oedema)	65	9.5 6.6-12.4	63	9.8 6.6-12.9
Severe Acute Malnutrition (WHM<70% or oedema)	5	0.7 0.01-1.4	6	0.9 -0.1-1.98
Proportion of stunted children (HAZ<-2)	94	13.8 10.7-16.8	88	13.7 10.1-17.3
Proportion of underweight children (WAZ<-2)	199	29.2 23.8-34.5	210	32.7 28.3-36.9

When estimated using WHO Anthro (2005) Reference standards, as expected, slightly higher GAM rates and almost double SAM rates were reported from the two study populations: the Hawd pastoral livelihood zone reported a GAM rate of **20.5 %**(17.4-23.0) and a SAM of **4.5%** (CI: 2.9-6.2), and the Addun livelihood assessment reported a GAM of **19.1%** (CI: 16- 22.2) and a SAM of **5.8%** (CI: 3.9- 7.6).



There is a significant deviation of the WHZ distribution curve to the left indicating a poor nutritional situation in both livelihoods according to international (WHO) standards. The mean WHZ for Hawd and Addun livelihoods were -1.25 (SD=0.81) and -1.42 (SD=0.71) respectively. A summary of the ENA for SMART Nutrisurvey quality checks for the assessments is given in appendix 7.

4.6.1: Malnutrition by Sex in the two Livelihoods

Table 4.6.1: Distribution of children by nutritional status (WHZ-score or oedema) and child sex

Nutrition status	Hawd				Addun			
	Males		Females		Males		Females	
	N	%	n	%	n	%	n	%
GAM (WHZ<-2 /oedema)	77	22.8	55	15.9	71	20.0 %	47	15.6
SAM (WHZ<-3 /oedema)	9	2.7	7	2.0	11	3.2 %	7	2.3
Oedema	1	0.3	1	0.3	1	0.3%	0	0.0%

The assessment found that a higher proportion of assessed boys were acutely malnourished compared to the girls as shown in table 4.6.1. In the surveyed population using weight for height <2 Z score or presence of oedema, boys in the Hawd pastoral livelihood were 1.2 times more likely to be acutely malnourished than girls and the difference was found to be statistically significant (RR= 1.23; CI: 1.04-1.46, p<0.05). However, no significant difference between the two sexes was noted in the Addun pastoral livelihood. Furthermore, children from male-headed and female-headed households did not show any statistically significant difference in their risk to acute malnutrition.

4.6.2 : Malnutrition by Age in the two livelihoods

Table 4.6.2 Distribution of Acute Malnutrition (WHZ Scores) by Age

Age (months)	Hawd		Addun	
	SAM	GAM	SAM	GAM
6-17	3(1.9%)	20(13.0%)	3(2.2 %)	26((19.4)
18-29	7(4.1%)	32(18.9%)	3(1.9 %)	28(17.6 %)
30-41	2(1.2%)	32(19.6%)	6(4.4 %)	21(15.4 %)
42-53	3(2.5%)	32(26.7%)	5(3.7 %)	31(23.0%)
54-59	1(1.3%)	16 (20..8)	1(1.3 %)	12(15.2 %)
Total	16(2.3%)	132(19.3%)	18(2.8 %)	118 (18.4 %)

Analysis of distribution of acute malnutrition between the different age groups in both livelihoods showed that all the groups had equal risk of acute malnutrition. This is reflected by the breastfeeding age group 6-24 months and the 25-59 months category showed no statistical difference in acute malnutrition rates ($p>0.05$) in Addun and Hawd pastoral livelihoods. Equally there was no statistical difference ($p>0.05$) in acute malnutrition levels among the 6-29 months and 30-59 months age bands in the Addun and Hawd pastoral livelihoods.

4.7: Acute Malnutrition by MUAC

Table 4.7 Child and Maternal Malnutrition by MUAC

Malnutrition rates	Hawd		Addun	
	No	% (CI)	No	% (CI)
<i>Child MUAC</i>	683			
GAM (MUAC< 12.5 cm or oedema)	28	4.1. 2.0-6.9	25	3.9 2.47-5.4
SAM (MUAC< 11.0 cm or oedema)	7	1.0 0.4-2.3	2	0.3 (-0.13-0.75)
<i>Pregnant Women MUAC</i>	N=84		N=77	
Total malnourished (MUAC< 23.0 cm)	18	21.4 13.2-31.7	21	27.3 17.7-38.6
Severely malnourished (MUAC≤ 20.7 cm)	4	4.8 1.3-11.7	2	2.6 0.3-9.1
<i>Non pregnant women MUAC</i>	N=260		N=229	
Total malnourished (MUAC≤ 18.5 cm)	2	0.8 0.1-2.8	1	0.40.0-2.4
Severely malnourished (MUAC< 16.0 cm)	2	0.8 0.1-2.8	0	0.0

Based on MUAC measurements, acute malnutrition rates (MUAC< 12.5 cm or oedema) of 4.1 and 3.9 % were reported in Addun and Hawd Pastoral livelihoods respectively

(Table 4.7) indicating alert nutrition situation in Addun and Hawd pastoral areas. As expected, the MUAC results were different given different and fewer children are identified as acutely malnourished using this indicator in the Somali pastoral populations, therefore were not consistent with weight-for-height estimates of acute malnutrition. Among the assessed women, relatively high acute malnutrition rates were recorded in the pregnant women (MUAC < 23.0 cm) ranging from 21.4 % and 27.3% in the Hawd and Addun pastoral livelihoods respectively as indicated in Table 4.7. Pregnancy raises physiological and nutritional demands of women making them vulnerable to malnutrition. Low malnutrition rates (<2%) were recorded among the non pregnant women.

