Comprehensive Food Security Assessment

SUDAN
North Kordofan

August 2013

Data collected in
April 2012

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EXECUTIVE SUMMARY

The comprehensive food security assessment was conducted in April 2012 by the State Ministry of Agriculture with support from WFP Sudan. The survey covered 9 localities in rural North Kordofan, distributed across eight different livelihood zones. The main objectives of the assessment are:

- to provide a reliable and detailed assessment of the current food security and vulnerability situation of the North Kordofan population;
- to assess some of the causes and risk factors for food insecurity and vulnerability and;
- to identify pockets of vulnerability where assistance and targeting may be required in the future.

The results of the survey are intended to assist WFP and the Government of Sudan in determining the best interventions, improve geographic and social targeting and to help policymakers in exploring options for establishing a food security-based safety net programme.

A classic cluster sampling approach was adopted with locality used as primary clusters. The sampling frame and the primary sampling units were updated according to the census of 2008 and projected up to 2012 using the annual population growth rates, based on information provided by the WFP Area Offices.

Livelihood zones within each locality were also used to stratify the sample. Information was collected from a total of 2,408 households. The total number of sampled cities/villages within each locality was based on the proportion of the population size in the different livelihood zones within each locality.

In total, 172 cities/villages were randomly visited from 9 localities and a minimum of 14 households were randomly selected and interviewed from each location, using a detailed household survey questionnaire designed to measure household food security. Health and feeding information was collected along with the mid-upper arm circumference (MUAC) measure for approximately 2,400 children between 6 and 59 months of age.

Who are the food insecure?

Income and livelihood diversity and asset wealth, access to agricultural production activities and less dependency on markets are all main determiners of household food security. Also, as is clearly seen for households in *Qebaesh*, direct or indirect impacts of conflict also have an impact on households' ability to access enough food or income. The education of the head of household is related to household food security but is likely the factor that influences income and livelihood options.

How many are they?

Findings from the comprehensive food security assessment show that six percent of the households in North Kordofan were food insecure at the time of the survey, and 16 percent were vulnerable to food insecurity.

When using the projected population numbers for 2012, an estimated population of 180,000 people in North Kordofan are food insecure. Furthermore, an estimated population of 450,000 people are vulnerable to food insecurity.

When analysing food security by locality, *Qebaesh* locality has the highest percentage of food insecure households (19 percent) and households vulnerable to food insecurity (34 percent).

What are the interventions recommended?

The following recommendations came from the stakeholder presentation of the assessment findings and the subsequent discussions around interpretation and actions regarding the issues that were raised from the survey analysis. Both the short- and long-term recommendations can and should be implemented jointly by the UN agencies (FAO, UNICEF, UNDP) and line ministries to achieve the desired level of ownership and impacts.

Short term recommendations

- A self-targeting project through food for training to develop the capacity and increase households' resilience in the most food insecure localities (*Qebaesh, Abu Zabad* and *Um Rawaba*). The types of activities recommended are training on handicrafts, agricultural extension/livestock and natural resources reservation (planting of Gum Arabic tree).
- State Ministry of Health is already implementing supplementary feeding programmes in *Qebaesh*. However, expanding the project and combine it with integrated blanket supplementary feeding programme is recommended.
- Provision of livestock loans through Farmers to Markets (F2M) initiatives and introduction of livestock restocking project in *Western Agropastoral millet* and *Gum Arabic* livelihood zones.

Long term recommendations:

- Implementation of two annual rounds of Food Security Monitoring System (FSMS) in the most affected localities in the lean season and during the post-harvest period.
- Expansion of the school feeding programme in most food insecure localities.
- Promotion of natural resources awareness/programmes such as the establishment of woodlots, traces and seedlings production.

North Kordofan Topographic

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Northern

Nile

Khartoum

Sodari

Jebrt El Sheekh

North Kordofan

Bara

White Nile

North Darfur

Wa Banda

El Nehoud

El Obeid

Um Rwaba

Shiekan

Abu Zabad

Qebaesh

East Darfur

South Kordofan

Key Map

WFP Operation
CFSA
Darfur

- - - - Dirt Road
——— Paved Road

N W E S

0 30 60 120 180 240 Kilometers

Data Sources:
VAM Unit : WFP Sudan
Sudan settlements: Sudan Interagency Mapping (SIM)
Sudan boundaries: Sudan Interagency Mapping (SIM)
Date: 27.06.2013

INTRODUCTION

Background

Sudan is one of the most geographically and ethnically diverse countries in Africa. Two rounds of a North-South civil war have cost the lives of 1.5 million Sudanese and the ongoing conflict in the Western region of Darfur has driven 2 million people from their homes. After years of insecurity and displacements, exacerbated by drought, failed harvests and high food prices since 2009/2010, a complex humanitarian crisis continues in most of Sudan.

North Kordofan is one of the largest states in Sudan with a population of 2.9 million as per the 2008 population census. The state borders South Kordofan as well as North and South Darfur, and has therefore inevitably been affected by the security situation in these areas. An influx of IDPs from other states has led to increased pressure on already limited basic services related to health and education.

Furthermore, North Kordofan is semi-arid and prone to both drought and desertification and lack of water is one of the key issues in the state and has been for decades. Consequently, North Kordofan is exposed to both chronic and sporadic food shortages (State Ministry of Health & UNICEF, 2009).

According to the Sudan Social Development Organisation (SUDO), poverty is a key challenge in the state, particularly in rural areas. Additionally, North Kordofan struggles with very poor health indicators and rates for maternal and infant mortality are high.

North Kordofan is traditionally an agro-pastoral community, and the main source of livelihoods is a combination of rain-fed cultivation and livestock keeping. The key economic activity is farming, followed by animal husbandry and trade. During the last decades, drought as well as pest infestation has led to an increasingly difficult situation in North Kordofan (SUDO, 2008). The state is also characterised by complex linkages between environment, poverty and conflict over natural resources that are becoming increasingly scarce. This situation demonstrates the connection between drought, resource degradation and conflict on the one hand and vulnerability to food insecurity on the other.

Food and livelihood assistance in North Kordofan

WFP's operations in North Kordofan State started in 1969 under a school feeding project to assist the government in executing its educational and literacy programmes. Decades later, WFP now works closely with several state ministries such as the Ministry of Education and thee Ministry of Agriculture, as well as national and international NGOs in the state.

In 2012, the main WFP activity in North Kordofan is Food for Education (FFE) targeting approximately 200,000 students in more than 900 schools across the state. With the exception of the FFE programme, the other WFP programmes such as Food for Training (FFT) and Food for Work (FFW) are supported through cash vouchers. Approximately 350,000 beneficiaries are receiving cash vouchers in North Kordofan

Livelihood Zones

There are eight livelihood zones that pass through North Kordofan state which are:[1]

1. **Western and Central Pastoral:** This is a vast zone with a scattered and very sparse population surviving in a semi-desert ecology by mainly nomadic camel and small stock pastoralism. It stretches across the north of *Kordofan* and comprises also the pastoral part of Nile state that lies to the east of the river. Rainfall is between about 50mm and 150mm per year insufficient for crop cultivation except in certain moisture-retaining *wadi* areas in Darfur and Buttana where poorer pastoralists with little livestock have turned to cultivation and usually manage a small millet harvest.

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[1] Livelihoods Zoning "Plus" Activity in Sudan. A special report by the Famine Early Warning Systems Network (FEWSNET) August 2011

2. **Western Agropastoral Millet:** This zone has a plains topography with sand dunes, and stony hills on the far north-west Marra plateau; the natural cover and north sahelian-type scattered bush and grasses. Landholdings tend to be relatively large but yields are low on the infertile sandy soils. Mean annual rainfall in much of the area is well under 300mm, at best marginally adequate for millet cultivation but not for cash crops such as groundnuts or sesame, although small amounts may be grown for home consumption. Rainfall is frequently erratic, with a late or hesitant start up to July, and damaging dry spells thereafter.

3. **North Kordofan Gum Arabic Belt:** This is a plains area straddling the **North** and **South Kordofan** boundaries and stretching into *South* and *North Darfur*. Gum arabic grows naturally across a wide semi-arid area of the country, but this zone offers a special resource in both wild and cultivated gum arabic, thus making a major contribution to Sudan's status as the principal exporter of gum arabic in the world.

4. **Central Rainfed Millet and Sesame Agropastoral:** This zone comprises a south-eastern corner of North Kordofan and has the same plains ecology and infertile sandy soils as the neighboring Western Agropastoral Millet zone, but a little more rainfall at 300-350 mm per year, enough for sesame production as well as reasonably successful millet production. The millet harvests give wealthier people about eight months of staple food consumption, while poorer people have some four months. The main livestock are sheep and goats, wealthier people also own camels. There is some collection of gum arabic.

5. **Flood Retreat:** This zone is composed of separate areas of flood retreat cultivation in the Aroma/Wager area in east North Kordofan (El Gash) and in the Ar Rahad area straddling the boundary of **Northern** and Southern **Kordofan** near the Khor Abu Habil river. Sorghum is the food crop of choice on these fertile alluvial soils, and wealthier farmers can also market a surplus. Poorer households by contrast only manage to produce a harvest to last them some three months of the year, and they are dependent on the market to buy the balance of their requirement. The retreat of the river flood-waters begins in August, allowing the progressive sowing of sorghum for a harvest between December and January. Sorghum has recently replaced cotton as the major cash crop. In addition, there is some production of vegetables, notably tomatoes, and of watermelons, for home consumption and garden marketing.

6. **Rainfed Sorghum Belt:** This is a very extensive zone, which covers a small part in the southern **North Kordofan.** There is substantial and reliable rainfall reaching up to 600 mm annually, and relatively fertile clay and sandy-clay soils. Sorghum is the main crop, but some millet is also grown, while poorer people grow more sorghum than millet. Cowpeas are commonly intercropped with the cereals. Wealthier farmers are normally fully self-sufficient in grain but choose to buy bread as part of their diet. Poorer households are able to feed themselves from their harvest for about half the year before depending on the market and on grain received as direct payment for labour.

7. **Western Agropastoral Millet and Groundnuts:** This zone is largely a plains area with scattered bush cover, sandy soils and average annual rainfall of 250-350 mm. The rainfall is sufficient to support millet on these soils, as well as groundnuts, but is frequently erratic. Watermelon seed and hibiscus are commonly grown and okra is chief amongst vegetables grown for home consumption. There is also livestock herding where small stock that are kept, more sheep than goats by wealthier people, more goats than sheep by poorer people. Better off households also keep small numbers of camels and/or cattle. Conflict is caused by the animals of herders from the north damaging crops as they pass through on their way to dry season southern pastures.

8. **Southeast Semi-Mechanized Rainfed Agriculture:** This is a very large and highly populated zone spreading but covers only the southern corner of North Kordofan state. There are two kinds of production, mechanized plots and smallholdings. In the smallholdings, where the owners cultivate for themselves with traditional ox-ploughing or hand-tilling. Members of these households may also work on the mechanized farms. The clay soils are fertile, and mean annual rainfall ranges from 400 mm in the north to up to 900 mm in the south, where the rains continue into October. The main food crops grown are sorghum and to a lesser extent millet; sesame is the main cash crop, followed by cotton and sunflower seed that are grown by wealthier farmers.

This map has been created by FEWSNET and partners. It is difficult to ascertain the livelihood zones with 100 percent accuracy, and especially the borders of the zones might not accurately reflect the situation on the ground[2].

North Kordofan Livelihood Zones

Livelihood Zones
- Rainfed Sorghum Belt
- Flood-retreat Cultivation
- West and Central Pastoral
- Western Agropastoral Millet
- Cattle Dominant Agropastoral
- North Kordofan Gum Arabic Belt
- Central Rainfed Millet and Sesame
- Western Agropastoral Millet and Groundnuts
- Southeast Rainfed Semi-mechanized Agriculture
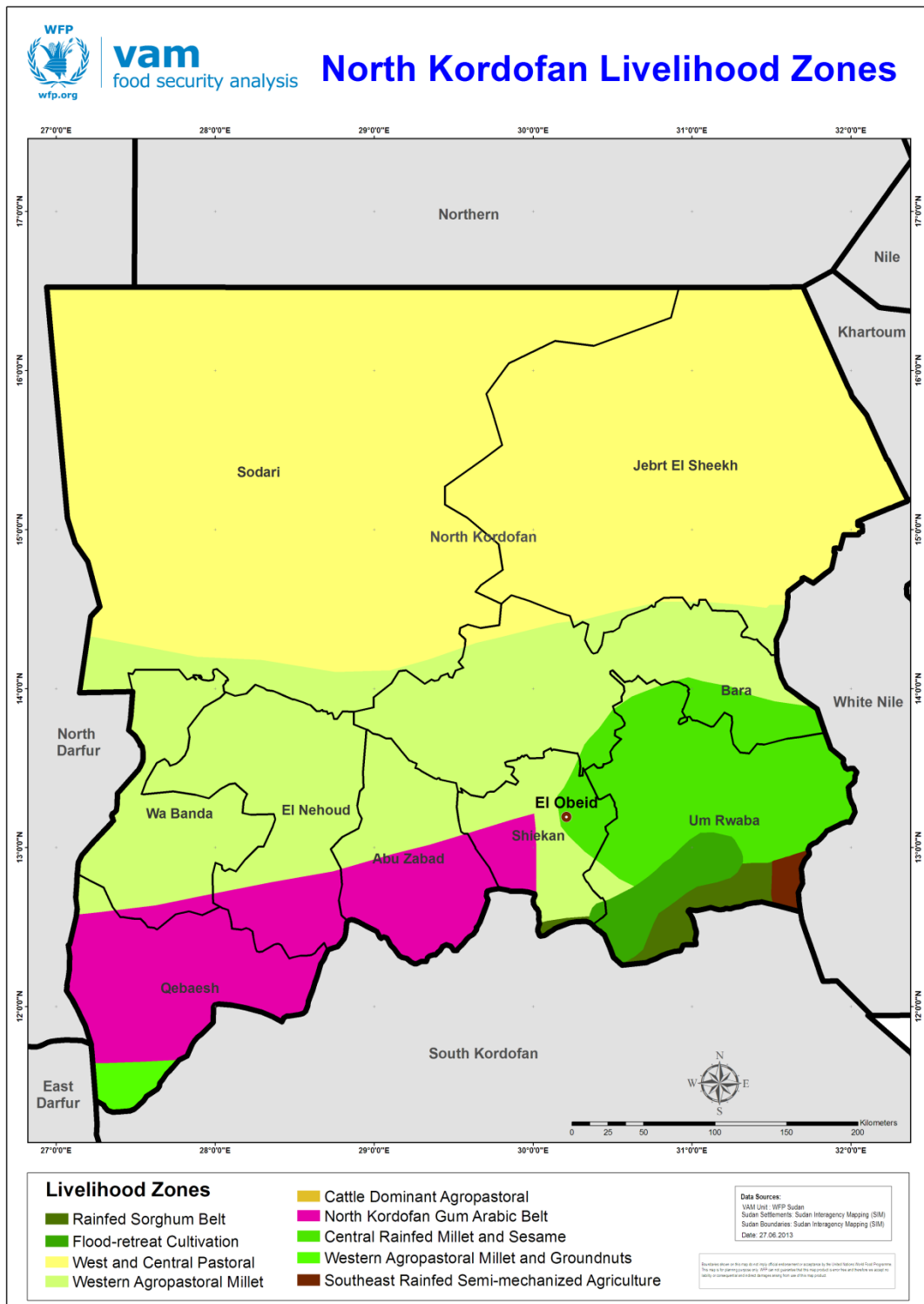
[2] Livelihoods Zoning "Plus" Activity in Sudan. A special report by the Famine Early Warning Systems Network, 2011

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1.0   STUDY OBJECTIVES AND METHODOLOGY

1.1   The need for a comprehensive assessment

A comprehensive food security assessment has never been carried out in North Kordofan, and in light of last years poor harvest, there is a need to assess the situation in North Kordofan properly. The Comprehensive Food Security Assessment was implemented in partnership with the State Ministry of Agriculture.

1.2   Objectives

The primary objectives of the comprehensive food security assessment in North Kordofan are:

- to provide a reliable and detailed assessment of the current food security and vulnerability situation of the population in North Kordofan;
- to assess some of the causes and risk factors for food insecurity and vulnerability and;
- to identify pockets of vulnerability where assistance and targeting may be required in the future.

The results of the survey are intended to assist WFP and the Government of Sudan in determining the best interventions, improve geographic and social targeting and to help policymakers in exploring options for establishing a food security-based safety net programme.

1.3   Sampling

A classic cluster sampling approach was adopted with locality used as primary clusters. In North Kordofan, the sample frame and the primary sampling units were updated according to the census of 2008 and based on information provided by the WFP Area Offices. The 2011 population numbers were created based on the population census numbers from 2008 multiplied with the annual population growth rate. This again, was used as the sample frame for the survey. The survey covered all the 9 localities in North Kordofan sate. The eight livelihood zones within each locality were also used.

The proportions of locality population to the total population within each state were used to determine the sample size. When conducting the survey, information was collected from 2,408 households. The total number of sampled cities/villages within each locality was based on the proportion of different livelihood zones within each locality.

In all, 172 cities/villages were randomly visited from 9 localities and a minimum of 14 households were randomly selected and interviewed from each city/village. When selecting the households, the teams use the city/village centre as a starting point, and head off in different directions to cover the whole city/village. To find the interval between households, the estimated number of households was divided by the number of interviews to be conducted from the location.

If, for some reason, the teams could not reach the sampled location, the teams would select the nearest alternative locations within the same locality and livelihood zone.

1.4   Data collection

WFP has built a strong partnership with the State Ministries of Agriculture across Sudan and are planning to continue this partnership by conducting workshops to build their capacity in terms of food security assessments, data collection and analysis.

The household questionnaire was designed to collection information on livelihoods, risk, and vulnerability in order to best understand food insecurity in the region. The questionnaire was divided into the following 10 modules:

- Household Demographics/Circumstances
- Income and Market
- Expenditures
- Food Sources and Consumption

- Coping Strategies
- Food Aid
- Agriculture
- Household Assets
- Child Feeding and Health
- Mid Upper Arm Circumference (MUAC)

The design of the questionnaire was intended to allow better understanding of the current problems facing the people in North Kordofan and understanding of the types of livelihood activities adopted by food-secure and food-insecure households. This kind of information will help to determine the type of risks affecting food-insecure households and how best to assist them.

The questionnaire was made available in two languages, Arabic and English. The month used as a reference period when reporting all income and expenditures was April 2012.

The data were collected using structured interviews with household members that reflect WFP's Vulnerability Analysis Mapping (VAM) standard framework of key questions which characterize food insecurity and vulnerability. The following questions guided the process of designing and carrying out this study:

- What is the current food security and vulnerability situation of the Darfur population?
- Who are the food insecure?
- Why are they food insecure (causes and risk factors for food insecurity and vulnerability)?
- How many are they?
- Where do they live (identify pockets of vulnerability where assistance and targeting may be required in the future)?
- What can be done to assist (interventions, improve targeting)?

2.0   FOOD SECURITY AND VULNERABILITY ANALYSIS

2.1   Human capital

2.1.1   Demographics

Data from this assessment indicate that the average household size is 6.5 people with approximately 30 percent headed by women. The percentage of female headed households on locality level ranges from 13% in *Shiekan* to approximately 45% in *En Nuhud* and *Sowdari* localities. In North Kordofan, around 8 percent of the households have members with disabilities, the majority of the disabilities being physical.

In this survey, the analysis of household composition in all states shows that approximately 20 percent of the population are children less than five years of age, 35 percent are school aged (6-15 years), around thirty percent are adults of working age (16-60 years) and around twelve percent are elderly.

Households in *Jebrt El Sheikh* and *Qebash* localities have the highest percentage of dependents (< 18 and 60 years or higher) at just under 70 percent. Households in *Abu Zabad* have the lowest percentage of dependents at 58 percent.