4.8 Mortality

A total of 10389 persons, 2209 of them under fives from 1850 households were assessed for mortality in the two livelihood-based assessments. Out of these, a total of 54 deaths were reported, 27 of them children under five years of age. The specific distributions of these figures per livelihood are shown in table 4.8

	Hawd		Addun	
	U5	Total	U5	Total
Total HHs surveyed		1000		852
Total Population assessed in HHs	1262	5198	947	4198
Number who joined the HHs	22	162	9	99
Number who left the HHs	23	279	21	357
Number of births	77	77	76	76
Number of deaths	15	29	12	25
Mortality rate	1.35	0.62	1.45	0.65
	(0.82-2.22)	(0.43-0.88)	(0.83-2.52)	(0.44-0.95)

The Hawd and Addun pastoral livelihoods recorded respective crude and U5 mortality rates of **0.62** (0.43-0.88) and **1.35** (0.82-2.22); and **0.65** (0.44-0.95) and **1.45** (0.83-2.52) in that order. These rates were all below the alert level according to WHO classification. (Table 4.8). Diarrhoeal diseases, febrile illness, birth related complications (poor birth outcome) and ARI were the main reported factors associated with under-five mortality according respondents' recall. Diarrhoea, malaria and birth related complications were also reported as the main causes of death among adults and children aged 5 years and above.

4.9 Qualitative Information

Qualitative information was derived from focus group discussions, key informants and review of secondary reports. The discussions were centred on food security, water & sanitation and childcare practices

The *Gu'08* seasonal rains were generally late, the first rainfall started on 3rd of May. Rainfall received in both livelihood zones was generally poor and below normal. It was also reported during the focus group discussions that Addun livelihoods received first showers during the first week of May; however, rains had intensified and improved both pasture and water in most parts of Jariiban and Hobyo.

Addun in Galgadud had experienced poor rainfall and partly replenished *berkads*. Livestock body conditions remain poor and milk production is insignificant. There was also livestock migration out of the area to coastal deeh and cowpea belt areas in central, due to the lack of adequate water and pasture. This reduced the availability of livestock products and subsequently households income. Both the terms of trade of milk versus cereal, and goat to cereal had drastically declined to the lowest ever recorded (FSAU Market update, June 08). The cost living therefore became more complicated due to the relentless price increase of both food and non-food essentials. Inflow of the IDPs from southern regions as well as the poor pastoral households continue to mount up regularly in the main towns mainly for labour opportunity against further stress of vulnerable households.

The main sources of water reported were *berkads*, hand dug wells, taps/piped water (mainly urban) and few bore-holes. The few functioning wells are in poor condition due to lack of appropriate maintenance. The distance between water points and settled villages is very far ranging between 20-45 kms. In some of the areas where water is accessible the focus groups reported that waiting time was between 2-4 hours. An unidentified disease is contributing to deaths of sheep and goats in all Hawd and Addun Livelihoods with goats being the most affected.

The most common reported diseases among children reported at the time of the survey were ARI, diarrhoea and malaria. There were also reports of some cases of measles. Additionally the focus group discussions revealed that residents of some of the villages have to travel an average of 30 kms to reach the nearest health facility, thus limiting access except for the most severe cases.

Common diseases in adults include: anaemia, common cold, malaria and pulmonary TB. Some of the villages have trained community workers and traditional birth attendants. The focus group discussions from the central team revealed that the residents sought medical care for children only when the illness had deteriorated and home remedies had failed. It was also established from the focus group discussions that the very poor households could not afford medical care.

In the central regions, infrastructure and other public services are limited. Enrolment and attendance of the children in schools is extremely poor. Education facilities are

confined in the main urban centres, such as Dusamareb, Guricel, Abudwaq, Elbur, and adaado, but the quality of education is poor due to lack of qualified teachers and lack of teacher's incentives. In addition to the basic social services in the northeast region such as education and health are slightly better than the central regions.

Child feeding and child care practices remain largely suboptimal based on *Facts for life, 2002* recommendations. Breastfeeding duration for children is usually for a maximum of 12 -15 months with very few extending to 24 months from birth. Water is often given to the newborn at birth. A sugary solution is given to the baby within the first week of life, while most children are given complementary food (animal milk – mostly goat milk) before they are one month old. For most children, semi solid foods are introduced as early as 3-4 months of age and solid foods like rice or canjera are introduced at the age of 8-12 months. The main foods given to infants (0 – 12 months) are goats milk 3 to 4 times a day in most cases and sometimes *canjero* or rice mixed with sugar and oil/butter and porridge (flour, sugar and oil). Shortage of food, close pregnancy intervals and sometimes ill health are the main constraints to breastfeeding of young children below two years. However cultural beliefs sometimes also negatively affect breastfeeding. Lack of clean water, cooking & storage facilities and too much domestic work for women were mentioned as the main hindrances to food preparation and storage. Women have to travel long distances at times (during dry spells) or spend a lot of time away from home and do not have enough time to prepare food.

5.0 Discussion and Conclusion

Findings from the Hawd assessment indicate a (GAM) rate (weight for height <-2 Z score or oedema) of **19.3%** (CI: 15.6-23.02) and SAM rate of **2.3%** (CI: 0.92-3.77), with oedema of 0.3% (CI :-0.20-0.69) recorded. In the Addun population, a GAM rate of **18.4%** (CI: 14.9-21.8) and SAM rate of **2.8%** (CI: 1.2-4.4) with one (0.2% CI: - 0.17-0.48) oedema case was recorded.

Results from both livelihoods indicate a **Critical** nutrition situation, with no statistically significant change from assessments conducted in the region by FSAU & partners in Nov '07 which reported GAM rates of above 15% in the Hawd (17.2%; (CI: 14.1 – 20.5) and Addun (15.9%; (CI:12.8 – 18.9) at the time; with the exception of one assessment conducted by ACF in Dusamareb district in December 2007 which reported a GAM rate of 12.4% (10.1-14.6) and a SAM rate of 1.3% (0.4-2.1) indicating a *Serious* nutrition situation in this area at the time. The retrospective crude and under five mortality rates are **0.62** (0.43-0.88) and **1.35**(0.82-2.22) respectively in the Hawd, and **0.65** (0.44-0.95) and **1.45**(0.83-2.52) respectively in the Addun livelihood zones. The CMR and U5MR rates are below the emergency thresholds of *1/10,000/day* and *2/10,000/day* respectively indicating an acceptable situation according WHO standards. Diarrhoea, febrile illness, ARI and birth related complications were the main reported causes of deaths in the three livelihoods

High morbidity rates in the Hawd and Addun livelihood zones continue to compromise the nutrition situation of the populations. 44.3 % and 57.1 % of the assessed children in the Hawd and Addun reportedly suffered from one or more communicable childhood diseases in the two weeks prior to the assessments.

Assessment findings reveal high levels of reported diarrhoea in Addun and Hawd populations (18.6% and 20.5% respectively) in the two weeks prior to the assessment. High incidences of ARI (35.8%, and 29.4 %) and febrile illnesses (22.1% and 11.4%) for Hawd and Addun respectively, were also reported in the two livelihoods. These levels were consistent with seasonal morbidity patterns recorded from the health facilities. Rapid Diagnostic Tests (RDT) conducted for malaria however ,reported high (9-11%) positive rates of 11.9 % (N=1208), and 9.3 % (N=1230) for *Plasmodium falciparum* in the Hawd and Addun respectively, particularly in the areas of Galdogob, Bursalah, Borancad and Hasbahale of Eyl district in the north east regions Malaria infection was also found high in Wabho areas in Elbur Abudwaaq, Balanbale and parts of Adaado district. High breeding sites due to use of open water sources such *berkads* , and increased population movements along the Ethiopian border could likely be the underlying causes of elevated Malaria in the region. Analysis continues to show strong significant association between acute malnutrition and morbidity rates. For example, in the Addun livelihood, children who had diarrhoea were nearly 1.5 times more likely to be acutely malnourished than those who had no diarrhoea (RR=1.50; CI: 1.05-2.14). Even though a high proportion of children reportedly fell ill in the two weeks prior the assessment in the Hawd, there was no statistical association between acute malnutrition and morbidity among the assessed children (P>0.05).

Findings indicate generally poor infant and child feeding practices. Among the assessed children aged 6-24 months in the Hawd and Addun livelihoods, only 38.1% and 33.5% respectively were breastfeeding at the time of the assessment. In addition, only 4.7 % and 11.3% of the children in Hawd and Addun livelihoods were correctly introduced to complementary feeding at the recommended age of 6 months. *Facts for Life (2002)* recommends that children aged 6 – 24 months be fed 5 or more times in a day. However, only 22.5% and 10.9% of the assessed children in both studies fed their children five times or more in a day. These practices indicate poor feeding habits which could have contributed to acute malnutrition considering their increased demand for adequate quality and quantity food. So far, dietary diversity in the assessed Hawd and Addun livelihood households was satisfactory, with both households consuming an average of four food groups or more. The most commonly consumed foods were cereals, sugars oil and milk. Consumption of diversified diet assists in mitigating the poor nutritional situation to some extent. Analysis of distribution of acute malnutrition between the different age groups in both livelihoods showed that all the groups had equal risk of acute malnutrition. The age group 6-24 months and the 25-59 months category showed no statistical difference in acute malnutrition rates among them ($p>0.05$) in Addun and Hawd pastoral livelihoods. Equally there was no statistical difference ($p>0.05$) in acute malnutrition levels among the 6-29 months and 30-59 months age bands in both the Hawd and Addun pastoral livelihoods.

Low coverage of health programmes are important risk factors to the poor nutrition situation in Central and parts of north east regions. The reported vaccination status for measles for eligible children (9-59 months old) was low at only 20.9% and 8.8 % in Hawd and Addun livelihoods respectively. The assessment found a very low proportion of women to have received the tetanus vaccination. Vitamin A supplementation and polio vaccination status was also low. Overall, coverage for all the health programmes fell below the recommended 95% level (Sphere, 2004). In the two livelihoods, access to safe drinking water is low with nearly (50%) of the assessed households from both the Hawd and Addun livelihoods reportedly accessing water from unprotected sources (open *berkedes*, streams, open wells and water catchments). Access to clean water is essential in preventing diarrhoeal illnesses. Additionally, a large proportion of the households in the Hawd (41.1%) and Addun (39%) did not have access to sanitation facilities and used the bush for faecal disposal. This practice may have increased the risk of contamination of water sources particularly during rainy period and led to the high levels of diarrhoeal diseases, contributing to the critical nutrition situation.

In conclusion, the critical nutrition situation observed in both Hawd and Addun in North East and central regions is attributed to reduced access to milk, and income from livestock sales, both of which are linked to poor livestock body conditions. The FSAU report in April '08 highlighted that livestock body conditions for all species have deteriorated and are well below average in all areas. The FSAU market update indicates that food prices have dramatically increased during the last 12 months with no signs to decline as food prices increase globally. The lack of adequate health facilities in the area is also a major issue; and poor child feeding, poor access to water and sanitation all remain the main contributing factors to the high levels of acute malnutrition in the Hawd and Addun livelihoods.