Chart 1 – Percentage dependents by locality
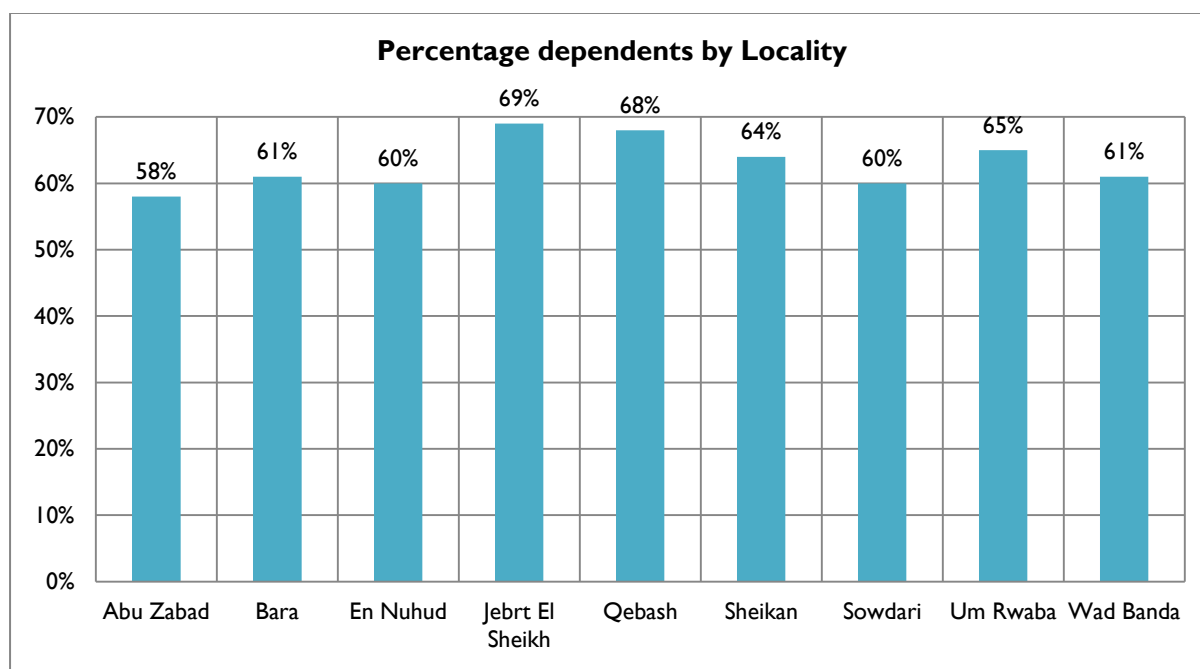
2.1.2   Education

Analysis shows that approximately half of the household heads in North Kordofan do not have any education. Out of the educated heads of household, the majority of the household heads have primary education, with only a very small percentage holding a university degree.

When analysing education level by locality, the highest percentages of household heads with no education are found in *Sowdari* (69 percent), *Jebrt El Sheekh* (64 percent), *Shiekan* (62 percent) and *Qebaesh* (60 percent). The highest percentages of educated household heads are found in *En Nuhud* (81 percent) and *Wad Banda* (77 percent) localities.

Chart 2. Education level by locality

Education level of household head by locality

Legend: ■ None ■ Primary ■ Secondary ■ University
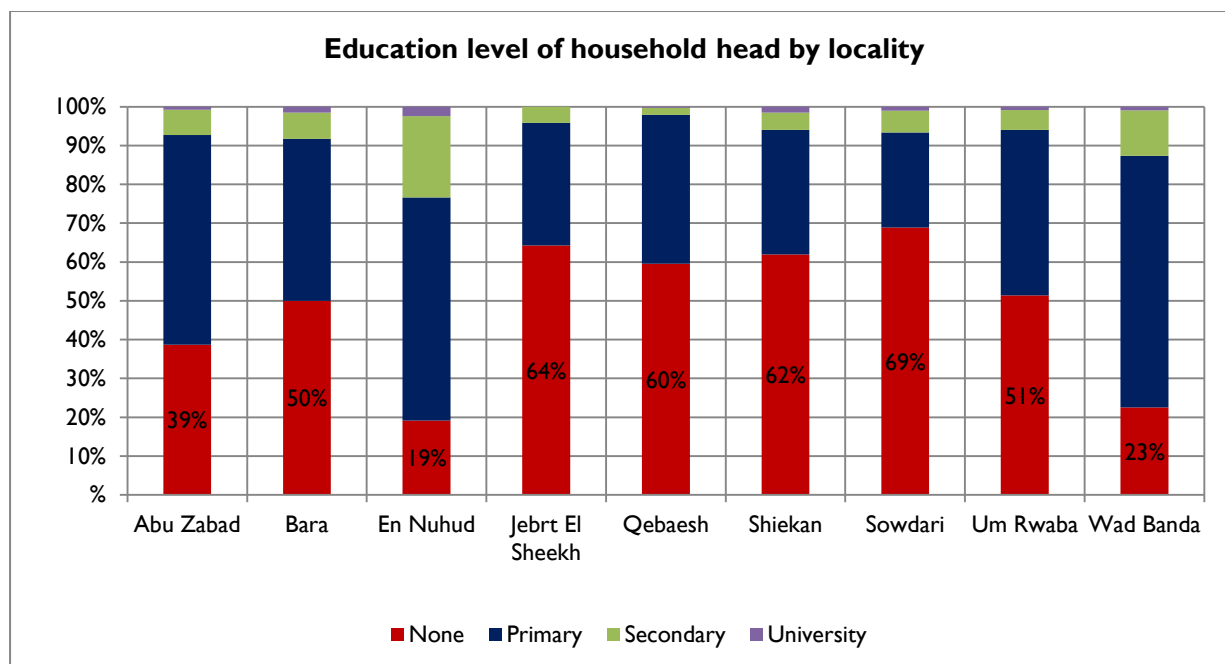
2.2 Natural Capital

2.2.1 Agricultural production at household level

Approximately 80 percent of the survey households had cultivated in the previous season. For those not cultivating, the main reasons were that they were not farmers (65 percent), poor/irregular rains (19 percent) and lack of inputs (11 percent). Approximately 80 percent of the people who cultivate, own the land. For the households who rent, 65 percent repay in cash, while the remaining repay in-kind.

When analyzing cultivation by locality, findings show that around 95 percent of households in *Quebash*, *En Nuhud* and *Abu Zabad* had cultivated compared to only 53 percent in *Sowdari* locality.

Chart 3. Percentage of households cultivating this season

Households cultivating this season
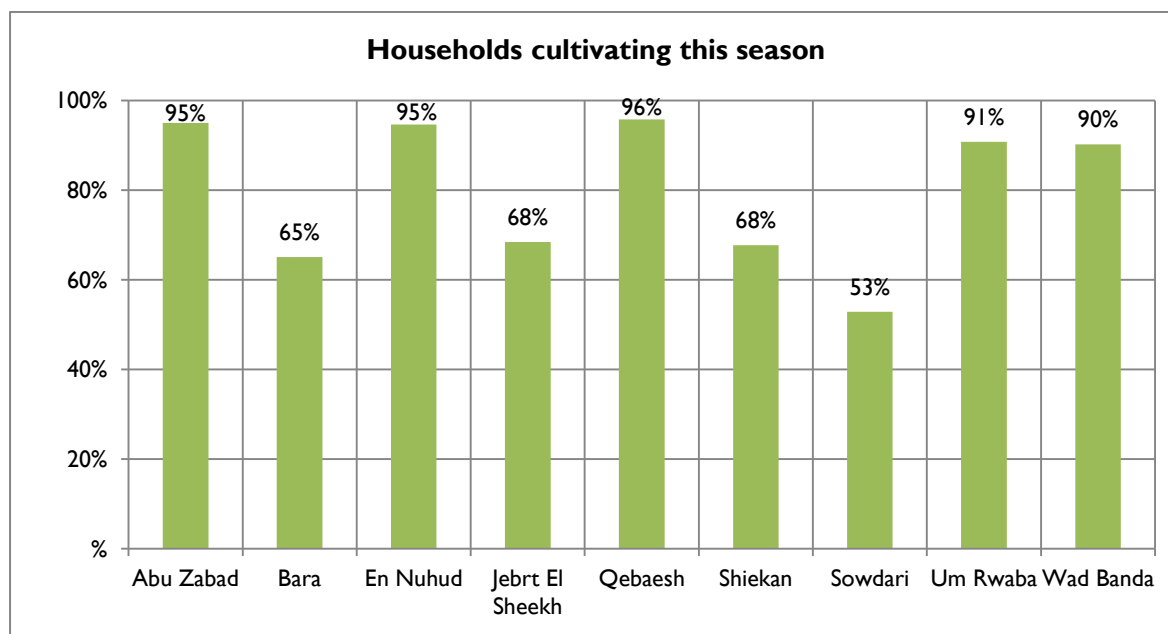
In North Kordofan, about half of the households felt that that the rainfall in the past season in terms of quantity was worse than normal and three-quarters believed the rainfall distribution was uneven.

The most important source of seeds is purchase from the market (54 percent), followed by own production (42 percent) and donations (4 percent).

On average, the area cultivated last year was 4 *feddan* millet, 3 *feddan* of sesame, 2.4 *feddan* of sorghum, and 1.7 *feddan* each for groundnuts and watermelon seeds.

The largest expected average household production in North Kordofan this season is 6.5 bags (45 kg) of groundnut and approximately 2.5 bags (*kentar*) of sesame.

Last year was a below average harvest mainly due to the low and unevenly distributed rainfall.

The chart below shows agricultural production by locality and indicates that households in *Qebaesh* (90 percent) were the most likely to have cultivated last season, followed by *En Nuhud* (85 percent), *Um Rwaba* (82 percent) and *Wad Banda* (80 percent) localities. For *Jebrt El Sheikh* and *Sowdari* localities with very low production, the main crop is millet. For the localities with a high percentage of farmers, the main crops are groundnuts. A high percentage of farming households in *Um Rwaba*, *Sheikhan* and *Bara* cultivated sesame.

Chart 4. Agricultural production by Locality
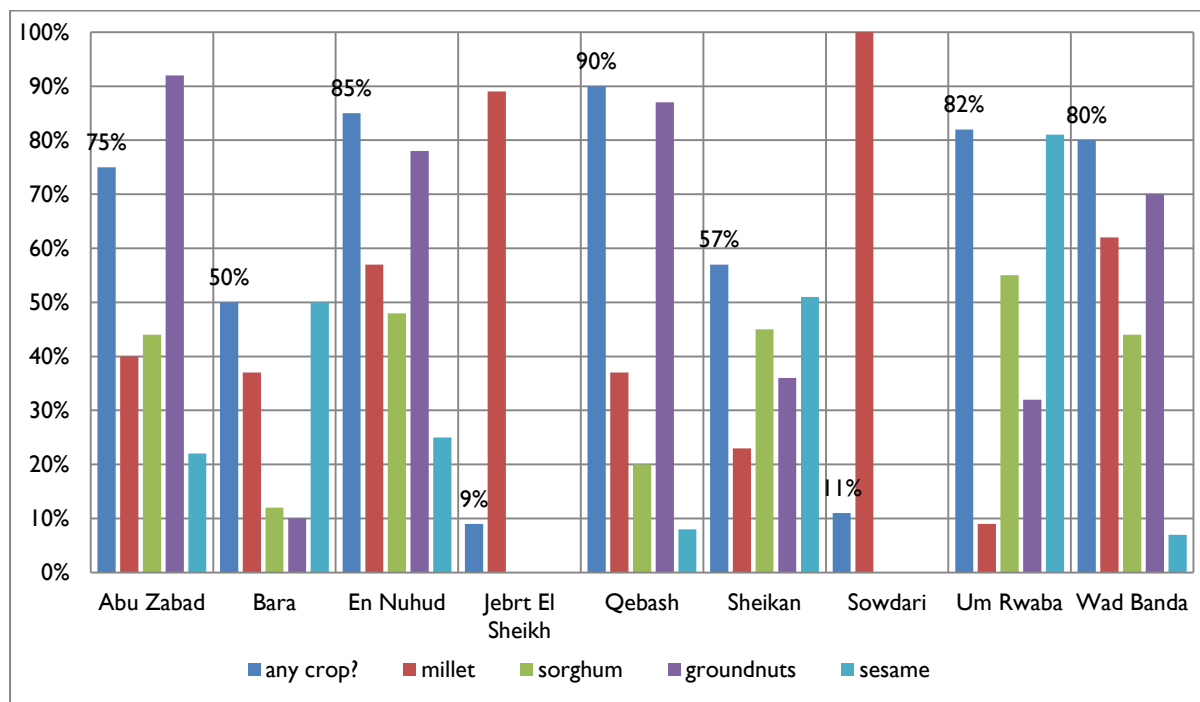
2.2.2 – Livestock ownership

A relatively large percentage of the households in North Kordofan own livestock. The most common animals to own are donkeys (78 percent) with an average ownership of 1-2 animals. Three-quarters of the households own sheep and goats with an average herd of 12 animals. Fifty-seven percent of households own camels with average ownership of 3 animals. Only 9 percent of households own poultry and 7 percent own cattle.

2.3   Physical and financial capital

2.3.1   Housing, water and sanitation

From the survey, the most common housing structure in North Kordofan is a thatched house, with 88 percent, followed by mud/mud brick houses (8 percent). The chart below shows that in *Sowdari*, 23 percent of households live under plastic sheeting. Furthermore, *Jebrt El Sheekh* and *Shiekan* localities have the highest percentages of people living in mud/mud brick houses, 15 and 13 percent respectively.

Chart 5. Type of housing by locality

Type of housing by locality
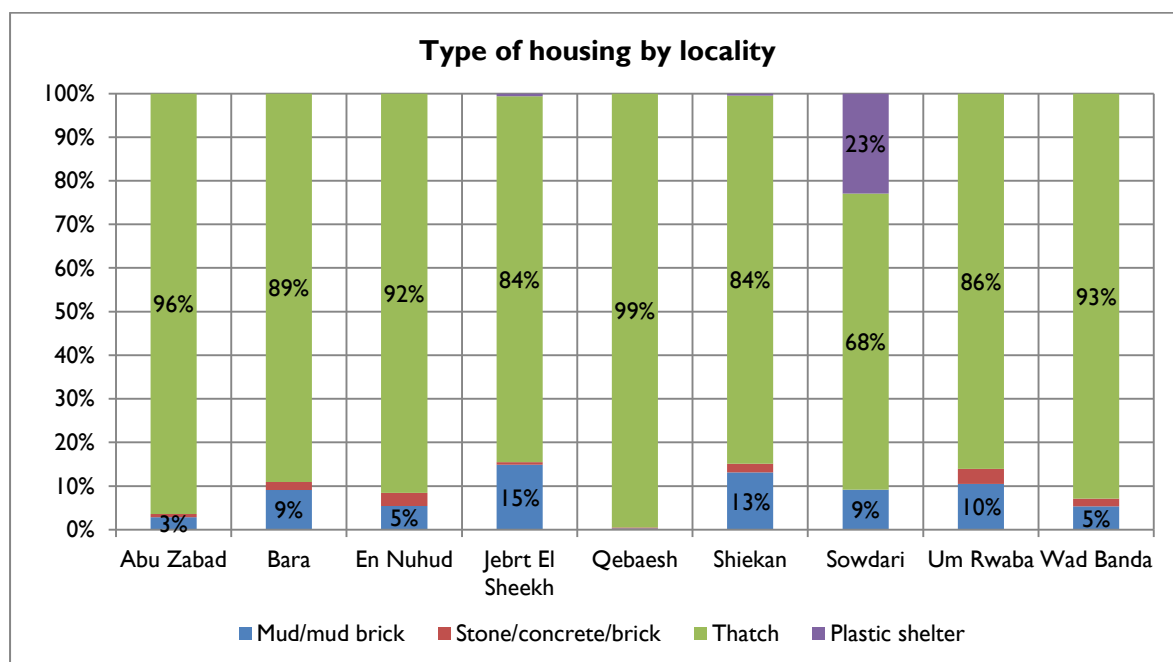
The main source of drinking water is borehole (64 percent), followed by tanker truck (10 percent) and unprotected well (9 percent). Using the UNICEF definition of drinking water from improved sources, the chart below shows that all of the households in the *Qebash* locality sample are using drinking water from an improved source. This compares to only 55 percent of households in *En Nuhud*, 57 percent in *Um Rwaba* and 58 percent in *Abu Zabad* localities.

Chart 6. Water and sanitation by locality

Water and sanitation by locality
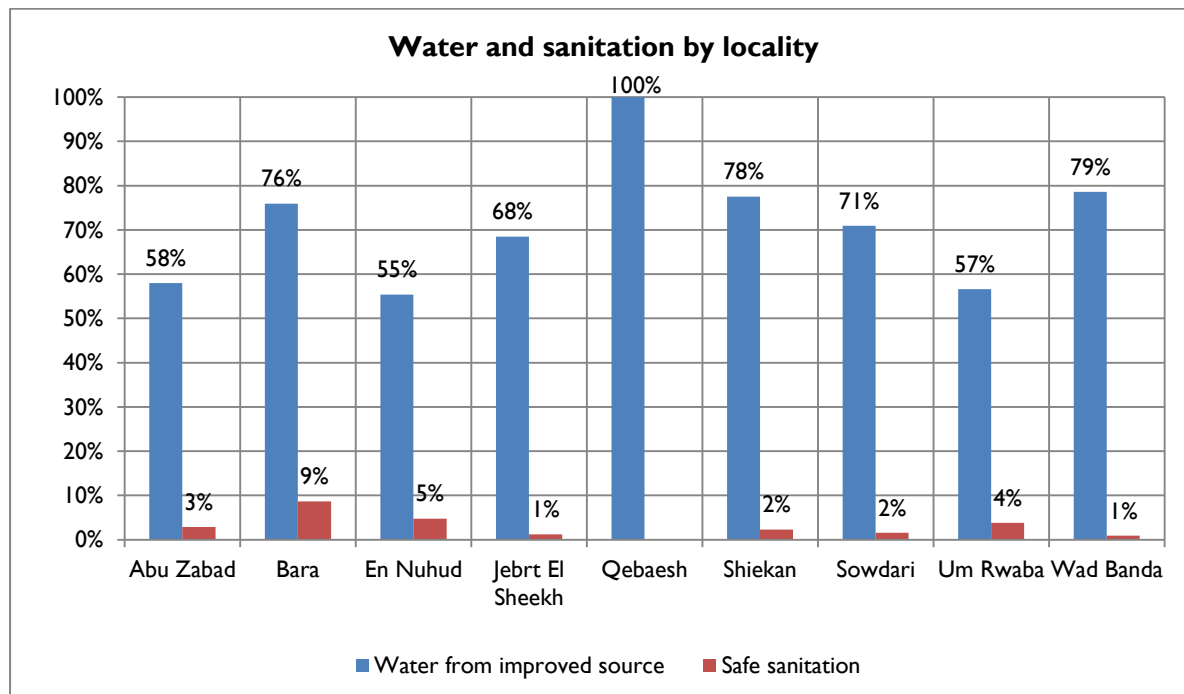
Out of the surveyed households in North Kordofan, 54 percent use traditional pit latrine as toilet facility. For the rest of the households, they use bush/stream (43 percent) as their toilet facility, and a small percentage (3) uses an improved latrine with cement slab which is considered 'improved' by UNICEF standards. The chart above shows that 9 percent of households in Bara locality are using

improved latrines which is the best in the sample. This compares to none of the households in the *Qebaesh* sample and 1 percent each in *Jebrt El Sheekh* and *Wad Banda* localities.

2.3.2   Wealth Index

Wealth is the value of all natural, physical and financial assets owned by a household. While measuring wealth is possible, it is difficult and requires making assumptions about the value of assets. Therefore, as a proxy measure, a wealth index was constructed using a series of different socio-economic measures.

The type of household assets assessed in the survey include: bed, table, chair, lantern, cooking utensils, bicycle, cart, hoe, axe, *muhurat*, radio/tape player, and jewellery or watch. In addition, households were asked about livestock ownership. The most commonly owned assets were bed (95 percent), cooking utensils (89 percent), axe (88 percent) and hoe (85 percent).