6.0 Recommendations

In view of the deteriorating nutrition situation in the Hawd and Addun pastoral livelihoods, intervention efforts need to be strengthened and broadened to address both immediate life saving needs and long term strategies. The assessment team also makes the following recommendations:

Immediate Interventions

- Improve the coverage for health programmes, especially for measles vaccination and vitamin A supplementation. Outreach immunization campaigns are required in both Hawd and Addun livelihood zones.
- Rehabilitation of acutely malnourished children through existing selective feeding programs in the central and north east regions, including targeted outreach supplementary feedings programs where possible. Capacity building of the existing MCH staffs and the community to manage acutely malnourished children could be explored.
- Provision of programmes that improve and sustain dietary diversity and promote consumption of micronutrient rich foods.
- Intervention programmes on malaria prevention are essential, particularly to target malaria hot spot areas such as Galdogob, Bursalah and Hasbahale of Eyl district, as well as Elbur, Abudwaaq and Balanbale districts.
- Intervention programmes to increase safe water consumption and promote sanitation and hygiene practices including health education need to intensify.

Long term Interventions

- Encourage comprehensive and effective strategies to tackle the chronic malnutrition through participatory techniques with community members and representatives from the public, and private sectors in the region.
- Address the issues of limited access to safe water, through rehabilitation/protection of water systems including the wells and water catchments.
- Provision of veterinary services: There is also a need to urgently provide veterinary services for the livestock in the community to control the spread of the reported livestock diseases.
- Establish or expand the health facilities and satellite services using mobile clinics especially in the pastoral villages with no health facilities.
- Intensify health and nutrition education activities at the household level to address care concerns, targeting mothers, and other caregivers. The main areas of focus should include promoting exclusive breastfeeding, appropriate young child feeding, dietary diversification, and improvements in household hygiene including health care
- Intensify peace building efforts both at local and national level.

7.0 APPENDICES

Appendix 1: NUTRITION ASSESSMENT HOUSEHOLD QUESTIONNAIRE, 2008

Household Number _____ Date _____ Team Number _____ Cluster Number _____ Cluster Name _____

District: _____

Q1-8 Characteristics of Household

Q1. Household size⁴? _____

Q2. Number of children less than
5 years (0-59 months)? _____

Q3. Sex of household head⁵? 1=Male 2=Female

Q4a. How long has this household lived in this locality? 1= Resident 2= IDP<6 months 3=IDP >= 6 months

b. Are you hosting any recently (in the last 6 months) internally displaced persons? 1= Yes 2= No

c. If yes, Number of persons _____

Q5. Does household have mosquito net? _____ 1= Yes 0= No Q6. If yes, ask to see the net: _____ 1= GFSOM label 2=Other
type3= Not seen

Q7. What is the household's main source of income? 1= Animal & animal product sales 2= Crop sales 3= Trade 4= Casual labor
5= Salaried/wage employment 6= Remittances/gifts/zakat 7= Others, specify

Q8-15 Feeding and immunization status of children aged 6 – 59 months in the household.

⁴ Number of persons who live together and eat from the same pot at the time of assessment

⁵ One who controls and makes key decisions on household resources (livestock, assets, income, and food), health and social matters for and on behalf of the household members.

First Name	Age (months) <i>(if child is more than 24 months old, skip to Q13)</i>	Q8 (If 6-24 months) Are you breastfeeding ⁶ the child? <i>(if no, skip to Q10)</i> 1=Yes 2= No	Q9 (If 6-24 months) If breast feeding, how many times/day? 1=2 times or less 2=3-6 3=On demand	Q10 (If 6-24 months) If not breast feeding, how old was the child when you stopped breast-feeding? 1= less than 6 months 2=6-11 months 3=12 – 18 months 4= \geq 18 months 5= Never breastfed	Q11 (If 6-24 months) At what age was child given water/ foods other than breast milk? 1=0-3 months 2=4-5 months 3=6 months 4=7 months or more.	Q12 (If 6-24 months) How many times do you feed the child in a day <i>(besides breast milk)</i> ? 1= 1 time 2=2-3 times 3=4 times 4= 5 or more times	Q 13 Has child been provided with Vitamin A in the last 6 months? <i>(show sample)</i> 1=Yes 2= No	Q14 (If \geq 9 months old) Has child been Vaccinated against measles? 1=Yes 2= No	Q15 Has the child ever been given polio vaccine orally? 1=Yes 2= No
1									
2									
3									
4									

Q16-27 Anthropometry and morbidity for children aged 6 – 59 months in the household

First Name <i>(follow same order as in Q 8-15)</i>	Q16a Age	Q16b Sex 1=Male 2=Female	Q17 Oedema 1=yes 0= No	Q18 Height (cm) <i>To the nearest tenth of a cm</i>	Q19 Weight (kg) <i>To the nearest tenth of a kg</i>	Q20 MUAC (cm) <i>To the nearest tenth of a cm</i>	Q21 Diarrhea ⁷ in last two weeks 1= Yes 0= No	Q22 Serious ARI ⁸ in the last two weeks 1=Yes 0= No	Q23 Febrile illness/suspected Malaria ⁹ in the last two weeks 1=Yes 0= No	Q24 (If \geq 9 month) Suspected Measles ¹⁰ in last one month 1=Yes	Q25 Did the child sleep under a mosquito net last night? 1=Yes	Q26 Where did you seek healthcare assistance when child was sick? <i>(If yes in Q21 – 24)</i> 1=No assistance sought 2=Own medication 3=Traditional healer 4=Private clinic/ Pharmacy	Q27 Is the child currently registered one of the following 1= SFP 2= TFC 3= OTP/C 4= Other 5=None

⁶ Child having received breast milk either directly from the mothers or wet nurse breast within the last 12 hours

⁷ Diarrhoea is defined for a child having three or more loose or watery stools per day

⁸ ARI asked as of wareen or warento. The three signs asked for are cough, rapid breathing and fever

⁹ Suspected malaria/acute febrile illness: - the three signs to be looked for are periodic chills/shivering, fever, sweating and sometimes a coma

¹⁰ Measles (Jadeeco): a child with more than three of these signs– fever and, skin rash, runny nose or red eyes, and/or mouth infection, or chest infection

										0= No	0= No	5= Public health facility	
1													
2													
3													
4													

28: Anthropometry (MUAC) for adult women of childbearing age (15-49 years) present at the household

Sno	Name	Age (years)	Received Tetanus vaccine? 1= Yes 2= No	MUAC (cm)	Physiological status 1=Pregnant 2= Non pregnant	Illness in last 14 days? If yes, what illness?
1	Mother:					

Codes for adult illnesses	
0= None	1= ARI
2=Diarrhoeal	3=Malaria/febrile
4=Joint	5=Urinal
6=Organ	7=Anaemia
8= Reproductive	9=Other, specify

Q 29 Food Consumption & Dietary Diversity

Twenty four-hour recall for food consumption in the households: The interviewers should establish whether the previous day and night was usual or normal for the households. If unusual- feasts, funerals or most members absent, then another day should be selected.

Food group consumed: What foods groups did members of the household consume in the past 24 hours (from this time yesterday to now)? Include any snacks consumed.	Did a member of your household consume food from any these food groups in the last 24 hours? 1=Yes 0= No	*Codes:	
		1= Own production 2=Purchases 3=Gifts from friends/ relatives 4=Food aid 5=Bartered	6=Borrowed 7=Gathering/wild 8=Others, specify____ 9=N/A
Type of food		What is the main source of the dominant food item consumed? (Use codes above)?	

1. Cereals and cereal products (e.g. maize, spaghetti, rice, caanjera, bread)?		
2. Milk and milk products (e.g. goat/camel/ fermented milk, milk powder)?		
3. Sugar and honey?		
4. Oils/fats (e.g. cooking fat or oil, butter, ghee, margarine)?		
5. Meat, poultry, offal (e.g. goat/camel meat, beef; chicken or their products)?		
6. Pulses/legumes, nuts (e.g. beans, lentils, green grams, cowpeas; peanut)?		
7. Roots and tubers (e.g. potatoes, arrowroot)?		
8. Vegetables (e.g. green or leafy vegetables, tomatoes, carrots, onions)?		
9. Fruits (e.g. water melons, mangoes, grapes, bananas, lemon)?		
10. Eggs?		
11. Fish and sea foods (e.g. fried/boiled/roasted fish, lobsters)?		
12. Miscellaneous (e.g. spices, chocolates, sweets, beverages, etc)?		
Q30 In general what is the <u>main</u> source of staple food in the household? (*Use codes in 29 above) _____		
Q31 Total number of food groups consumed in the household (count from Q 29 above): _____		

Q32 How many meals¹¹ has the household had in the last 24 hours (from this time yesterday to now)? 1= One 2=Two 3= Three

¹¹ A meal refers to food served and eaten at one time (excluding snacks) and includes one of the three commonly known: - breakfast, lunch and supper/dinner

Q33-38 Access to water (quality and quantity)

- Q33a What is the household's main source of drinking water? 1 = Tap/ piped water 2= Tanker truck 3= Tube well/ borehole 4= Spring
5= Bottled water
6= rooftop rainwater 7= Surface water (river, stream, dam, pond, open well; water catchments; berkad, etc)
- Q33b Is drinking water drawn from a protected/safe source? 1= Yes 2= No
- Q33c If household has no access to safe protected water what is the main reason? 1= Not Available 2= Distance too far 3= Security Concerns 4=Cannot afford 5=Other
- Q33d Do you get a reliable supply of drinking water from this source? 1= Reliable supply 2=Seasonal supply 3= Occasional problems
4= Frequent problems
- Q34a Is water treated at the source or storage level? 1= Yes 2= No
- Q34b If treated, what is the method of treatment? 1= Boiling 2= Chlorination 3= straining/filtering 4= Decanting/ letting it stand and settle
5= Other, specify
- Q35 What is the household's main source of water for other domestic uses? 1 = Tap/ piped water 2= Tanker truck 3= Tube well/ borehole 4= Spring
5= Rooftop rainwater 7= Surface water (river, stream, dam, pond, open well; water catchments; berkad, etc)
- Q36 Average time taken to and from the nearest water point (*including waiting and collecting time*) 1= <30 min 2=30 – 60 min 3= 1-2 hrs 4= more than 2 hrs
- Q37 Number of water collecting and storage containers of 10-20 litres in the household: 1=1-2 containers 2= 3-4 containers 3=4-5 containers
4= more than 5
- Q38 How is water stored in the household? 1= Clean containers with cover 2= Closed plastic containers 3= open buckets/ pans 4= *Ashuun* (with constricted neck/end)

Q39-43 Sanitation and Hygiene (access and quality)

- Q39a Type of sanitation facility used by most members of the household 1= Flush toilets 2= Ventilated Improved pit latrine (VIP) 3= Traditional pit latrine/ Open pit
4= Bush/open ground
- Q39b If household has no access to sanitation facility, what is the main reason? 1= Pastoral/ frequent movements 2= Lack resources to construct
3= Doesn't see the need
- Q40 Distance between latrine and water source (if underground or surface source) 1=1- 30 metres 2=30 metres or more 3=N/A (mainly if using bush)
- Q41 How many households share/use the same facility? 1= One 2= 2- 9 3= 10 or more 4=N/A (mainly if using bush)
- Q42 Maintain basic hygienic hand washing practices (e.g. before eating, feeding the baby, cooking; after eating, cleaning the baby's bottom; etc)? 1= Yes
2= No
- Q43 What washing agents do you use in your household? 1=Soap 2=Shampoo 3=Ash 4=Plant extracts 5=None