The first step in the construction of the wealth index in North Kordofan was to identify a series of assets or socioeconomic proxies that would be a comparable measure of wealth across localities. A number of variables were determined to meet this criterion. Using these variables, a principal component analysis (PCA) was conducted. The first component was selected and wealth quintiles (poorest, poorer, moderate, richer and richest) were developed.

The chart below shows asset ownership by wealth quintile. For all assets, as wealth increases ownership of the various assets also increases. Typical examples are radio and jewellery/watch, where a low percentage of households in the poorest wealth quintile own these assets while all the households in the richest quintile own beds and tables.

Chart 7. Asset ownership by wealth quintile
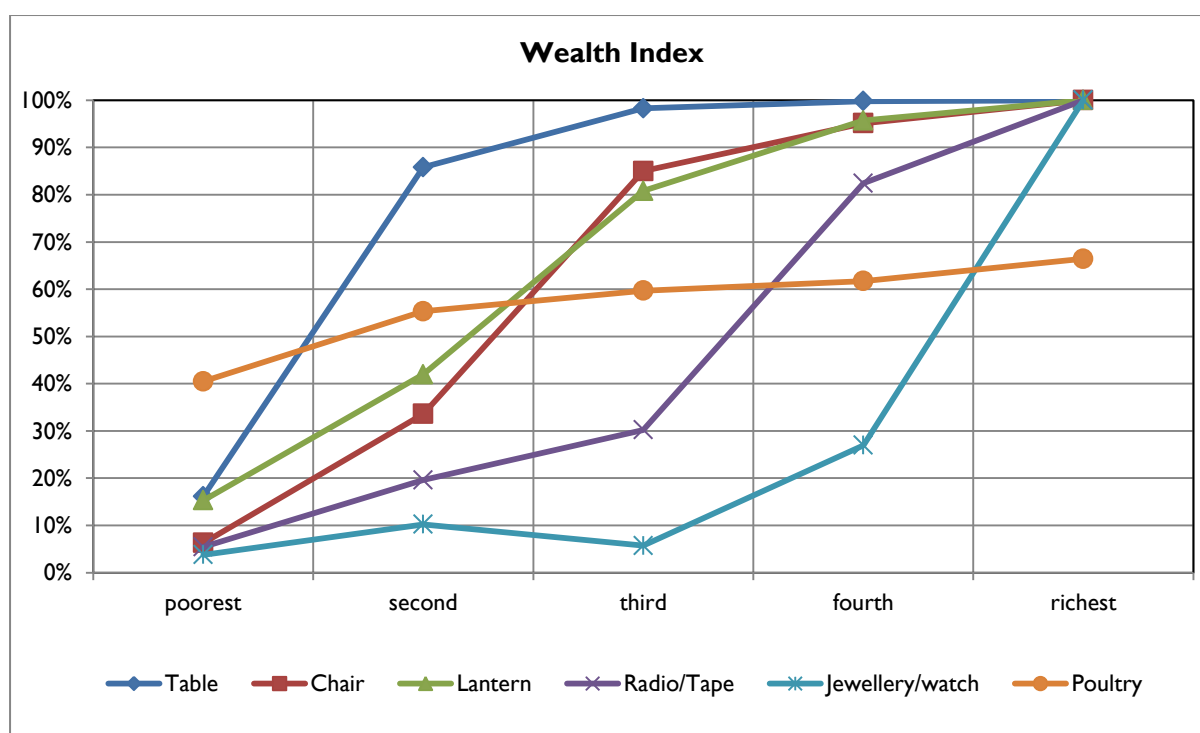
Analysis of wealth by locality show great variations across the localities. In *Qebaesh*, 47 percent of the households are in the poorest quintile and 31 percent in the second quintile. In addition *Jebrt El Sheekh* has high percentages of poor households, with 44 percent in the poorest quintile and 24 percent in the second quintile. The localities with the highest percentage of households in the wealthiest quintile are *En Nuhud* (40 percent) and *Wad Banda* (36 percent).

Chart 8. Wealth quintiles by locality

Chart: Wealth index by locality (stacked bar chart, quintiles: poorest, second, third, fourth, richest)

Locality	poorest	second	third	fourth	richest
Abu Zabad	8%	18%	26%	22%	26%
Bara	13%	12%	24%	27%	23%
En Nuhud	15%	13%	15%	16%	40%
Jebrt El Sheekh	44%	24%	17%	9%	5%
Qebaesh	47%	31%	13%	7%	2%
Shiekan	4%	19%	30%	30%	18%
Sowdari	31%	20%	13%	17%	19%
Um Rwaba	10%	19%	27%	30%	14%
Wad Banda	16%	17%	19%	13%	36%
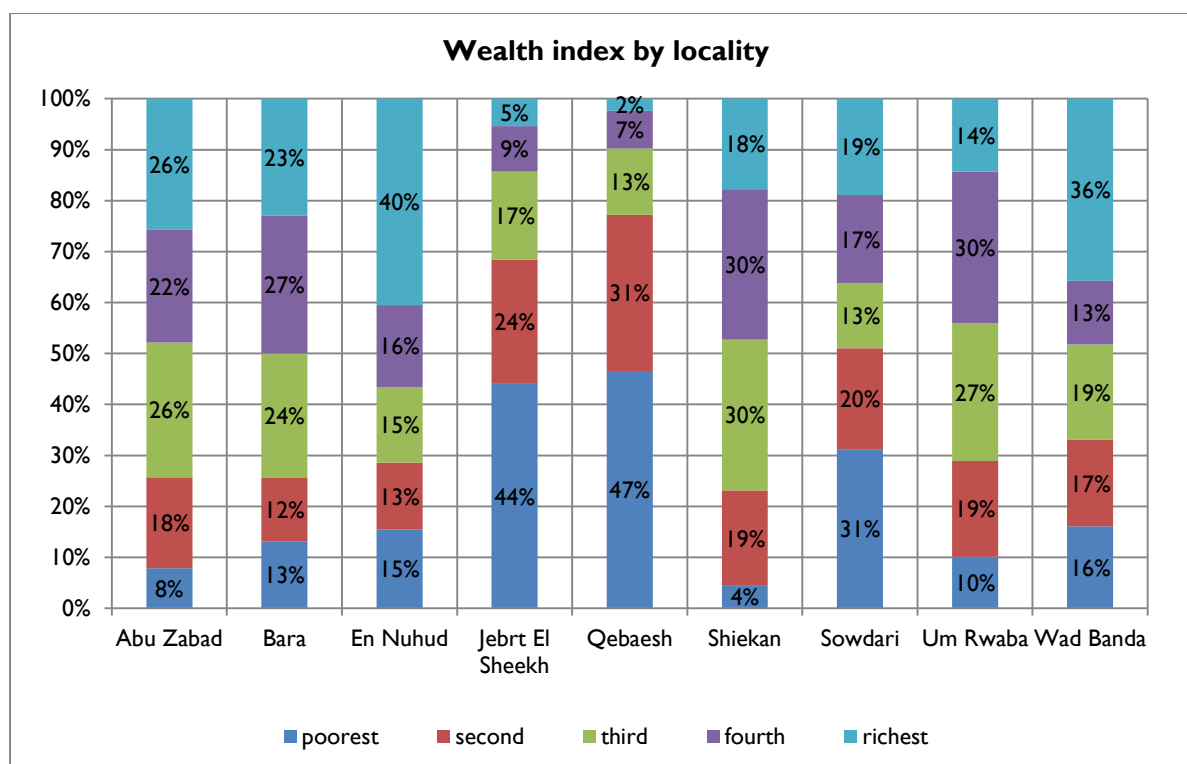
2.3.3 Livelihood zones

In this assessment, eight livelihood zones in North Kordofan state states were visited. The assessment has considered the geographical coverage of each livelihood zones within the localities and the states. The most important livelihood zone is *Western Agropastoral Millet* where 34 percent of the interviewed households live, followed by *Central Rainfed Millet and Sesame* (20 percent) and *North Kordofan Gum Arabic Belt* (18 percent).

Table 1. Livelihood zones

Western Agropastoral Millet	34%
Central Rainfed Millet and Sesame	20%
North Kordofan Gum Arabic Belt	18%
West and Central Pastoral	15%
Western Agropastoral Millet and Groundnuts	5%
Flood Retreat Cultivation	3%
Southeast Rainfed Semi-mechanized Agriculture	3%
Rainfed Sorghum Belt	2%

Analysis of household characteristics shows that the highest percentage of female headed households are in *West and Central Pastoral* livelihood zone (39 percent), while the lowest percentage is found in *Rainfed Sorghum Belt* (15 percent).

Across all livelihood zones, a large percentage report to be living in thatched houses, ranging from all households in *Western Agropastoral Millet and Groundnuts* to 65 percent in *Flood Retreat Cultivation*. *Western and Central Pastoral* is the only livelihood zone where people report to be living under plastic shelter. The highest percentages of people living in mud/mud brick houses are found in *Flood Retreat Cultivation* (27 percent) and *Rainfed Sorghum Belt* (21 percent).

Chart 9. Type of housing by livelihood zone

Type of housing by livelihood zone

Zone	Mud/mud brick	Stone/concrete/brick	Thatch	Plastic shelter
West and Central Pastoral	12%		74%	13%
Flood retreat Cultivation	27%	7%	65%	
Southeast Rainfed Semi mechanized Agriculture	9%		91%	
Rainfed Sorghum Belt	21%	2%	76%	
Western Agropastoral Millet and Groundnuts			100%	
Western Agropastoral Millet	9%	2%	89%	
Central Rainfed Millet and Sesame	8%	3%	88%	
North Kordofan Gum Arabic Belt	1%		98%	

Legend: ■ Mud/mud brick ■ Stone/concrete/brick ■ Thatch ■ Plastic shelter

When analysin water sources by livelihood zones, *Flood Retreat Cultivation* stands out as a zone with limited access to improved water sources as only 24 percent of the households have access to water from an improved source, and they are mainly relying on water from the river.

Chart 10. Water and sanitation by livelihood zone

Water and sanitation by livelihood zone

Zone	Water from improved source	Safe sanitation
West and Central Pastoral	70%	1%
Flood retreat Cultivation	24%	13%
Southeast Rainfed Semi mechanized Agriculture	66%	6%
Rainfed Sorghum Belt	55%	0%
Western Agropastoral Millet and Groundnuts	100%	0%
Western Agropastoral Millet	72%	4%
Central Rainfed Millet and Sesame	64%	2%
North Kordofan Gum Arabic Belt	89%	2%

Legend: ■ Water from improved source ■ Safe sanitation

When analysing wealth index by livelihood zone, *Western Agropastoral Millet and Grou*ndnuts have the highest percentages of households in the poorest wealth group (43 percent), with an additional 38 percent in the second poorest wealth group. *West and Central Pastoral* also has a high percentage in the poor wealth group (38 percent), followed by *North Kordofan Gum Arabic Belt* (34 percent).

Western Agropastoral Millet and *Rainfed Sorghum Belt* have the highest percentage in the richest wealth group (both 26 percent).

Chart 11. Agriculture by livelihood zone
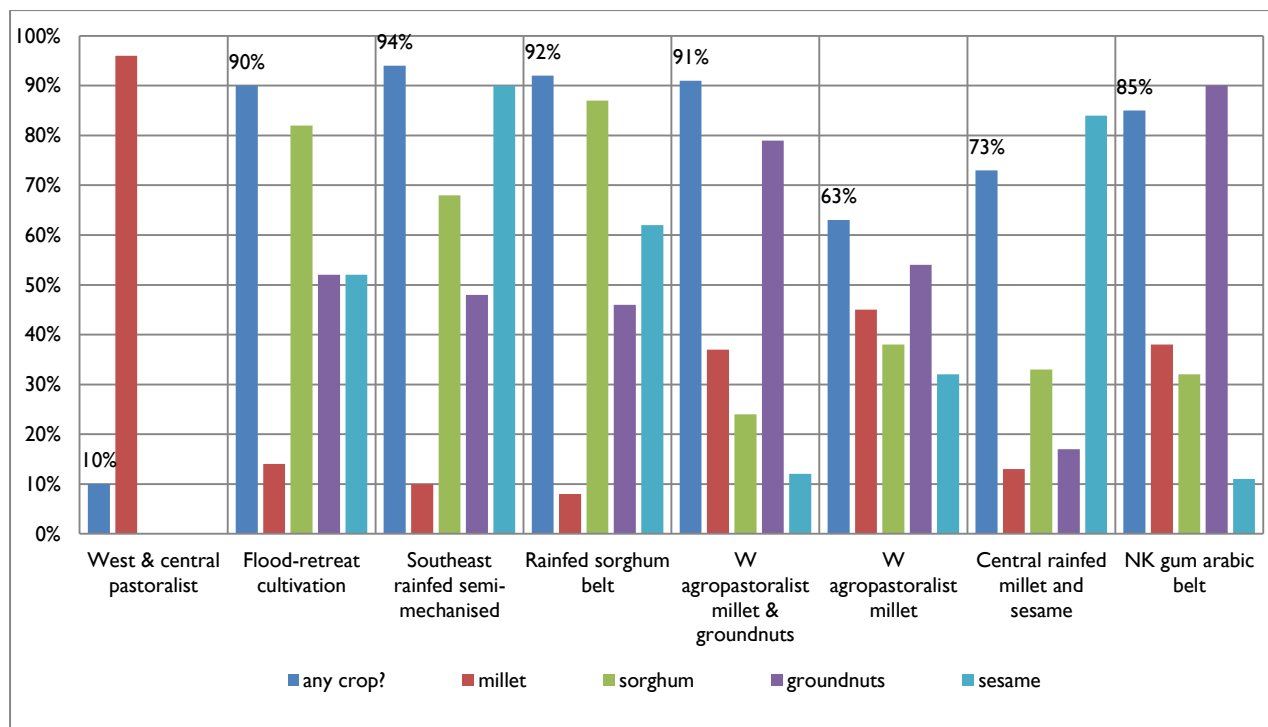
The chart above shows that a large percentage of households in all but *West & Central Pastoralist* zone are engaged in agriculture. The cash crops of groundnut and sesame are most commonly grown in the *Southeast Rainfed Semi-Mechanised, Central Rainfed Millet and Sesame* (sesame) and *Western Agropastoralist millet and groundnuts* and *North Kordofan Gum Arabic Belt* (groundnut) zones.

Chart 12. Wealth index by livelihood zone

22
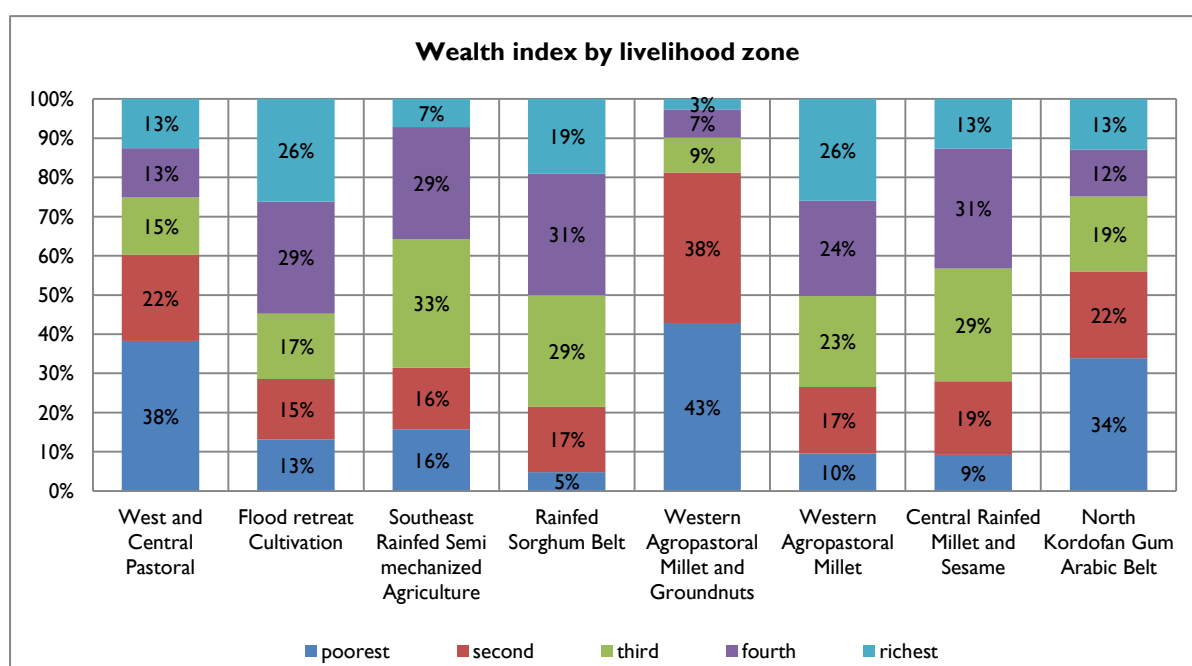
2.3.4   Livelihoods and income sources

Approximately 95 percent of all households in North Kordofan report that heads of household are employed. For the unemployed population, illness/aging was the most important reason for not working followed by no chance of work.

Using the share contribution to total income by the 25 livelihood activities in the survey, 12 different groups were created. The number of different groups was a result of exploratory analysis where groups with more than one activity logically made sense. The livelihood groups are useful for understanding the nature of food insecurity and for social targeting of interventions.

The 12 distinct livelihood groups are:

- Livestock = 9% of households
- Petty trade = 9%
- Mining = 7%
- Agricultural wage labour, firewood = 12%
- Gift, porter, domestic labour, agricultural wage labour, handicraft = 7%
- Donkey, tea, kiosk, charcoal = 6%
- Remittances = 12%
- Sale of other crops = 14%
- Salaries, skilled labour = 9%
- Sale of cereal = 7%
- Brick making, construction, rickshaw = 7%
- Wheel barrow, water, petty trade = 1%

Two livelihood groups have a significantly higher percentage of female headed households, remittances with 66 percent and gift/porter/domestic labour/agricultural wage labour/handicraft with 45 percent.

Chart 13. Household characteristics by livelihood group
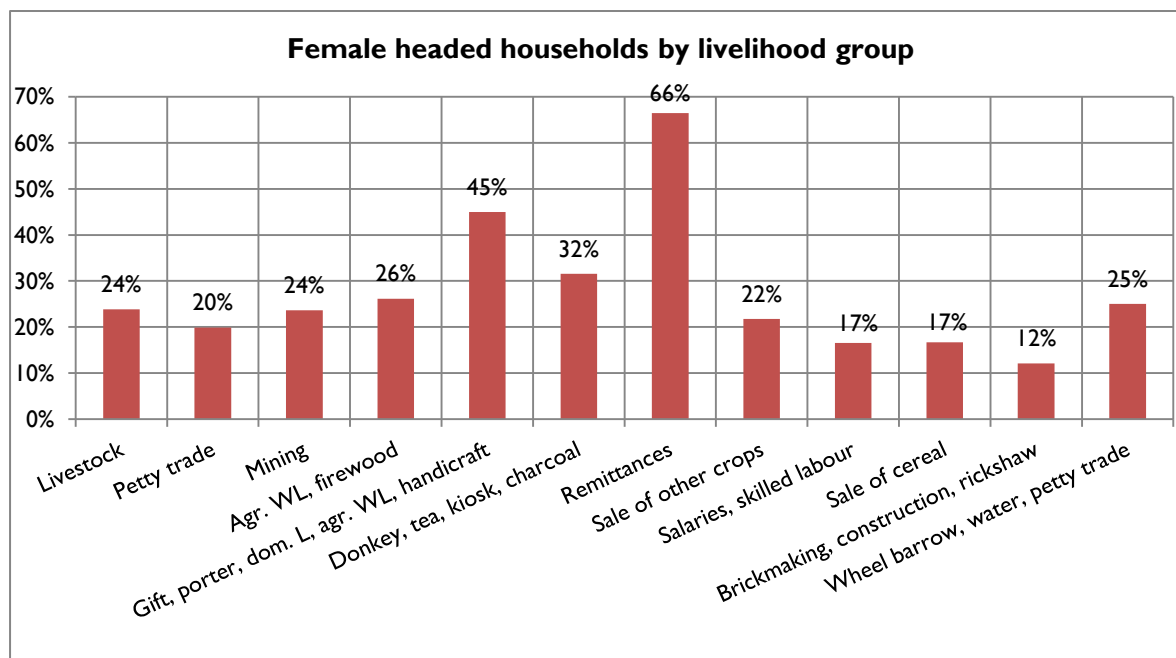
The different livelihood activities are relatively equally spread out across the localities. However, there are still a few localities that stand out in terms of livelihood activities. In *Jebr El Sheekh*, 21 percent of the households are engaged in Mining activities. *Quebaesh* has 30 percent of the households engaged in Agricultural wage labour/Firewood collection, and 29 percent of the households in *En Nuhud* rely on Sale of Other Crops. Furthermore, 25 percent of the households in *Um Rwaba* have to rely on Remittances.