Checked by supervisor (*signed*): _____

Appendix 3: Clusters Sampling for Hawd & Addun_May assessment

		Underfive	Pop est	clusters
Elgaras		730	3650	1,2
Ellahelay		659	3295	3
Jalam	Libile	1980	9400	14
Gosol	Xawalabadan	96	480	15
Elbur wstern		1000	5100	6,7
Caalkowwale		2380	11450	18
Cee	Hulkujir	85	425	17
Igarweyne		126	630	9
Balambal		700	3500	18
Wad		130	650	10
Xasan barre		64	320	19
Saarsaarey		120	600	11
Wabxo		630	3150	20
Seego		70	350	12
Maxas		450	2250	21
Wsi		500	2500	13
Mogokori		240	1200	22
Caadawo		290	1450	14
town dibir		1700	8500	23
Ardaal cadde		100	500	24
Galinsoor		640	3200	25
Jiriban		1120	5600	18,19
Malaasle		160	800	20
Bubi		160	800	21
Balibusle		620	3100	22
Galxagar		291	1455	23
Godob		860	4300	24
Godob CAddun		60	300	25

Hawd Clusters

		<5	POP est	clusters
Ba'adweyn		2100	10500	1
Hema		380	1900	2
Xarfo		860	4300	3
Galdogob		5860	29300	4,5,6
Bursalah		1695	8475	7
Borancad		30	150	8
Xamxamaa		260	1300	9
Burtinle Town		5060	25300	10,11,12

Appendix 4. Hawd & Addun Assessment -May- 2008 Assessment Team

N o	Name	Possition	Locations	Cluster Numbers
	Team One			
1	Abdulkarim Husein duale(FSAU)	Supervisor	Godob	24
2	Fadumo ahmed Hersi	Team leader	Godob CAddun	25
3	Mohamed Ali shire	RDT	Xam-xamaa	9
4	Siciid C/laahi cilmi	enumerat or	Xasbahale	15
5	Cusmaan c/risaaq Jaama	enumerat or		
	Team Two			
1	Mohamed Faatax Maxamuud	Supervisor	Bacadwey	1
2	Huruuse Cabdi Cilmi	Team Leader	Hema	2
3	A/Nour C/risaaq Mire	RDT	Xarfo	3
4	Mohamed Nuur Geelle	Enumorat or	Malaasle	20
5	Cumar siciid Mohamed	Enumorat or	B/busle	22
	Team Three			
1	Mohamed Mohamuud Hassan(FSAU)	Supervisor	Jariiban	18,19
2	Hassan Ali Awad	Team Leader	Buubi	21
3	Sacdiyo Maxamed xirsi	RDT	Galxagar	23
4	C/naasir Xaabuun	Enumorat or		
5	Astur Mohamed Faarax	Enumorat or		
	Team Four			
1	Fuad Hassan Mohamed(FSAU)	Supervisor	Goldogob	4,5,6
2	C/kariim Faarax Guutaale	Team Leader	Bursaalax	7
3	Xaawo ahmed cilmi	RDT	Boraan-cad	8
4	Warsame Maxamed Faarax	Enumorat or		
5	C/fataax Barre Nuux	Enumorat or		
	Team Five			
1	C/laahi Warsame Maxamed(FSAU)	Supervisor	Buurtinle	10,11,12
2	C/nour Xasan Axmed	Team	Jalam	13

		Leader		
3	Hassan Husein	RDT	Dogob	14
4	Ruquyo diiriye Xassan	Enumurat or		
5	Maxamed Axmed Xirsi	Enumurat or		
	Team six			
	Abdirizak Mohamed Ahmed -supervisor(SRCS)	Supervisor	Elgras	1
	Seynab Ahmed Mohamed -T leader	Team leader	Elgras	2
	Saccido Ahmed Hesri -RTD	RDT	Hawalobadan	5
	Cabdi Ibraahin Abdullahi	Enumurat or	Ceelkooimbale	8
	Halimo Diiriye	Enumurat or	Ceelgarweyne/sarsar ey	9,13
	Team Seven			
	Hibo Jamac Hashi (FSAU data Assistants)	Supervisor		
	Abdi Fataax Mohmaud Ahmed	Team leader	Abudwaq	16
	Maryan Abdullahi Hersi- Nurse RDT	RDT	Hulkujir	17
	Khadiijo Jaamc Mohamed - Enumrator	Enumurat or	Balambal	18
	Mahad Abdullahi Hassan - Enumurator	Enumurat or	Hassan Barre	19
	Team Eight			
	ALI Sheikh Mohamed – Supervisor(FSAU data assistant/ SAHED)	Supervisor		
	Asad Mohamed Ahmed - Team leader	Team leader	Adaado	23
	Safiyo Adan Moahmed - Nurse RDT	RDT	Ardo	24
	Jawahir Shire Dalab- Enumurator	Enumurat or	Galinsor	25
	Saafi Ahmed Elmi- Enumurator	Enumurat or	Wad	10
	Team nine		Libile	4
	Ahmed Hassan Ali – Supervisor(FSAU data Assistant)	Supervisor	Seego	12
	Ali Warsame wehliye -Team leader	Team leader	Wisil	13
	Saccdo Ahmed Mohamed -	RDT	AfBarwaaqo	14

	RDT			
	Mahad Ahmed Shhuriye	Enumerator	Ceeldibir	15
	Abdulqaadir Nur Afdhuub-Enumerator	Enumerator	Jilibile	17
	Team ten		Cigaal Cadde	16
	Fisa Nur Farh- Supevisor(FSAU data Assistant)	Supervisor	Elhele	3
	Omer Abdullahi Arab- Team leader	Team leader	Elbur	6,7
	Bashir Abdi Ibrahim - RDT	RDT	Wabho	20
	Sacdiyo Mohamed Mohamud - Enumerator	Enumerator	mahas	21
	Fadumo ali	Enumerator	mahas	22

APPENDIX 5: TRADITIONAL CALENDAR

Year Significant Event		Age in Months	Monthly event specific to that year	Recurring yearly events
2008	May			Rabilthani- Jamatulawil
	Apr	1		Rabiicul Aakhir
	Mar	2		Rabiicul-Awal
	Feb	3		Safar
	Jan	4		Sako
2007	Dec	5		Arafo
	Nov	6		Sidatal
	Oct	7		Soonfur
	Sept	8		Shacbaan- Ramadan
	Aug	9		Rajab- shacbaan
	July	10	Bilowgii Dayrta	Jamdul-akhir-Rajab
	June	11		Jamatulawil-jamtulakhir
	May	12		Rabilthani- Jamatulawil
	Apr	13	Bilowgii Guga	Rabiawal- rabialthani
	Mar	14		Safar- Rabici-awal
	Feb	15	Gubashadii Buulo Ajuuran	Muharam-Safar
	Jan	16	Bilowgii Jiilaalka	ThulQada-Muharam
	2006	Dec	17	Dagaalkii Maxkamadaha iyo TFG
Nov		18		Shawal- Thulqedah
Oct		19	Bilowgii Dayrta	Ramadan- Shawal
Sept		20		Shabaan- Ramadan
Aug		21		Rajab- shabaan
July		22	Qaraxii Baydhabo,	Jamtulakhir-Rajab
June		23	Qabsashadii Maxkamadaha ee Xamar	Jamatulawil-jamtulakhir
May		24		Rabilthani- Jamatulawil
Apr		25	Bilowgii Guga	Rabiawal- rabilthani
Mar		26		Safar- Rabiawal
Feb		27		Muharam
Jan		28	Bilowgii Jiilaalka	Thulhijah- Muharam
2005		Dec	29	,
	Nov	30		Shawal- Thulqedah
	Oct	31	Bilowgii Dayrta	Ramadan- Shawal
	Sept	32		Shabaan- Ramadan
	Aug	33		Rajab- shabaan
	July	34	Bilowgii Xagaaga (gubashadi Buulo Ajuuraan)	Jamtulakhir-Rajab
	June	35		Jamatulawil-jamtulakhir
	May	36		Rabilthani- Jamatulawil

	Apr	37	Bilowgii Guga	Rabiawal- rabilthani
	Mar	38		Safar- Rabi-Awal
	Feb	39		Muharam
	Jan	40	Doorashaddii Cadde, Bilowgii Jiilaalka	Thulhijah- Muharam
2004	Dec	41	Tsunami	Thulqedah- Thulhijah
	Nov	42		Shawal- Thulqedah
	Oct	43	Roobkii Baraf-laha, Doorashadii Madaxweyne C/laahi Yuusuf	Ramadan- Shawal
	Sept	44		Shabaan- Ramadan
	Aug	45		Rajab- shabaan
	July	46	Bilowgii Xagaaga	Jamtulakhir-Rajab
	June	47		Jamatulawil-jamtulakhir
	May	48		Rabilthani- Jamatulawil
	Apr	49	Bilowgii Guga	Rabiawal- rabilthani
	Mar	50		Safar- Rabiawal
	Feb	51		Muharam
2003	Jan	52	Bilowgii Jiilaalka	Thulhijah- Muharam
	Dec	53		Thulqedah- Thulhijah
	Nov	54		Shawal- Thulqedah
	Oct	55	Bilowgii Dayrta	Ramadan- Shawal
	Sept	56		Shabaan- Ramadan
	Aug	57		Rajab- shabaan
	July	58	Bilowgii Xagaaga	Jamtulakhir-Rajab
	June	59		Jamatulawil-jamtulakhir
	May			Rabilthani- Jamatulawil
	Apr		Bilowgii Guga	Rabiawal- rabilthani
	Mar			Safar- Rabiawal
2002	Feb			Muharam
	Jan		Bilowgii Jiilaalka	Thulhijah- Muharam
	Dec			Thulqedah- Thulhijah
	Nov			Shawal- Thulqedah
	Oct		Bilowgii shirkii Eldorate	Ramadan- Shawal