Chart 14. Main livelihood activities by locality

Livelihood groups by locality
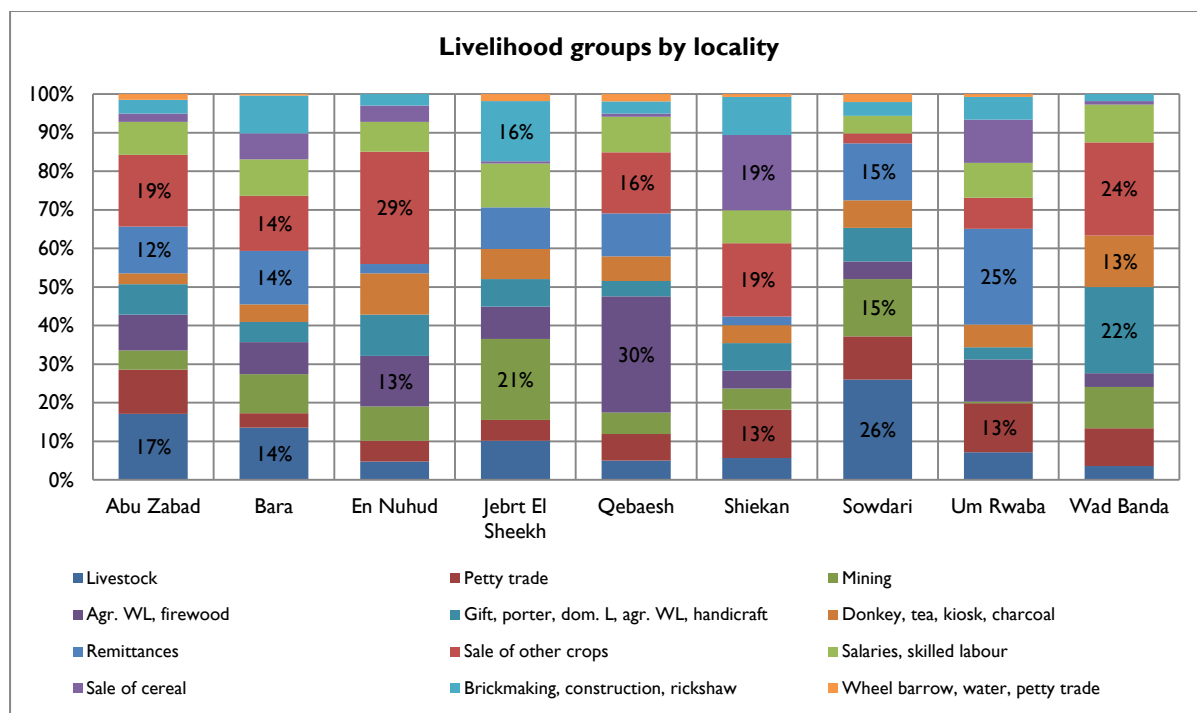
Analysis of wealth by livelihood groups indicate that households relying on Wheel barrow/Water sale/Petty trade are the poorest households, with 29 percent of the households both in the poorest and in the second poorest wealth group. Another poor group are the households relying on Agricultural wage labour/Firewood collection, with 26 percent of the households in the poorest wealth group, and 27 percent in the second poorest wealth group. The best off households in terms of wealth are households relying on Gifts/porter/domestic labour/agricultural wage labour/handicraft with 31 percent of the households in the richest wealth group, followed by households relying on Salaried work/Skilled labour (27 percent).

Chart 15. Wealth index by livelihood group

Wealth index by livelihood group
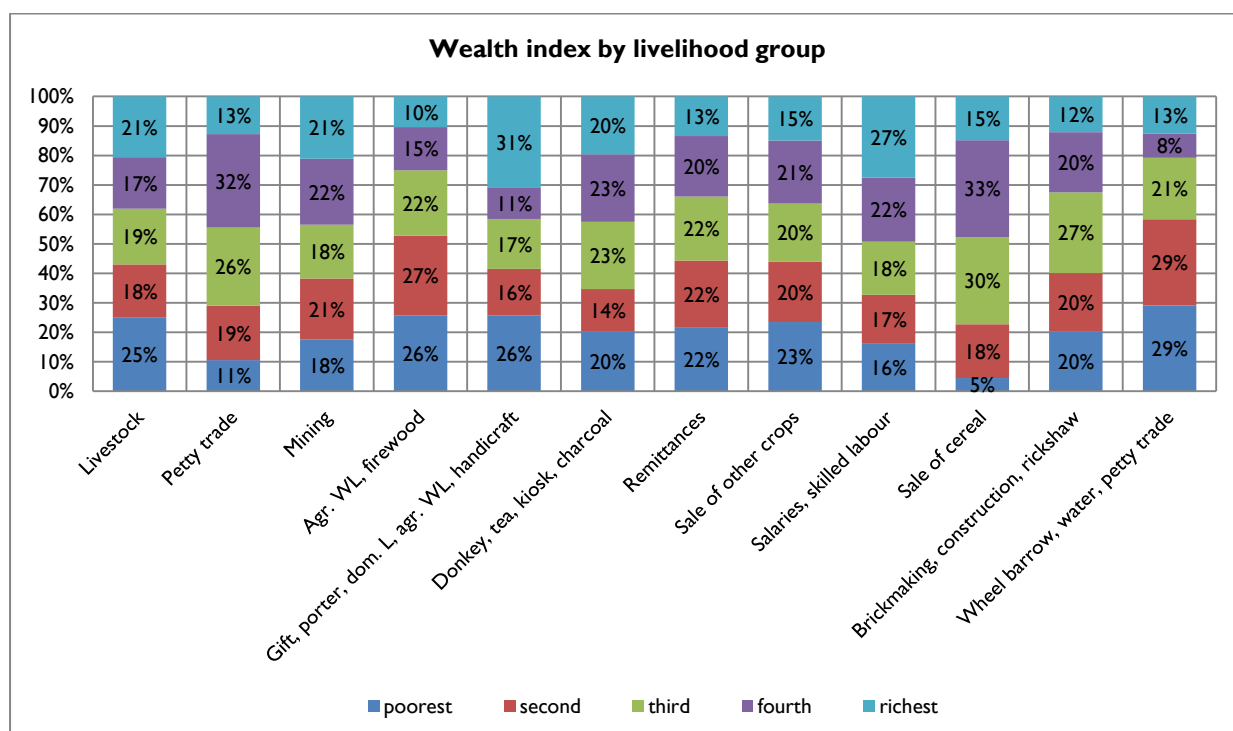
2.3.5 Food Assistance

Overall, a relatively small percentage of households across North Kordofan state receive food aid. The highest percentages of households reporting to have received food assistance is found in *En Nuhud* (39 percent) and *Wad Banda* (32 percent), while none of the households in *Qebaesh, Shiekan* and *Sowdari* have received any kind of food assistance. Most of the food assistance programmes in North Kordofan state are through school feeding or food for work/training activities.

3.0 CURRENT HOUSEHOLD FOOD SECURITY STATUS

3.1 FOOD SECURITY

3.1.1 Expenditure

In this assessment, expenditure is used as an income proxy indicator. When analysing household expenditure, this approach uses the cost of the Minimum Healthy Food Basket (MHFB). The MHFB consists of eight food items; cereals (sorghum), milk, dry vegetables, cooking oil, goat meat, cow meat, onions and sugar. The amount of each food needed for the MHFB is calculated in order to meet the WHO minimum requirements of 2,100 kilocalories per person per day. The requirement in grams is then multiplied by the market prices of different food items.

After calculating the cost of the minimum healthy food basket, households are classified into three different categories based on their purchasing power. The first category is the **poor** category, where households cannot even afford the cost of one minimum healthy food basket. The second category is the **borderline** category, where households can afford between one and two baskets. Finally, the third category can afford more than two baskets and are therefore the **acceptable** category.

The cost of one minimum healthy food basket in April 2012 in North Kordofan ranges from 2.26 SDG/person/day in *Bara* locality to 2.91 SDG/ person/day in *Qebaesh* locality.

Chart 15. Purchasing power by locality
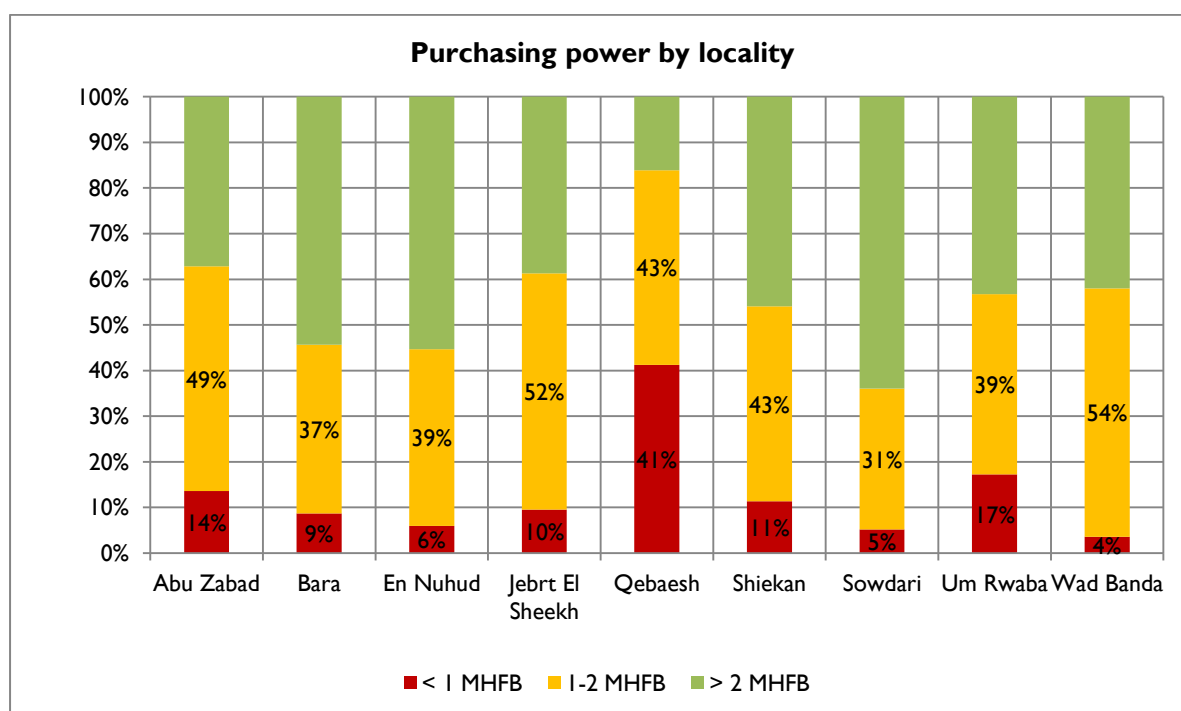
In North Kordofan, approximately 40 percent of the households can afford more than two minimum healthy food baskets. Overall, in the state, around 40 percent can afford between one and two MHFBs while 16 percent of the households cannot afford the cost of one basket.

Analysis of the purchasing power by locality shows that one locality stand out in terms of low purchasing power. In *Qebaesh*, 41 percent of the households cannot afford the cost of the one minimum healthy food basket and 43 percent can afford between one and two baskets. Households in Sowdari locality have the best purchasing power, where nearly two-thirds can afford 2 or more baskets.

3.1.2 Relative expenditure on food

In Sudan, the World Bank threshold for estimating vulnerability to shocks in terms of food access is set at 65 percent of expenditures for food. Less than 65 percent of total monthly expenditure on food is regarded as good and over 65 percent is poor where any changes in food prices could have a detrimental outcome. In North Kordofan, 57 percent of the households spend more than 65 percent of their monthly expenditure for food.

Chart 27. Relative expenditure on food

More than 65 percent monthly expenditure for food
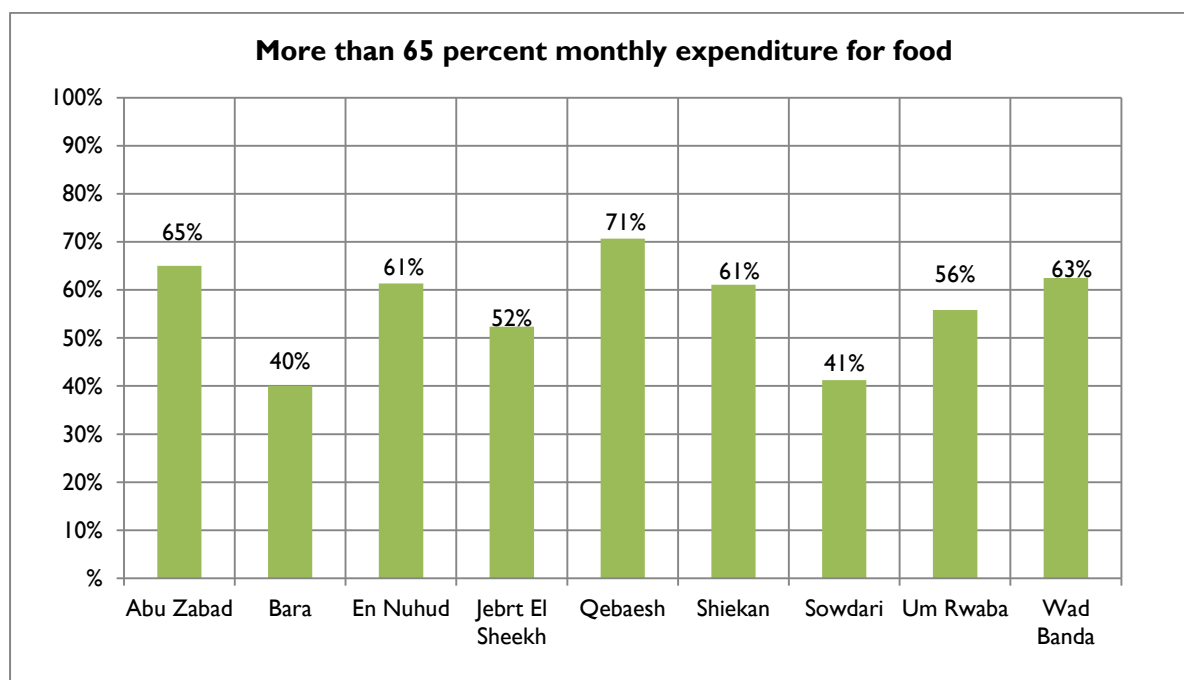
When analysing relative expenditure on food by locality, *Qebaesh* has the highest percentage of households spending more than 65 percent of their total monthly expenditure on food with 71 percent of the households. In *Abu Zabad*, 65 percent of the households spend more than 65% of their expenditure on food. The lowest percentages of households spending more than 65% of their total monthly expenditure on food are found in Sowdari (41 percent) and Bara (40 percent).

3.1.3 Household food consumption

Research has shown that dietary diversity[3] and frequency are a good proxy measure of food consumption and food security at household level. Food consumption data was collected and analysed using the standard WFP methodology: the variety and frequency of different foods and food groups consumed over a 7-day recall period was recorded to calculate a weighted Food Consumption Score (FCS).

Weights were based on the nutritional density of the foods. Standard cut-points or thresholds were established to enable analysis of trends and to provide a benchmark for success. Households were then classified as having either 'poor', 'borderline' or 'acceptable' consumption based on the analysis of the data. The table below outlines the weights and their justification for each food/food group used to calculate the food consumption score.

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3 Dietary diversity is defined as the number of individual foods or food groups consumed over a given period of time

Table 2. Weights and justification for food consumption score

Food group	Weight	Justification
Main staples	2	Energy dense, protein content lower and poorer quality than legumes, micronutrients.
Pulses	3	Energy dense, high amounts of protein but of lower quality than meats, micronutrients, low fat.
Vegetables	1	Low energy, low protein, no fat, micronutrients.
Fruit	1	Low energy, low protein, no fat, micronutrients.
Meat and fish	4	Highest quality protein, easily absorbable micronutrients, energy dense, fat. Even when consumed in small quantities, improvements to the quality of diet are large.
Milk	4	Highest quality protein, micronutrients, vitamin A, energy.
Sugar	0.5	Empty calories. Usually consumed in small quantities.
Oil	0.5	Energy dense but usually no other micronutrients.

In this survey, households with a score less than 28 are classified as having poor consumption; those with a score from 28 to 42 are classified as borderline while households with a score greater than 42 are considered to have acceptable consumption. In Sudan people tend to consume sugar on a daily basis.

Overall, the food consumption situation is good in North Kordofan with 85 percent of the households having acceptable food consumption, 12 percent borderline and three percent poor food consumption. When analysing the food consumption by locality, *Qebaesh* is worst off with eight percent of the households in the poor category and 24 percent having a borderline food consumption score. The highest percentages of households with an acceptable food consumption score are found in *En Nuhud, Wad Banda* and *Sowdari*.

Chart 17. Food Consumption Categories

Food consumption categories by locality
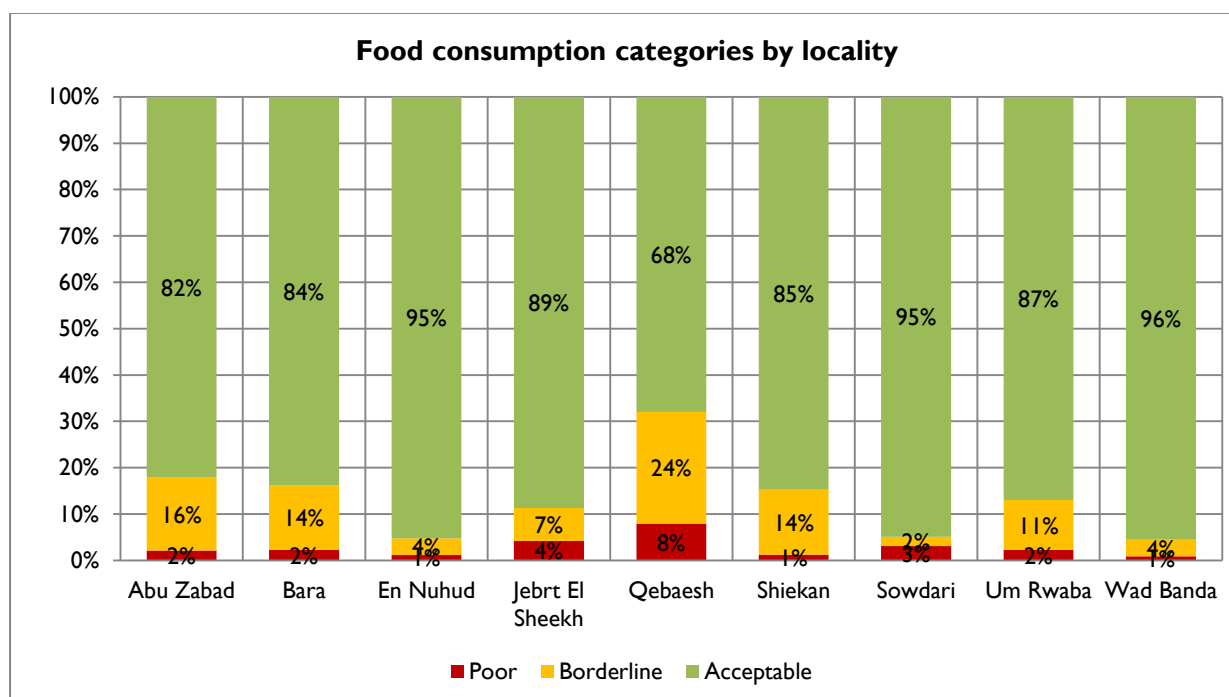
In terms of livelihood zone, *North Kordofan Gum Arabic Belt* has the highest percentage of households with poor and borderline food consumption, followed by *Southeast Rainfed Semi-mechanized Agriculture* and *Western Agropastoral Millet and Groundnuts*. Households in *Rainfed Sorghum belt* are best off when it comes to food consumption.