APPENDIX 6: REFERRAL FORM FOR MALNOURISHED CHILDREN

Name of the village: _____ Date: _____

Name of the child: _____ Sex of child: _____

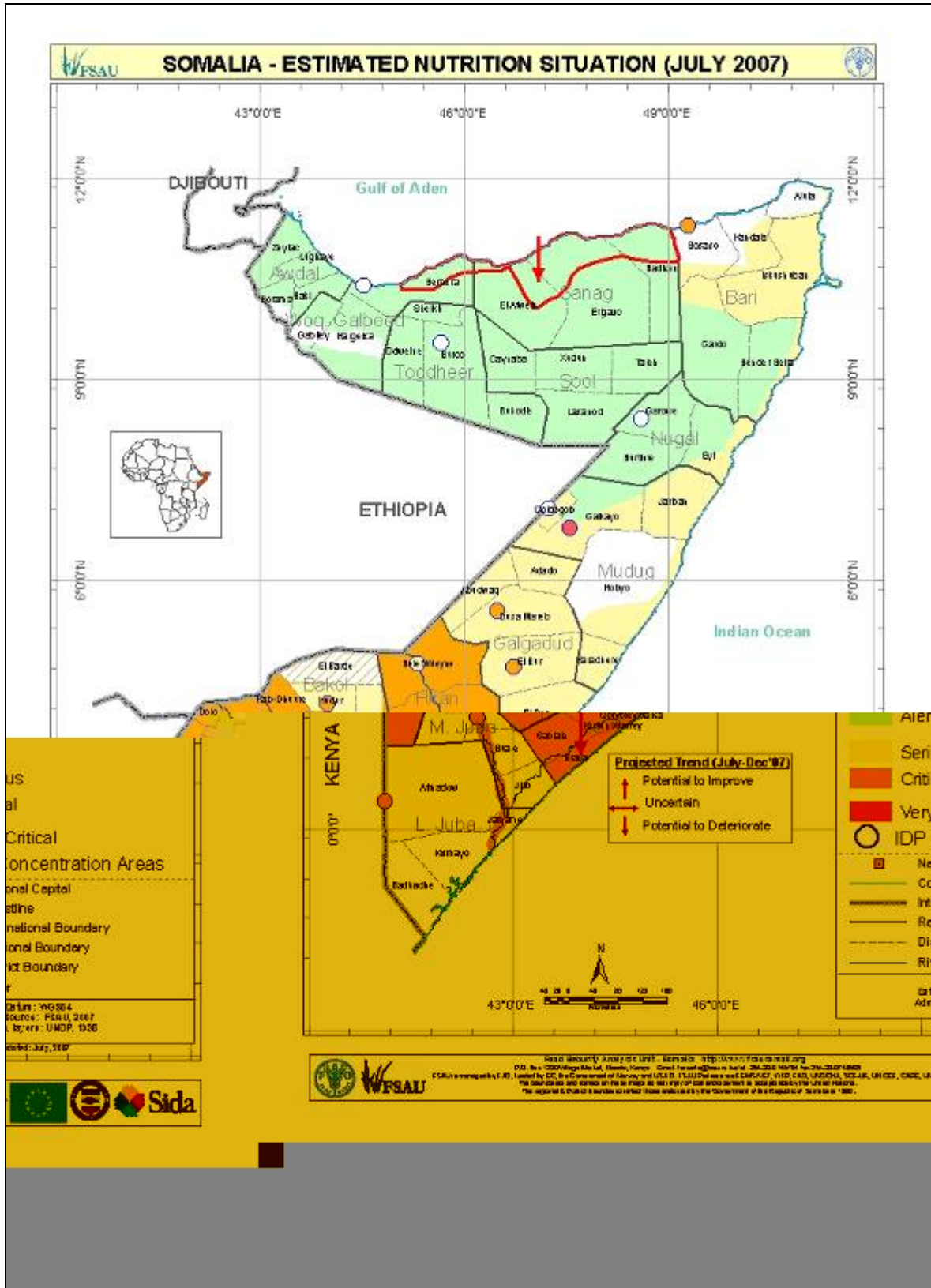
Age of child: _____ Name of caretaker: _____

Child diagnosed (suspected) with (state the condition): _____

Child referred to: _____

Child referred by: _____

Appendix 5.



Appendix 7. Assessments Quality checks- Hawd Assessment

Standard/Reference used for z-score calculation: NCHS reference 1977
(If it is not mentioned, flagged data is included in the evaluation)

Overall data quality

Criteria	Flags*	Unit	Good	Accept	Poor	Unacceptable	Score
Missing/Flagged data (% of in-range subjects)	Incl	%	0-2.5 0	>2.5-5.0 5	>5.0-10 10	>10 20	0 (0.1 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<0.000 10	0 (p=0.789)
Overall Age distrib (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<0.000 10	2 (p=0.093)
Dig pref score - weight	Incl	#	0-5 0	5-10 2	10-20 4	> 20 10	0 (3)
Dig pref score - height	Incl	#	0-5 0	5-10 2	10-20 4	> 20 10	2 (8)
Standard Dev WHZ	Excl	SD	<1.1 0	<1.15 2	<1.20 6	>1.20 20	0 (0.79)
Skewness WHZ	Excl	#	<±1.0 0	<±2.0 1	<±3.0 3	>±3.0 5	0 (0.00)
Kurtosis WHZ	Excl	#	<±1.0 0	<±2.0 1	<±3.0 3	>±3.0 5	0 (-0.03)
Poisson dist WHZ-2	Excl	p	>0.05 0	>0.01 1	>0.001 3	<0.000 5	0 (p=0.362)
Timing	Excl	Not determined yet	0	1	3	5	
OVERALL SCORE WHZ =			<5	<10	<15	<25	4 %

At the moment the overall score of this survey is 4 %, this is good.

Assessments Quality checks- ADDUN Assessment

Standard/Reference used for z-score calculation: NCHS reference 1977
(If it is not mentioned, flagged data is included in the evaluation)

Overall data quality

Criteria	Flags*	Unit	Good	Accept	Poor	Unacceptable	Score
Missing/Flagged data (% of in-range subjects)	Incl	%	0-2.5 0	>2.5-5.0 5	>5.0-10 10	>10 20	0 (0.0 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<0.000 10	0 (p=0.106)
Overall Age distrib (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<0.000 10	0 (p=0.325)
Dig pref score - weight	Incl	#	0-5 0	5-10 2	10-20 4	> 20 10	0 (5)
Dig pref score - height	Incl	#	0-5 0	5-10 2	10-20 4	> 20 10	2 (9)
Standard Dev WHZ	Excl	SD	<1.1 0	<1.15 2	<1.20 6	>1.20 20	0 (0.71)
Skewness WHZ	Excl	#	<±1.0 0	<±2.0 1	<±3.0 3	>±3.0 5	0 (-0.50)
Kurtosis WHZ	Excl	#	<±1.0 0	<±2.0 1	<±3.0 3	>±3.0 5	0 (0.28)
Poisson dist WHZ-2	Excl	p	>0.05 0	>0.01 1	>0.001 3	<0.000 5	0 (p=0.069)
Timing	Excl	Not determined yet	0	1	3	5	
OVERALL SCORE WHZ =			<5	<10	<15	<25	2 %

At the moment the overall score of this survey is 2 %, this is good.

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