Chart 18. Food consumption by livelihood zone

Food consumption by livelihood zone

Livelihood zone	Poor	Borderline	Acceptable
West and Central Pastoral	4%	5%	92%
Flood retreat Cultivation	2%	13%	85%
Southeast Rainfed Semi mechanized Agriculture	4%	21%	74%
Rainfed Sorghum Belt	2%	5%	93%
Western Agropastoral Millet and Groundnuts	4%	16%	79%
Western Agropastoral Millet	1%	11%	88%
Central Rainfed Millet and Sesame	2%	10%	88%
North Kordofan Gum Arabic Belt	6%	22%	71%

Legend: ■ Poor ■ Borderline ■ Acceptable

When analysing food consumption by livelihood group, households relying on Gifts/porter/domestic labour/agriculture wage labour/handicraft and agricultural wage labour/firewood collection have the highest percentages in the poor and borderline food consumption groups. Households relying on sale of livestock have the highest percentage in the acceptable food consumption group.

Chart 19. Food consumption by livelihood group

Food consumption by livelihood group

Livelihood group	Poor	Borderline	Acceptable
Livestock	1%	5%	94%
Petty trade	1%	11%	89%
Mining	2%	9%	89%
Agr. WL, firewood	7%	19%	74%
Gift, porter, dom. L, agr. WL, handicraft	8%	16%	75%
Donkey, tea, kiosk, charcoal	3%	6%	92%
Remittances	3%	13%	84%
Sale of other crops	3%	14%	83%
Salaries, skilled labour	1%	9%	90%
Sale of cereal	1%	14%	85%
Brickmaking, construction, rickshaw	4%	13%	83%
Wheel barrow, water, petty trade		17%	83%

Legend: ■ Poor ■ Borderline ■ Acceptable

When analysing food consumption by wealth index, there is a direct relationship between asset poverty and household dietary diversity and food frequency. The chart below shows that only 70 of households in the poorest wealth quintile have acceptable consumption. This increases up to 98 percent for the wealthiest households.

Chart 20. Food consumption by wealth index

Food consumption by wealth index
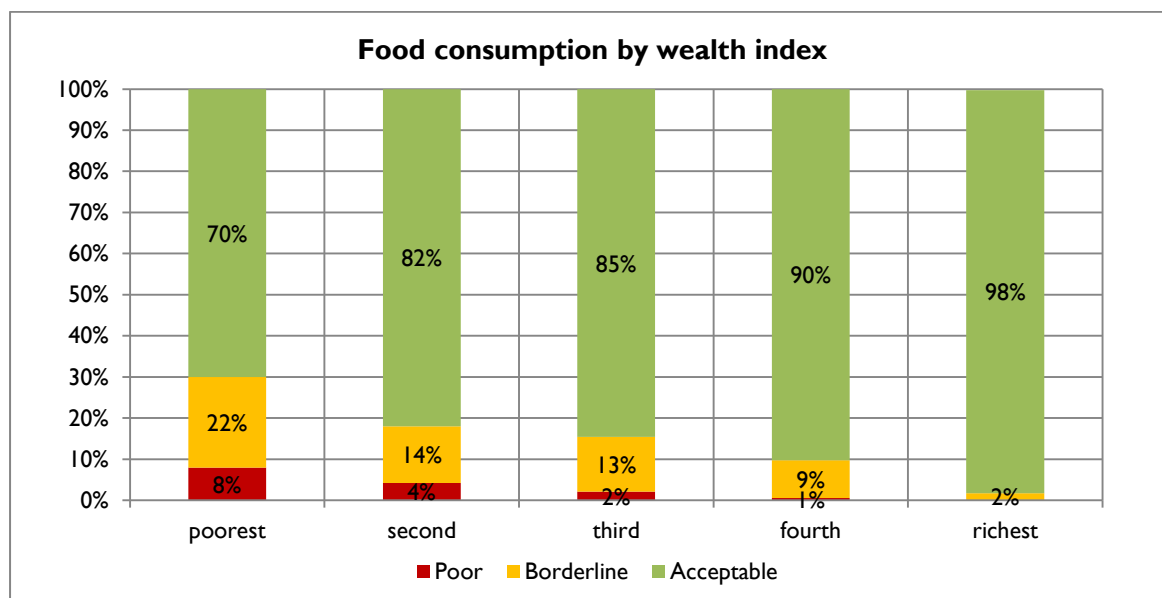
To understand qualitatively what the consumption categories mean, the chart below highlights the typical diet of households in each group. Households with poor consumption consume sorghum almost on a daily basis. They also consume sugar six says a week, and oil and dry vegetables five times per week. The remaining food items are rarely being consumed. Households with borderline consumption eat sorghum and sugar on a daily basis, and have a more frequent consumption of oil, vegetables, meat and pulses. Households with an acceptable food consumption score have a higher consumption of all food groups, especially milk.

Chart 21. Weekly food consumption by group

Days per week food items by consumption category
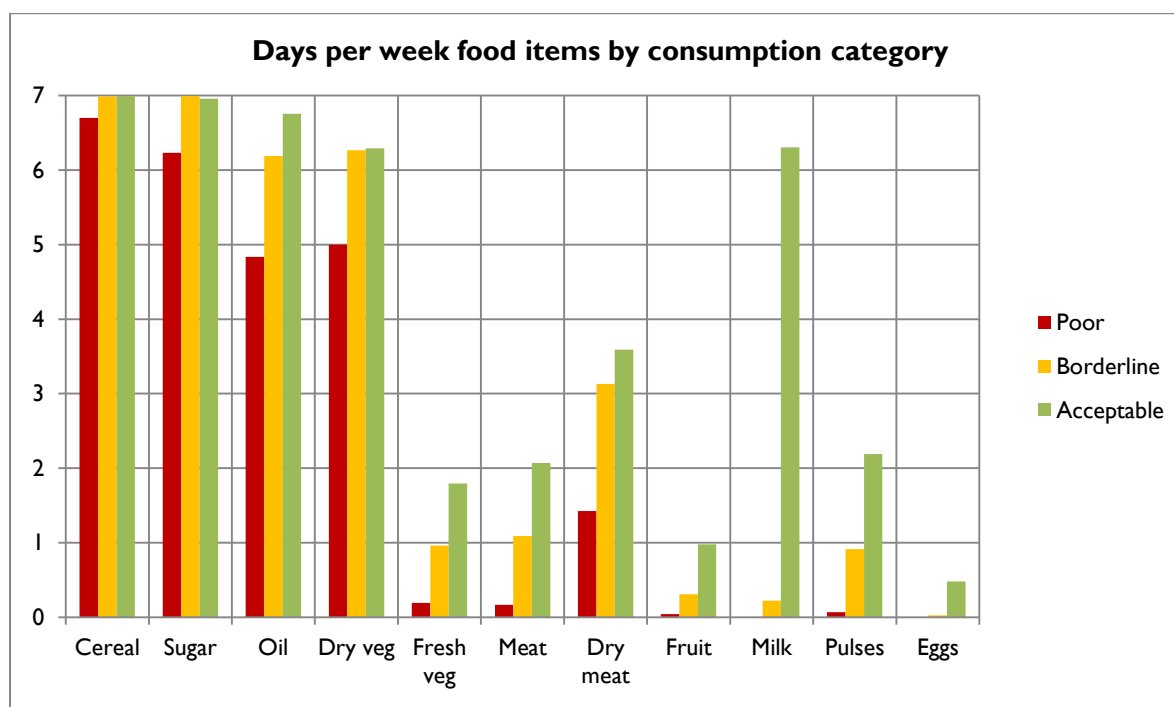
3.1.4   Sources of food consumed

The sources of different foods consumed are analyzed as an attempt to understand how reliance on particular sources of food can impact household food security. The main source of food in the North Kordofan context is the market. Households with borderline and acceptable food consumption rely slightly on own production. Other sources such as gifts, borrowing, in-kind payments or hunting/gathering/fishing were considered in the survey.

Chart 22. Food sources by consumption group

Sources of food by food consumtion group
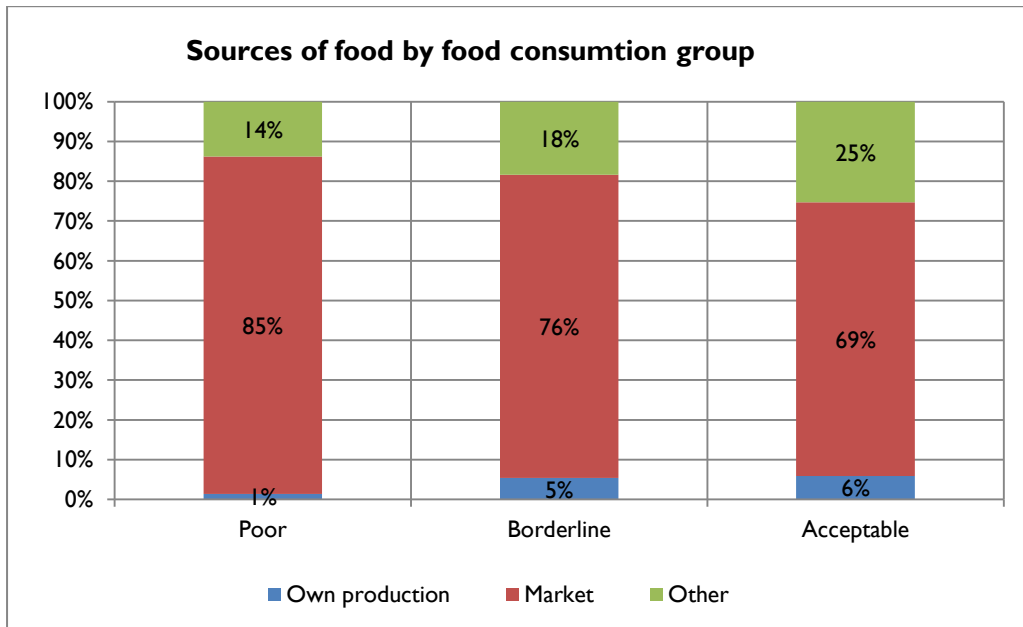
4.0   HOUSEHOLD FOOD SECURITY

4.1   Food Security

Food Security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life (World Food Summit, 1996). In general, food security is a measure of food availability, food access and food utilisation for purposes of this assessment, household food security will be determined through analysis of food access indicators.

According to the International Fund for Agricultural Development (IFAD), there is also a long-term and short-term aspect to food security. When a household is regularly unable to meet the food requirements of its members over a long period of time, characterised by short periods of good and bad moments, this is known as *chronic food insecurity*. The short-term problem can affect any household regardless of the current situation. Shocks like crop failure, seasonal shortages or reduced income due to illness or underemployment of productive members may temporarily reduce household access to adequate amounts of nutritious food, leading to *transitory or acute food insecurity*.

For this study, both acute and chronic food insecurity will be measured at the household level, with a focus on the food access issues and using slightly different indicators and analytical approaches in order to best understand the situation of the people in North Kordofan. First, acute food insecurity will be presented, followed by the analysis of chronic food insecurity in the study areas.

4.2   Acute Food Insecurity

In this assessment, the multi-dimensional aspects of acute food security will be measured using three different variables:

1. Ability to afford the Minimum Healthy Food Basket[4] (MHFB), which is a measure of household poverty;
2. Share of total monthly expenditure on food where a household is better off if it has less than 65% of total expenditure for food which reflects household purchasing power.
3. Household dietary diversity and food frequency which is a measure of current household food security.

The households were classified as being acutely food insecure, vulnerable or food secure based on the above-mentioned indicators. These findings were then used to draw conclusions about acute food insecurity at locality level.

Based on the composite analysis presented above, 6 percent of the households in North Kordofan are acutely food insecure, while 16 percent are vulnerable to acute food insecurity at the time of the survey.

When using the projected population numbers for 2012[5], an estimated 180,000 people are acutely food insecure with a further estimated 450,000 people vulnerable to acute food insecurity.

Table 3. Estimated population of food insecure households

	North Kordofan
2012 Projected population	3,225,000
Acutely food insecure	**180,000**
Vulnerable	**450,000**

In North Kordofan state, the localities with the highest percentage of acutely food insecure households are *Qebaesh, Abu Zabad* and *Um Rwaba*, while En Nuhud, Sowdari and Wad Banda are best off.

Chart 23. Acute food security by locality

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4 The MHFB consists of eight food items; cereals (sorghum), milk, dry vegetables, cooking oil, goat or cow meat, onion and sugar.
5 Based on the 2008 Census

Acute food security by locality
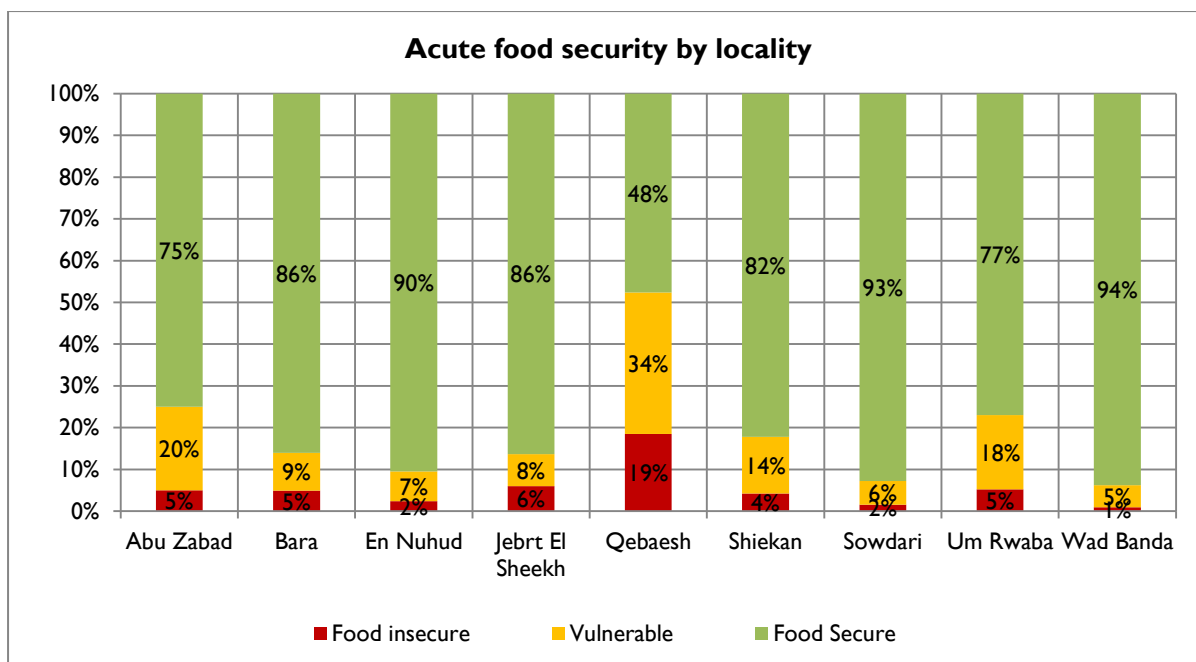
When analysing acute food insecurity by livelihood zone, finding shows that households in *Western Agropastoral Millet and Groundnuts* and *North Kordofan Gum Arabic Belt* zones are the most likely to be acutely food insecure and vulnerable to acute food insecurity. *West and Central Pastoral* and *Western Agropastoral* zones have the highest percentages of food secure households.

Chart 24. Livelihood zones and acute food security status

33
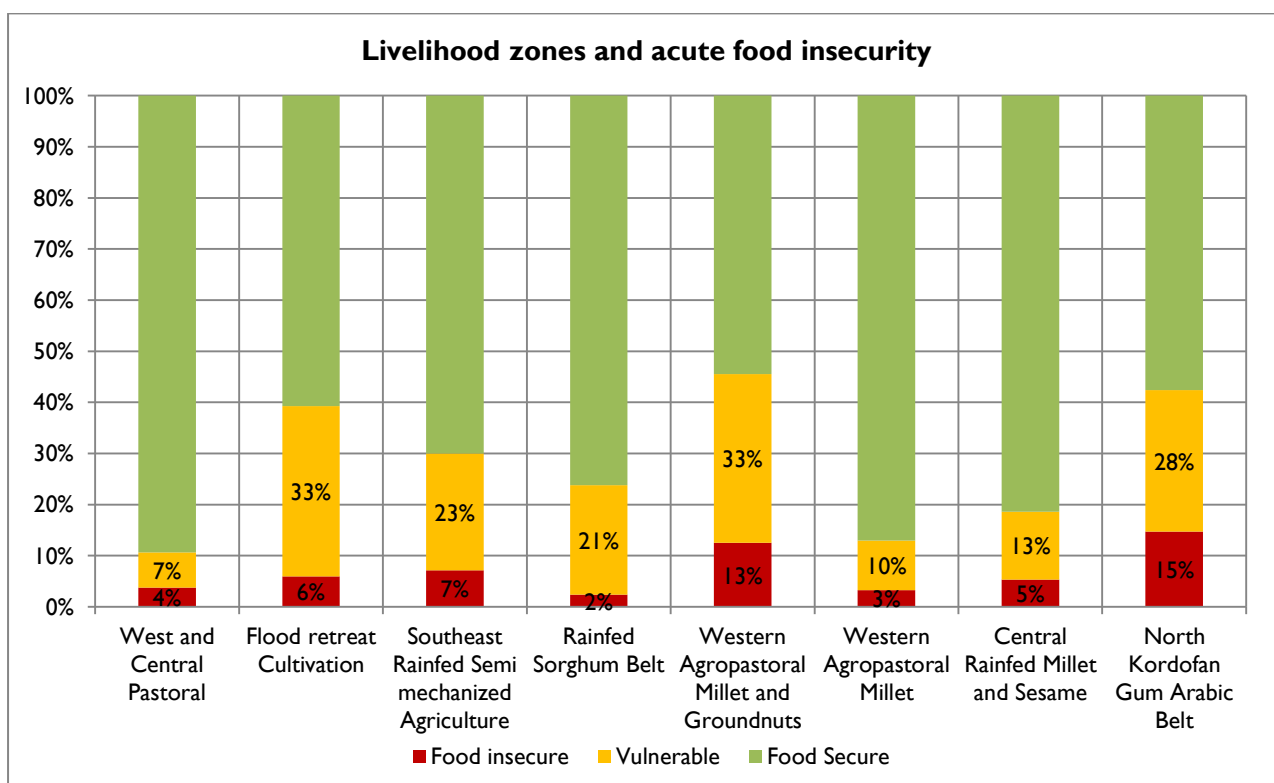
4.3 Household profiling of acute food insecurity

This section explores the underlying causes of food insecurity. The purpose of this section is to characterize typical food insecure households and to identify particular groups that are more likely to be food insecure in order to help guide the design and targeting of food security interventions more effectively.

4.3.1   Household and housing characteristics

In North Kordofan, gender of household head does not have a relationship with the acute food security situation to the households. However, education of the household head is clearly related with acute food insecurity. Where the head had no education, only 74 percent of households are food secure. This increases to 81 percent when the head has at least a primary education, and up to 88 percent for households where the head has secondary education. All households where the head has a university education are food secure.

When comparing acutely food insecure and food secure households, findings indicate that a higher percentage of food secure households live in mud/mud brick houses and stone/concrete/brick houses.

4.3.2   Livelihoods

When analysing acute food insecurity by livelihood group, households in the Agricultural wage labour/firewood collection group are the most likely to be acutely food insecure with only 60 percent being food secure. Households relying on Remittances and also those in the Brickmaking + construction + rickshaw group are also more likely to be acutely food insecure or vulnerable to acute food insecurity. The chart below presents acute food security classifications for all of the livelihood groups. Households relying on Livestock or in the Mining group are the most likely to be food secure.

Chart 25. Food security by livelihood group
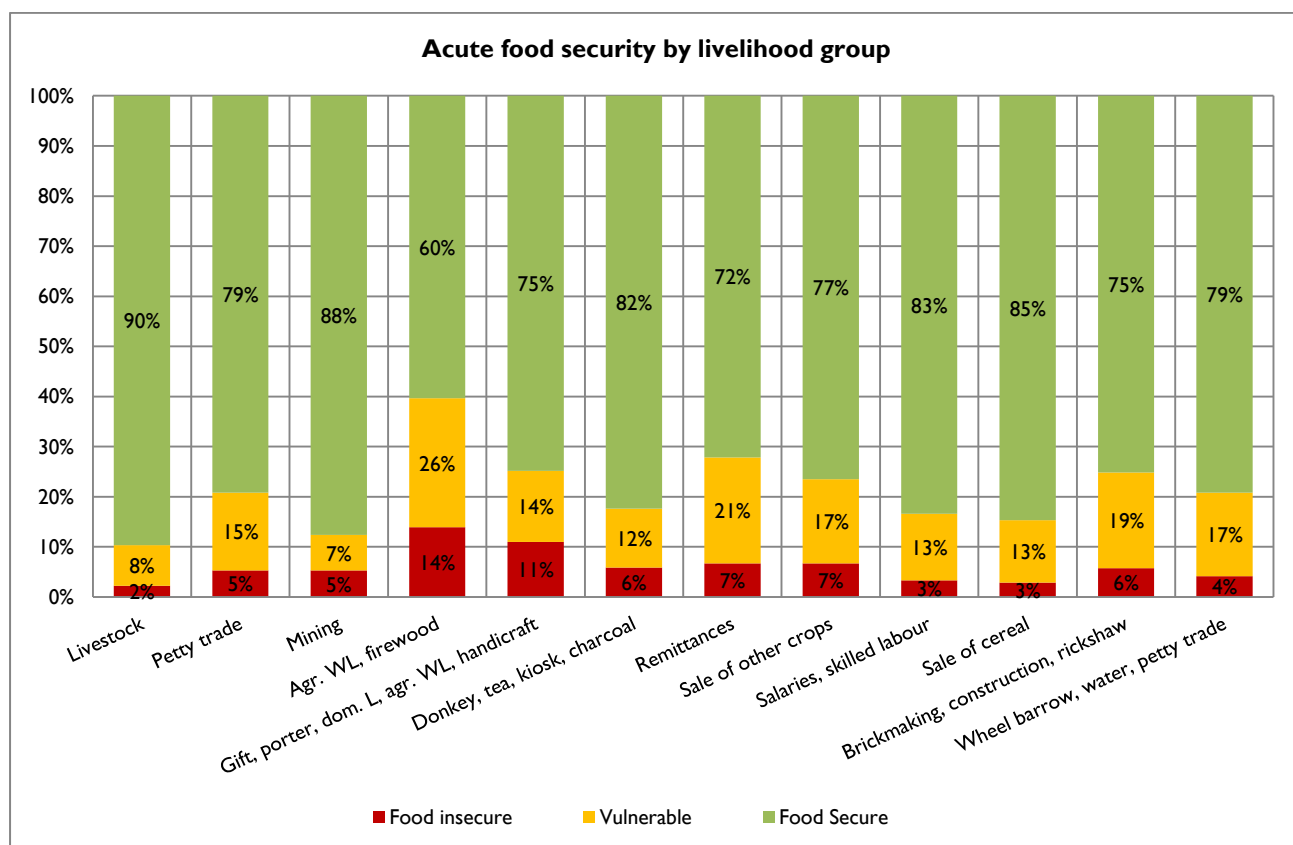
4.3.3   Household wealth

There is a clearly link between household asset wealth and acute food insecurity as illustrated in the chart below. Only 61 percent of the households in the poorest wealth quintile are food secure compared to 94 percent in the richest quintile.

Chart 26. Wealth quintiles and food security status

Food security by wealth index
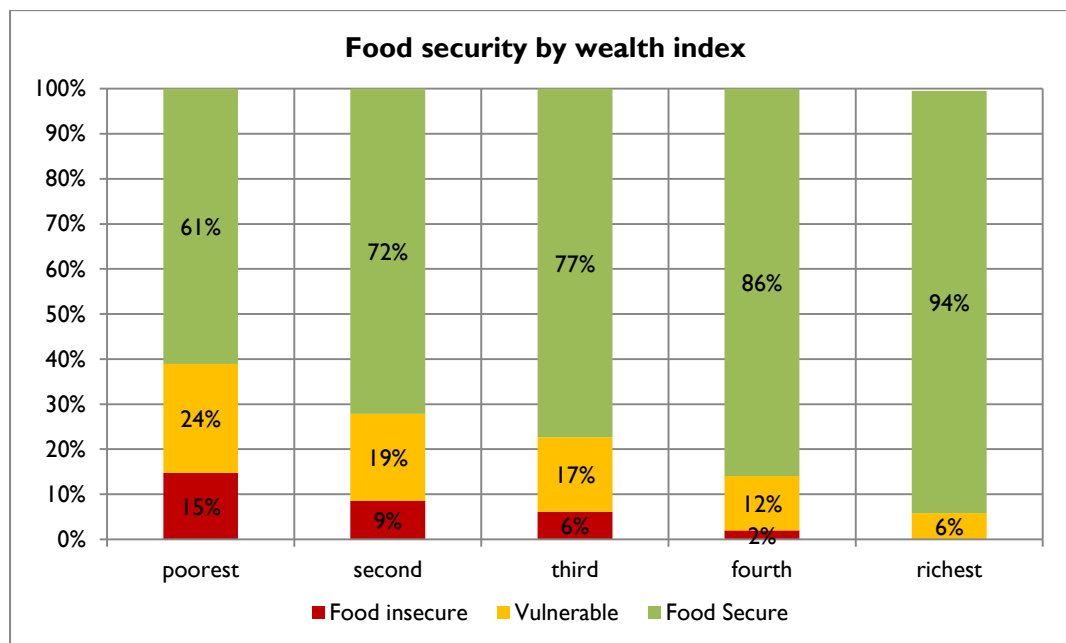
4.4   Chronic food insecurity

A second food security analysis was done in order to test a different approach for the North Kordofan study in order to better understand the relationship between chronic food insecurity and poverty.

Three continuous variables were analysed together using cluster analysis:

- *Food consumption score* – a measure of current household food security
- *Total number of different assets (0-17) owned* – a measure of wealth/future food security
- *Share of total expenditure for food* – a measure of food access

A total of 4 different groups were identified and are shown in the table below:

Table 4 Chronic food insecurity groups:

	FCS	# assets	% expenditure for food	N
Food secure	81	13	71%	293 (20%)
Moderate food secure – rely on purchase	66	9	80%	502 (35%)
Moderate food secure – rely on production	68	10	45%	417 (29%)
Chronically food insecure	36	7	84%	237 (16%)

The *Food secure* households are characterised as having high dietary diversity and food frequency as indicated by the high food consumption score, many different assets, a fairly high share of expenditure for food. Households that are classified as *Chronically food insecure* have poor dietary diversity and food frequency and thus a low food consumption score, the lowest number of different assets and a very high share of monthly expenditure for food, and thus are vulnerable to price increases. The two *Moderate food secure* groups are similar in terms of food consumption score and

number of different assets and differ only in reliance on purchase to access food as indicated by the share expenditure for food. As expected, the majority of households are in the moderately food secure groups.

The chart below shows the distribution of chronic food insecurity by livelihood zone. Households in the *North Kordofan Gum Arabic belt* are the most likely to be chronically food insecurity followed by those in the *Western agropastoralist millet and groundnuts* zone. The highest percentage of food secure households is found in the *Western agropastoralist millet* zone.

Chart 27. Chronic food insecurity and livelihood zones
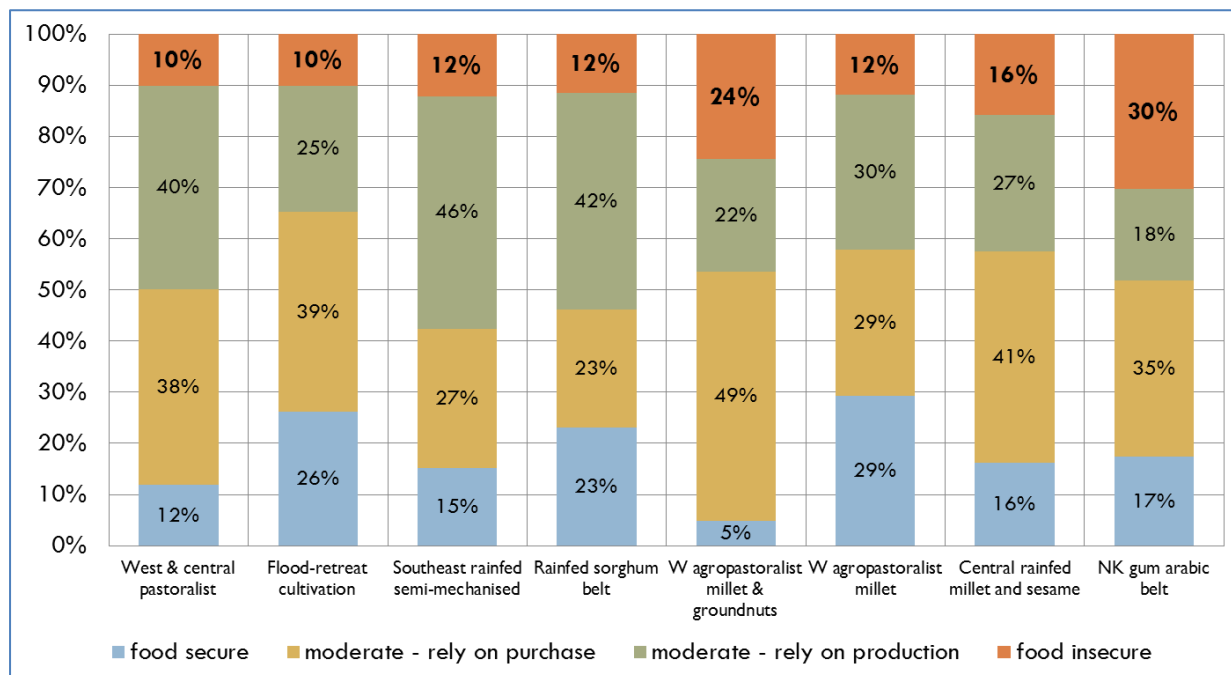
The chart below shows the distribution of chronic food insecurity by locality. While the lowest percentage of food secure households is found in *Jebrt El Sheikh* locality, the highest percentage of chronically food insecure households are found in *Qebaesh* locality. Households in *Wad Banda* locality also are less likely to be food insecure.

Chart 28. Chronic food insecurity and localities

Map 3. Chronic food insecurity by locality

North Kordofan C-FSA May 2012

Northern

Nile

Khartoum

Sodari

Jebrt El Sheekh

North Kordofan

Bara

White Nile

North Darfur

Wa Banda

El Nehoud

El Obeid

Um Rwaba

Shiekan

Abu Zabad

Qebaesh

South Kordofan

East Darfur

Food insecure households
- Food secure
- Moderately food secure
- Moderately food insecure
- Highly food insecure

Data Sources:
VAM Unit : WFP Sudan
Sudan Settlements: Sudan Interagency Mapping (SIM)
Sudan Boundaries: Sudan Interagency Mapping (SIM)
Date: 27.06.2013

4.4.1 Household characteristics

For all the groups, the access to water from improved sources is relatively similar with high percentages in all groups having access to drinking water from improved sources (from 65-76 percent). Across all groups, access to safe sanitation is limited with around 3 percent of the households having access to safe sanitation

The majority of the interviewed households in North Kordofan live in thatched houses, ranging from 92 percent of the households in the chronic food insecure group, to 83 percent of the households in the moderate food secure group - relying on production. A small percentage of households in the 3 food insecure and moderate food secure groups are living in plastic shelter. The chronic food secure group has the highest percentages of households living in mud/mud brick housing and stone/concrete brick houses.

4.4.2 Employment and livelihoods

There is not much difference between the groups in terms of employment of the household head except that for the food secure households, there are fewer relying on non-skilled labour to earn money for their families. Food insecure households rely on farming and other income sources the same as the other groups.

Analysis by more detailed livelihood groups show that households relying on agricultural wage labour and sale of firewood/grass are the most vulnerable with 28 percent being chronically food insecure. Other vulnerable groups are households relying on transfers and various forms of daily wage labour.

Chart 29 Chronic food security by livelihood groups;
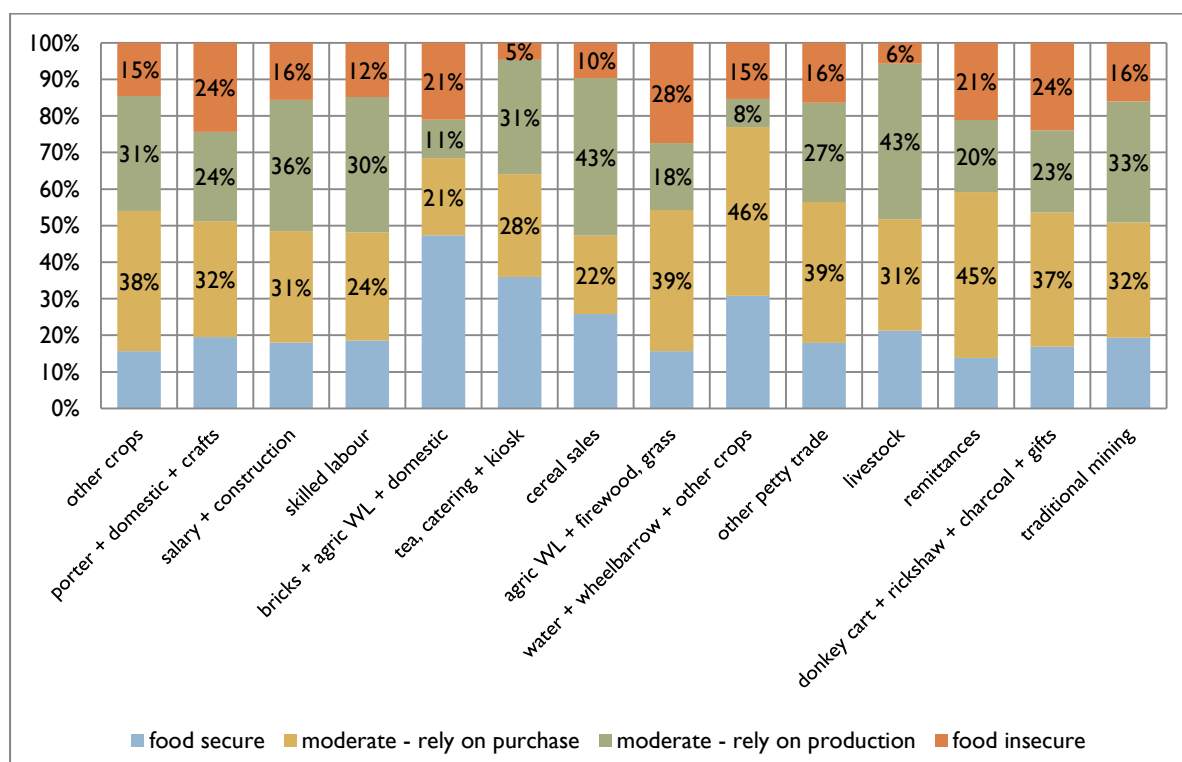
4.4.3 Household wealth

When analysing asset ownership by chronic food insecure groups, a lower percentage of chronic food insecure households own the various assets compared to the other groups. Among the two moderate groups, a higher percentage of households in the group relying on own production own assets compared to the group relying on purchase. The food secure group own more assets compared to the   other groups, and when it comes to luxury items such as radio/tape and

jewellery/watch, the food secure group has a much higher percentage of household owning these assets compared to the other groups.

Chart 30. Chronic food security and asset ownership;
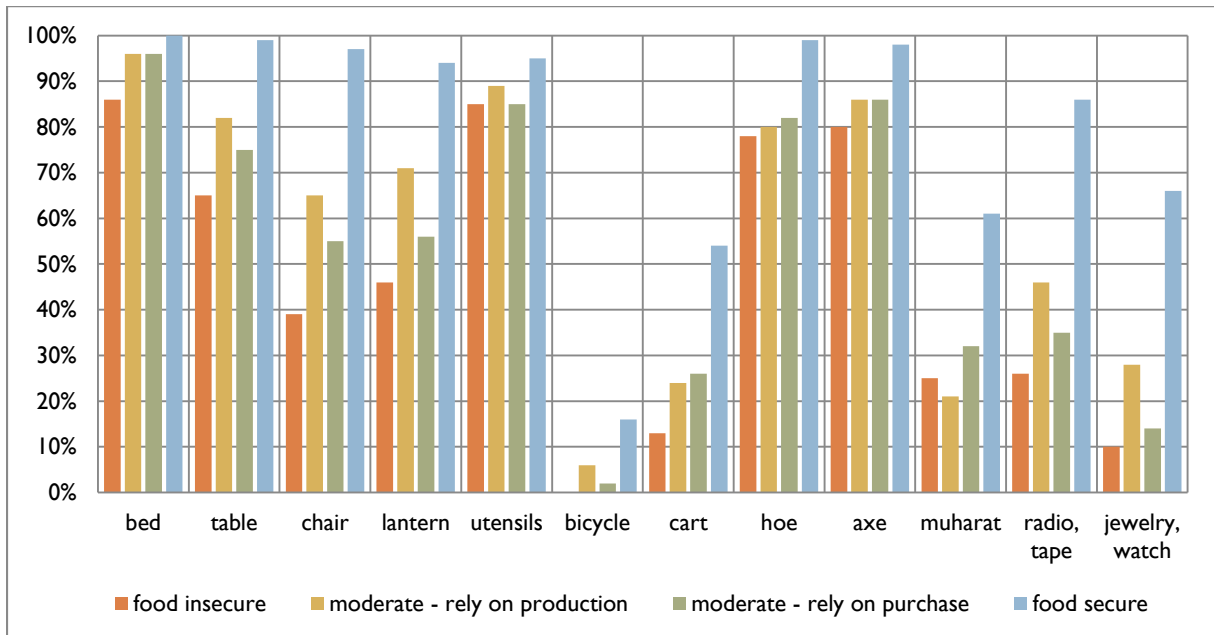
4.4.4   Household food consumption

Weekly consumption for chronically food insecure households consists of daily consumption of sorghum, oil/fat, sugar and dry vegetables, accompanied by occasional consumption of other cereals, meat/dried meat, and fresh vegetables. Food secure households have daily consumption of sorghum, millet, oil/fat, dairy, sugar and dry vegetables accompanied by a variety of other foods that are consumed 2-3 days per week.

Chart 313. Chronic food security and weekly consumption
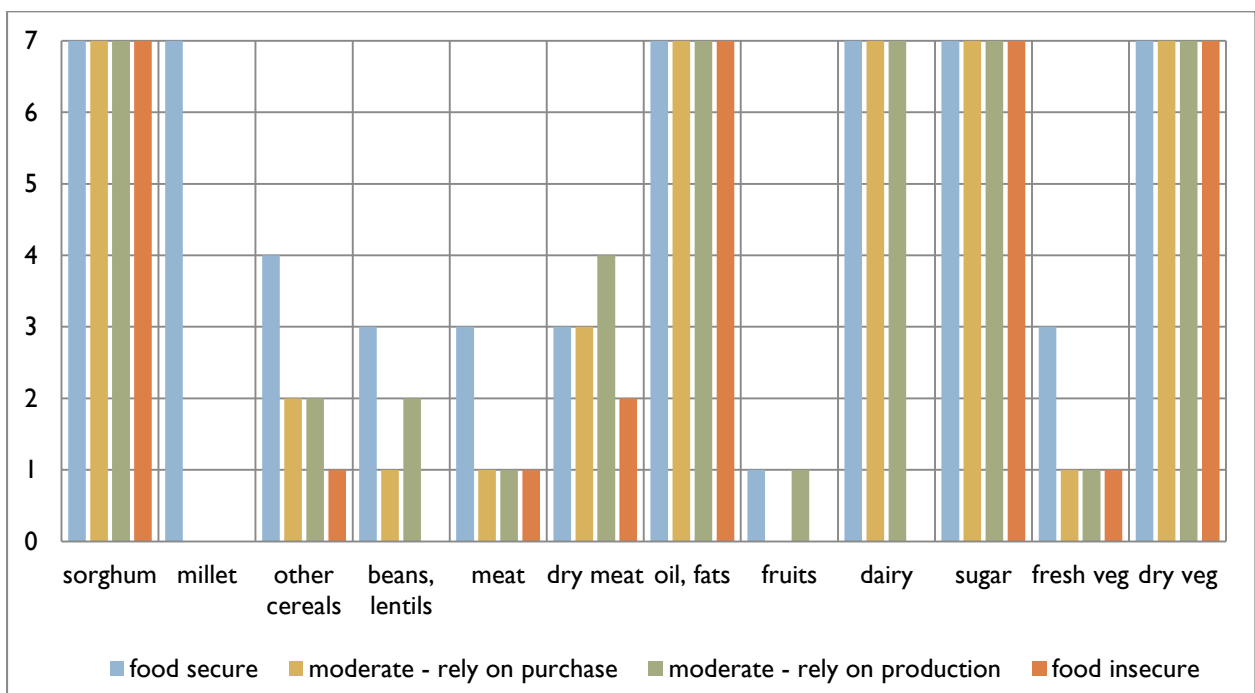
Food consumption by chronic food security groups shows that all of the households in the food secure and moderate (relying on purchase) categories have acceptable food consumption. The chronic food insecure group has the highest percentage of households in both the borderline (58%) and poor (14%) food consumption categories.

Chart 324. Chronic food security by food consumption groups
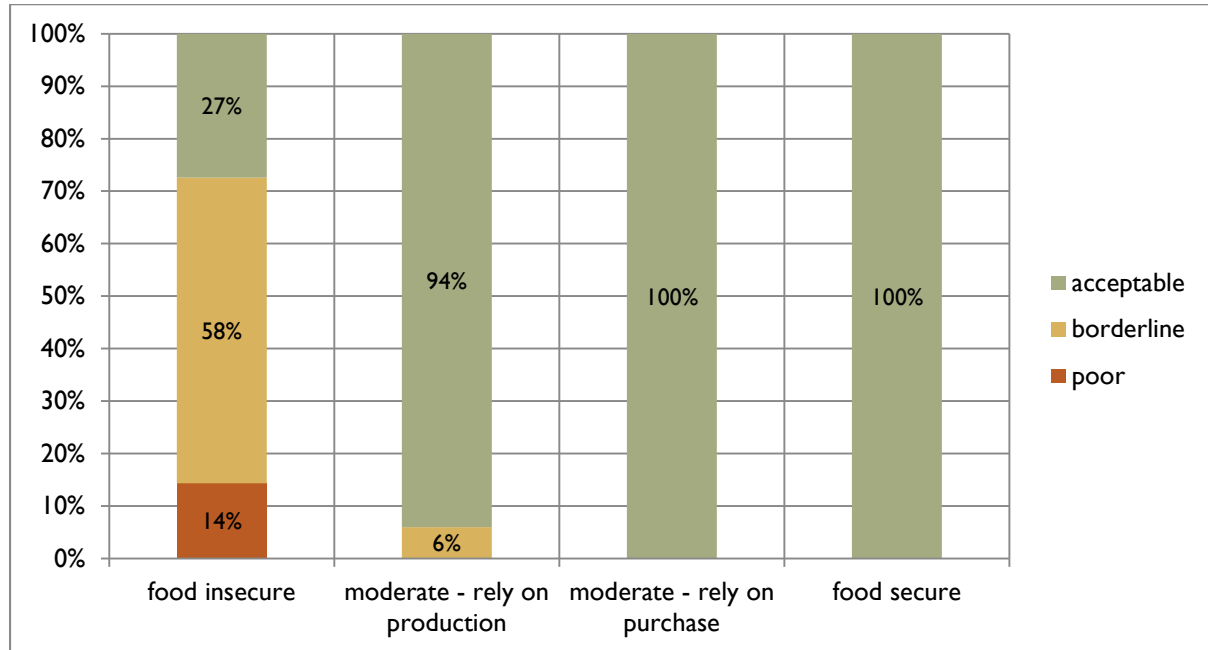
5.0   HOUSEHOLD STRESS AND COPING

In the survey a series of questions were used to assess households' do when they do not have enough food or do not have enough money to buy food. In other words, the behavioural responses or 'coping strategies' when faced with food insecurity, such as reducing the frequency of meals, reducing the portions of food consumed during meals or shifting reliance to cheaper foodstuffs, shifting reliance to less preferred or cheaper food types and other food consumption-related coping strategies. Overall, approximately 40 percent of the households in North Kordofan have engaged in coping strategies the last 7 days.

When looking at the coping strategies adopted by households the most common (from a fixed list) is to borrow food or money to purchase food (32 percent) followed by reducing number of meals per day (11 percent). The table below outlines the use of these different strategies for households who had experienced difficulty in accessing enough food in the week prior to the survey.

Table 5. Use of key coping strategies

	North Kordofan
Eat less preferred/less expensive foods	7%
Borrow food or money to buy food	32%
Rely on help from friends or relatives (*musaada*)	5%
Limit portion size at mealtimes	4%
Reduce consumption by adults so children can eat	3%
Reduce the number of meals per day	11%

Analysis of recent food access stress by locality reveals great differences between the different localities. In *Shiekan*, only 22 percent had experienced any food access stress in the last week, compared to 77 percent of the households in *Jebrt El Sheikh* and more than half in *Qebaesh, Wad Banda* and *Bara* experienced food access problems.

Chart 33. Household food access stress in last 7 days
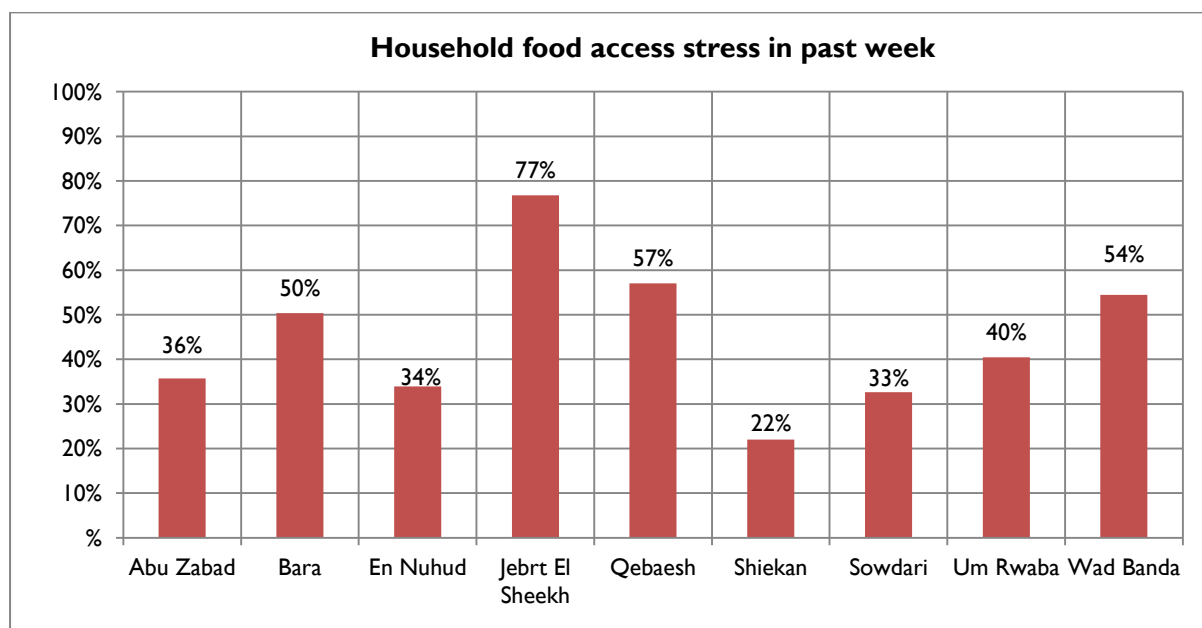
When comparing recent household food access problems and livelihood groups the chart below shows that those relying on gifts/porter/domestic work/agric wage labour/handicrafts are the most likely to have experienced recent food access problems, followed by those that rely on agricultural wage labour/firewood collecting and those in the wheel barrow/water/petty trade groups. The

households least likely to experience recent food access problems are those that rely on sale of cereals, followed by those relying on sales of other crops.

Chart 5. Food access problems and livelihood groups

Not enough money or food in past week by livelihood group

Livelihood group	%
Livestock	35%
Petty trade	41%
Mining	42%
Agr. WL, firewood	60%
Gift, porter, dom. L, agr. WL, handicraft	62%
Donkey, tea, kiosk, charcoal	37%
Remittances	54%
Sale of other crops	28%
Salaries, skilled labour	39%
Sale of cereal	24%
Brickmaking, construction, rickshaw	48%
Wheel barrow, water, petty trade	58%
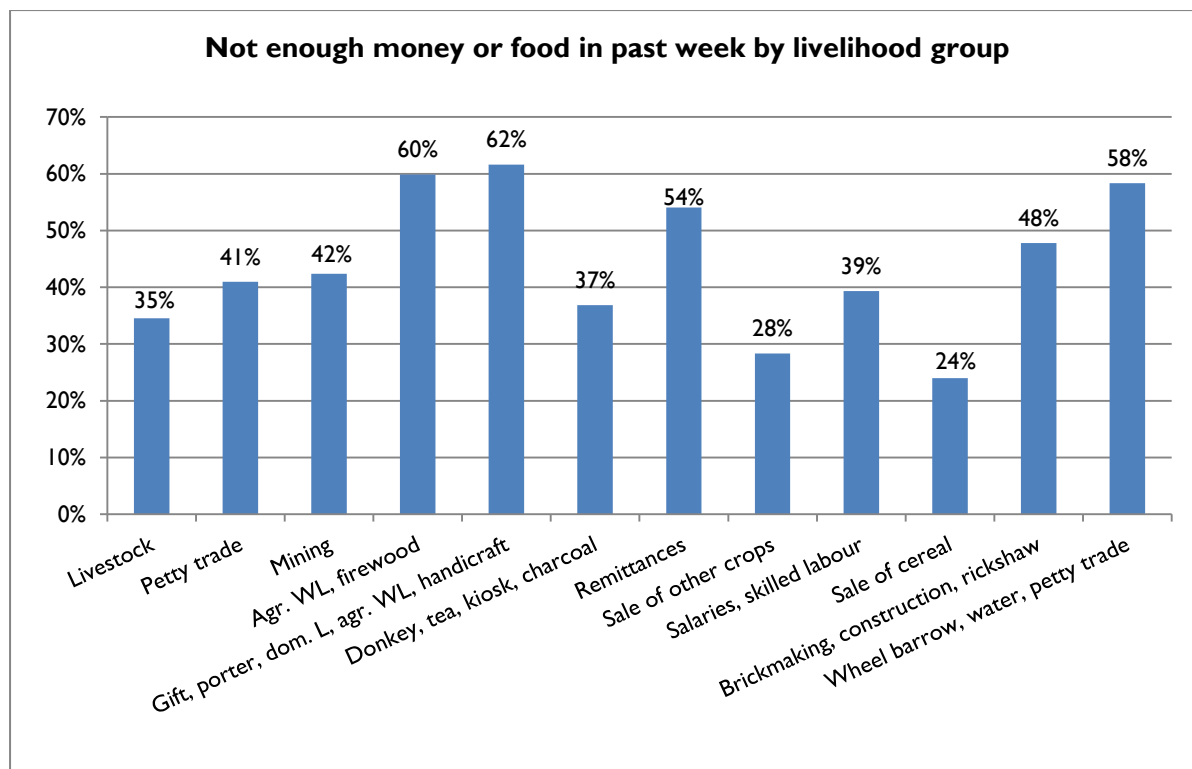
The households are asked if, during the last 7 days, there have been times where they have not had enough food, or money to buy food. For the chronic food insecure group, 57% of the households have experienced levels of stress the past week, while 35% of the food secure group has done the same.

Chart 6. Chronic food security and recent food access problems

Group	%
food insecure	57%
moderate - rely on production	41%
moderate - rely on purchase	44%
food secure	35%
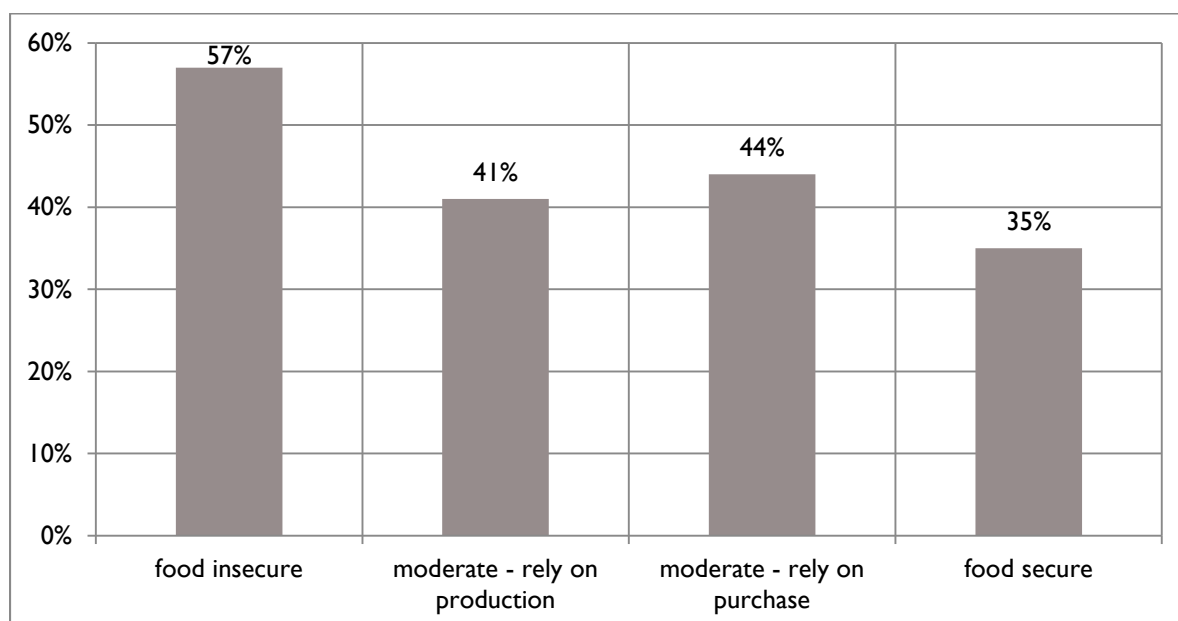
6.0   FOOD UTILIZATION AND NUTRITIONAL STATUS

6.1   Children's nutritional status

Mid Upper Arm Circumference (MUAC) was measured on a total of 2,390 children in the age between 6-59 months in North Kordofan. Using a cut-point of < 12.5 cm for global acute malnutrition (GAM), a total of six percent of the children was identified with GAM. Children 6-23 months of age were more likely to have low MUAC (15 percent) than those two years of age and over (2.5 percent). The prevalence of very low MUAC is one percent for the entire sample in North Kordofan state.

Table 6. Prevalence of low MUAC

	North Kordofan	6-23 months	24-59 months
< 11.5 cm	1%	2%	0.5%
< 12.5 cm	6%	15%	2.5%

The chart below shows the prevalence of low MUAC by child age group. For GAM (< 12.5 cm) the curve is as expected with the highest prevalence of low MUAC in the children 18-23 months of age, when they are being weaned from breastfeeding. The prevalence drops steeply by the 24-35 months age group to nearly none amongst the oldest children. For children with MUAC < 11.5 cm (SAM), the prevalence is highest in the youngest children and then remains between 1-2 percent during the weaning ages and drops to nearly none in the oldest groups. Overall, the problem with low MUAC is found in children less than two years of age only.

Chart 36. Prevalence of low MUAC by child age group
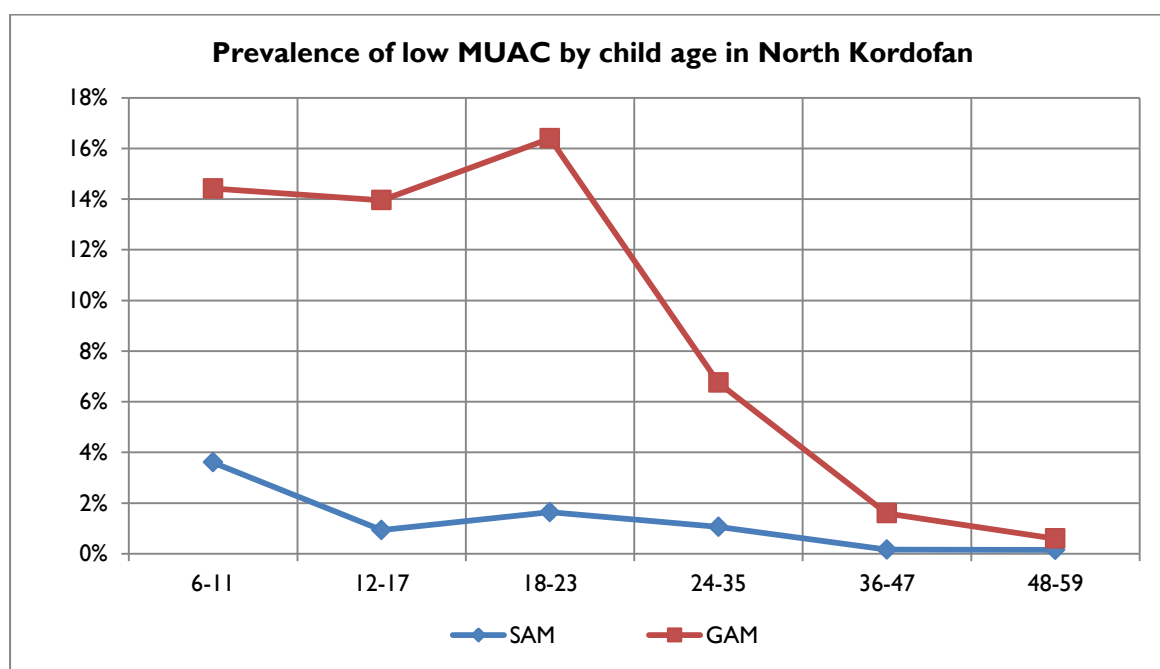
The chart below shows the prevalence of low MUAC for children 6-23 months of age by locality. From the data it seems that young children in Bara are the most likely to be malnourished (23 percent) followed by those in *Abu Zabad* (22 percent). The levels of low MUAC for children < 2 years are lowest in *En Nuhud* and *Sowdari* localities with only 8 percent each.   The highest percentage of children 6-23 months of age with MUAC < 11.5 cm is found in *Qebaesh* locality which is also the most food insecure locality. *Qebaesh*, along with Sheikan and *Jebrt El Sheikh* localities all have levels of low MUAC worthy of concern.

Chart 37. SAM and GAM for children 6-23 months by locality

Low MUAC for children 6-23 months by locality
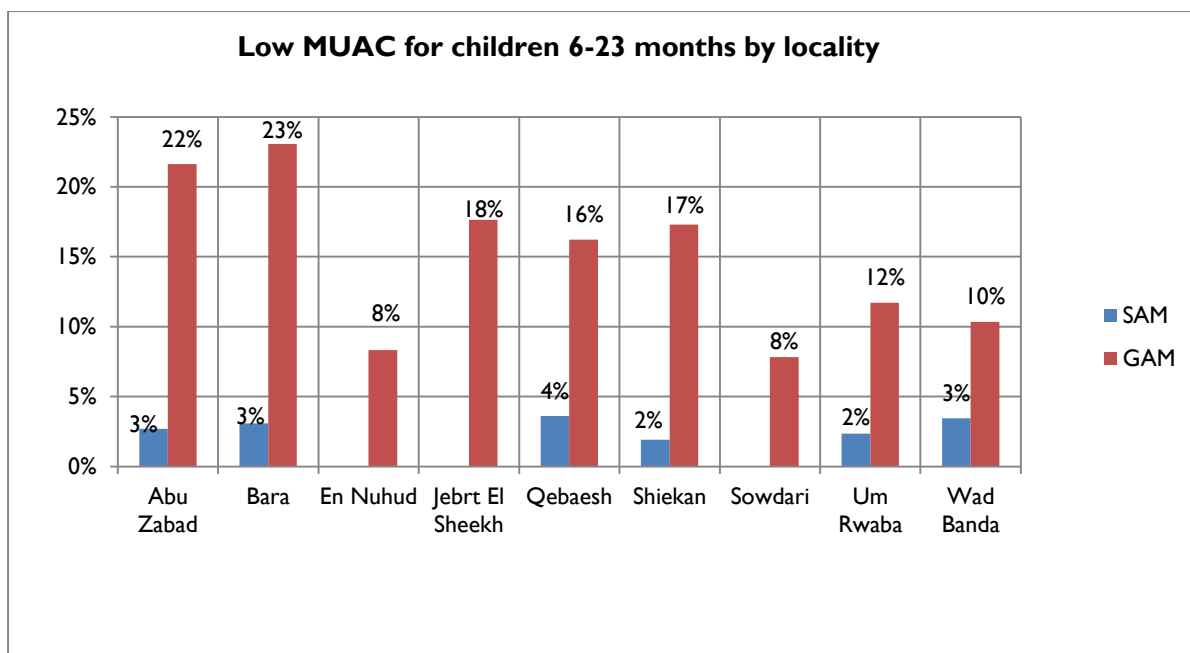
In general, the levels of low MUAC in older children are within an acceptable range and are much lower than in the younger children. The locality with the highest prevalence of low MUAC is *Jebrt El Sheikh* (8 percent) followed by *Bara* and *Wad Banda*.

Chart 38. Low MUAC in children 24-59 months of age by locality

SAM and GAM for children 24-59 months of age by locality
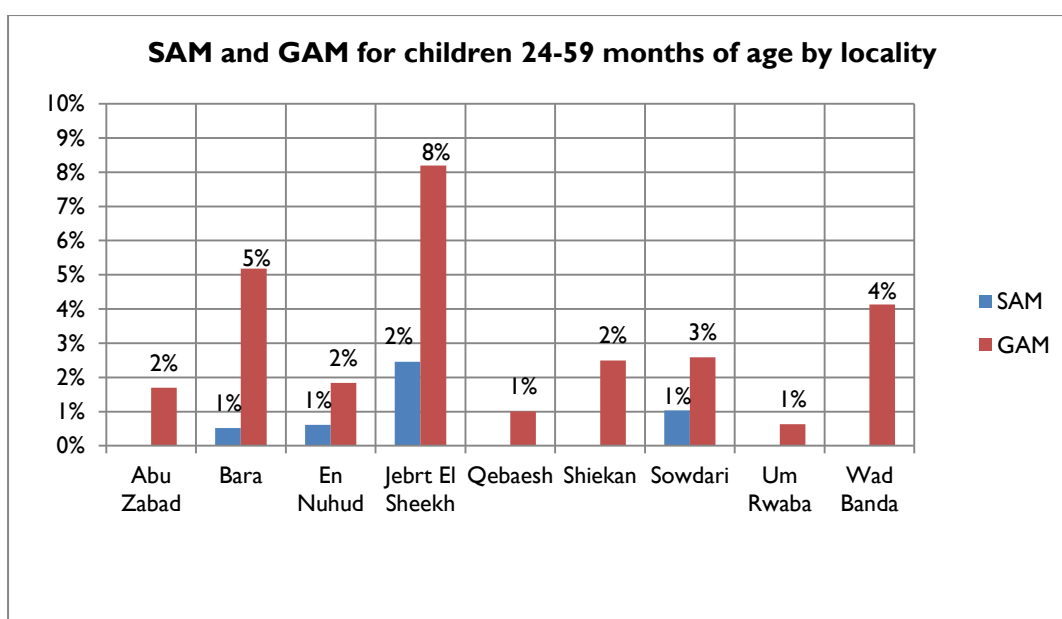
6.2   Child feeding

An important contributing factor to a child's health is the mothers feeding practices and knowledge about child health. In this assessment, the mother is asked what her child ate in the previous day. As illustrated in the chart below, breastfeeding is high (80 per cent) amongst children 6-11 months and then drops considerably to around 50 per cent for children 18-23 months of age.

It also appears that 6 months of age, about 60 per cent of the children are eating cereals (mostly sorghum and millet), the percentage of child eating cereal increases proportionally to the increase in the child age. Consumption of dairy remains stable across the age groups and gradually increases in the older child groups.

Chart 39. Complementary food items by feeding age groups

Complementray food items by feeding age groups

Legend:
- Grain,roats,tubers
- Legumes/nuts
- dairy
- Meats/fish
- Fruits
- Vegetable
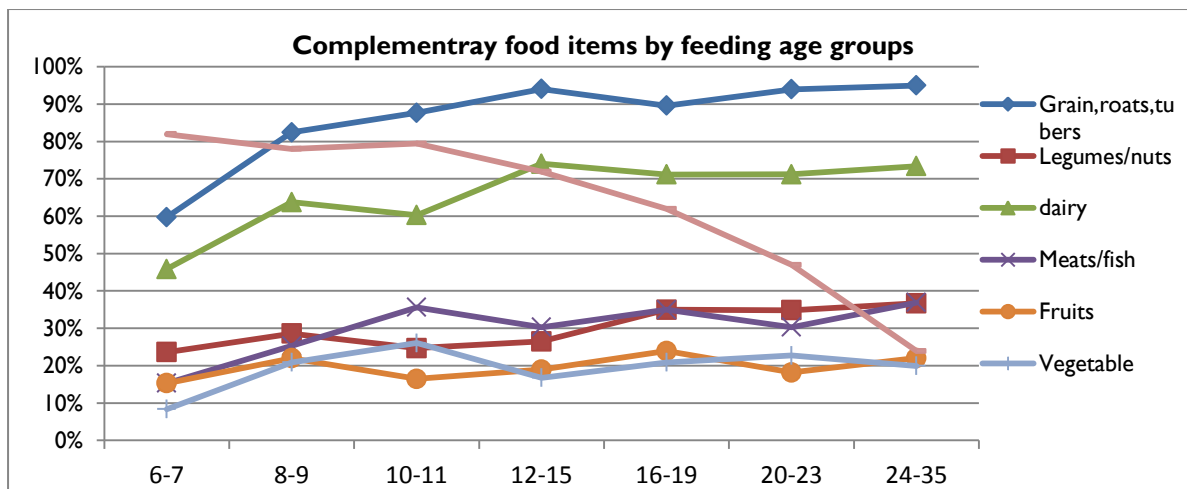
Dietary diversity was measured by counting the number of different foods/food groups (0-6) that are fed to the children. In the chart below it is clear that low diversity (0-1) decreases after 9 months of age and that high diversity (4-6) increases. Notably the highest diversity (11 per cent) is among the same groups that has the lowest dietary diversity (6-7).

Chart 40.Dietry Diversity by child feeding age groups

Dietry diversity by child feeding age groups

Legend: ■ Low (0-1) ■ meduim (2-3) ■ high (4-6)

45
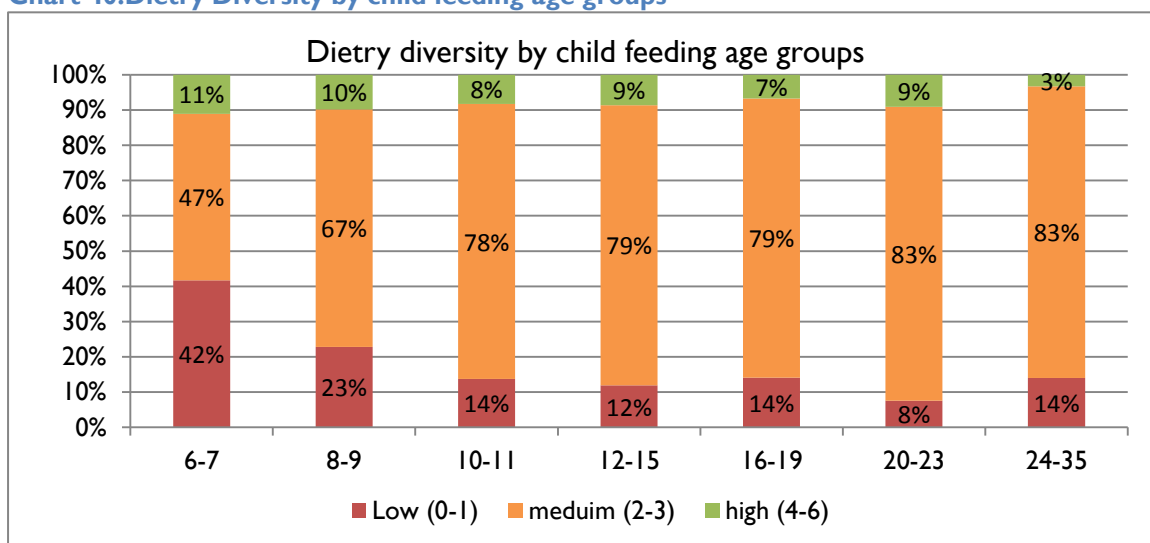
6.3   Morbidity

To analyze child health, the respondent is also asked if the child has been ill the last two weeks prior to the assessment. In North Kordofan, data was collected from 1,525 children. When comparing the two age groups of children, a higher percentage of the younger children have had a recent illness. For the children between 6 and 23 months, 18 percent had experienced acute respiratory infection, 14 percent with fever, nine percent diarrhoea and one percent suspected measles. In all, older children were less likely to have experienced recent illness.

Chart 41. Recent child illness

Recent illness in children by age
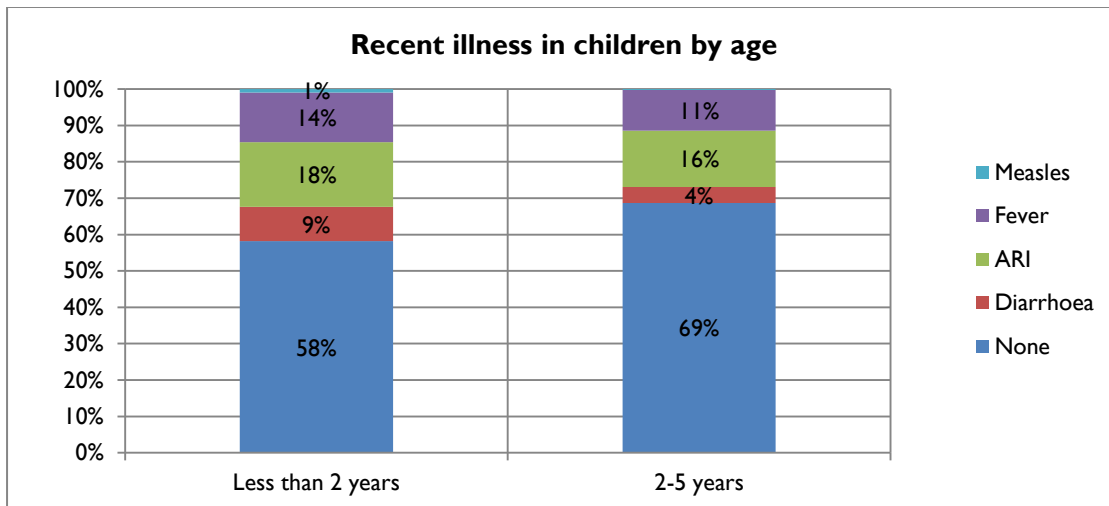
7.0   CONCLUSIONS and RECOMENDTIONS

Findings from the comprehensive food security assessment show that six percent of the households in North Kordofan were acutely food insecure at the time of the survey, and 16 percent were vulnerable to food insecurity.

When using the projected population numbers for 2012, an estimated population of 180,000 people in North Kordofan are acutely food insecure. Furthermore, an estimated population of 450,000 people are vulnerable to food insecurity.

Additional analyses shows that 16 percent of the households are chronically food insecure and there is a clear difference between localities in the problem of food insecurity with households in *Qebaesh* being the worst off with *Abu Zabad* and *Shiekhan* localities also of concern and in need of interventions.

When reviewing the causes of food insecurity, one of the main reasons identified by stakeholders is that the localities are located in drought-affected zones with limited possibilities for agricultural production (*Western Agropastoral Millet and Gum Arabic*).

The *Western Agropastoral Millet* livelihood zone is found between west Kordofan and East Dafur and is characterised by its frequent drought, poor production and scarcity of drinking water sources. Historically the area is cereal deficit and depends on cereal supply from East Darfur. The 2010/2011 agricultural season is considered to be one of the worst seasons in many years. In addition, frequent rebel (JEM) movement between the end of 2010 and early 2011 in the area, has created instability and has prevented farmers from accessing their land.

Although Gum Arabic collection and sale is the main livelihood activity for the residents, its contribution to the households' income is very limited because the assessment took place before the harvest period. The main livelihood groups observed in the two livelihoods zones are wage labour and agricultural labour which is both affected by the poor harvest and limited labour opportunities.

The nutritional status of children younger than five years in *Qebeash* and Abu *Zabad*, based on MUAC measurements, indicates that malnutrition rates are above 15 percent.

The food insecure households in the assessment are relying mainly on what used to be secondary livelihood sources such as firewood collection, remittances and migration to traditional mining areas. It has been observed that remittance is a quite common source of income in *Swodari*, where more than 80% of the female headed households are depending on remittance. This is mainly due to the seasonal migration of men to the agricultural projects in central Sudan. However, the households depending on remittances, wages labour and transfer in *Sowdari*, *Qebaesh* and *Abu Zabad* are the least food insecure households.

The prices of food items included in the minimum healthy food basket collected in May 2012 have increased considerably between the assessment data collection period and the end of the year. Generally the households in North Kordofan across the localities are allocating more than 60 percent of their monthly share of expenditure for food. Meanwhile, households in *Qebaesh, Jebrt El Sheik* and *Um Rawba* are exceeding the threshold (65 percent) in expenditure for food. This means that households that are depending mainly on access to markets for their food and are more likely to be affected by price increases, particularly during the lean season (June-October).

Causes of food insecurity and vulnerability

This report has documented that there are several common characteristics that affect and determine a household's food security status in North Kordofan which are also similar to other parts of the country. Income and livelihood diversity and asset wealth, access to agricultural production activities and less dependency on markets are all main determiners of household food security. Also, as is clearly seen for households in *Qebaesh*, direct or indirect impacts of conflict also have an impact on households' ability to access enough food or income. The education of the head of household is related to household food security but is likely the factor that influences income and livelihood options.

The following recommendations came from the stakeholder presentation of the assessment findings and the subsequent discussions around interpretation and actions regarding the issues that were raised from the survey analysis. Both the short- and long-term recommendations can and should be implemented jointly by the UN agencies (FAO, UNICEF, UNDP) and line ministries to achieve the desired level of ownership and impacts.

Short term recommendations

- A self-targeting project through food for training to develop the capacity and increase households' resilience in the most food insecure localities (*Qebaesh, Abu Zabad* and *Um Rawaba*). The types of activities recommended are training on handicrafts, agricultural extension/livestock and natural resources reservation (planting of Gum Arabic tree).
- State Ministry of Health is already implementing supplementary feeding programmes in *Qebaesh*. However, expanding the project and combine it with integrated blanket supplementary feeding programme is recommended.
- Provision of livestock loans through Farmers to Markets (F2M) initiatives and introduction of livestock restocking project in *Western Agropastoral millet and Gum Arabic* livelihood zones.

Long term recommendations:

- Implementation of two annual rounds of Food Security Monitoring System (FSMS) in the most affected localities in the lean season and during the post-harvest period.
- Expansion of the school feeding programme in most food insecure localities.
- Promotion of natural resources awareness/programmes such as the establishment of woodlots, traces and seedlings production.

	North Kordofan									
Locality	Abu Zabad	Bara	En Nuhud	Jebrt El Sheekh	Qebaesh	Shiekan	Sowdari	Um Rwaba	Wad Banda	North Kordofan State
Average household members	6.8	6.4	7.1	6.6	6.5	6.2	7.5	6.1	6.8	6.5
% under 5, Male	11.3%	10.5%	12.1%	10.4%	12.3%	10.6%	12.0%	11.3%	12.0%	11.4%
% under 5, Female	11.0%	11.3%	12.3%	10.3%	12.3%	11.0%	11.2%	9.7%	12.2%	11.2%
% 6 -15 yrs, Male	14.5%	17.3%	14.3%	20.0%	17.5%	16.9%	16.2%	17.7%	14.9%	17.0%
% 6 -15 yrs, Female	17.2%	16.3%	15.7%	18.9%	17.4%	16.0%	15.2%	18.6%	15.9%	17.0%
% 16 -60 yrs, Male	15.8%	16.6%	14.5%	13.3%	14.5%	13.3%	15.2%	15.3%	13.4%	14.8%
% 16 -60 yrs, Female	17.9%	17.7%	17.7%	14.8%	13.8%	13.3%	16.0%	17.8%	13.4%	15.9%
% over 60 yrs, Male	7.6%	4.8%	6.7%	5.8%	5.8%	9.2%	6.9%	5.3%	9.1%	6.4%
% over 60 yrs, Female	4.7%	5.5%	6.6%	6.5%	6.4%	9.7%	7.3%	4.3%	9.1%	6.3%
Residence status										
Residents	100.0%	100.0%	100.0%	98.2%	100.0%	100.0%	85.2%	100.0%	100.0%	98.7%
Nomads	.0%	.0%	.0%	1.8%	.0%	.0%	14.8%	.0%	.0%	1.3%
Gender of household head										
Male	72.5%	71.8%	57.3%	66.7%	71.6%	87.4%	55.6%	70.8%	65.2%	71.2%
Female	27.5%	28.2%	42.7%	33.3%	28.4%	12.6%	44.4%	29.2%	34.8%	28.8%
Education level of the household head										
None	38.7%	50.0%	19.2%	64.3%	59.5%	62.0%	68.9%	51.4%	22.5%	52.3%
Primary	54.0%	41.7%	57.5%	31.5%	38.4%	32.1%	24.5%	42.7%	64.9%	40.6%
Secondary	6.6%	6.8%	21.0%	4.2%	1.9%	4.4%	5.6%	5.1%	11.7%	6.1%
University	.7%	1.5%	2.4%	.0%	.3%	1.5%	1.0%	.9%	.9%	1.0%
Type of housing										
Mud/mud brick	2.9%	9.1%	5.4%	14.9%	.3%	13.2%	9.2%	10.5%	5.4%	8.3%
Stone/concrete/brick	.7%	1.9%	3.0%	.6%	.3%	2.0%	.0%	3.5%	1.8%	1.8%
Thatch	96.4%	89.1%	91.6%	83.9%	99.5%	84.4%	67.9%	86.1%	92.9%	87.9%
Plastic shelter	.0%	.0%	.0%	.6%	.0%	.5%	23.0%	.0%	.0%	2.0%
Main source of drinking water										
Public tap	.0%	7.9%	1.2%	.0%	.3%	4.2%	.0%	1.0%	.0%	2.0%

	Borehole with hand pump/engine	56.5%	56.4%	38.7%	54.2%	98.4%	64.9%	66.8%	52.8%	71.4%	63.7%
	Protected dug well/ spring	1.4%	11.7%	15.5%	14.3%	1.3%	8.4%	4.1%	2.8%	7.1%	6.4%
	Unprotected well/spring	2.2%	15.4%	1.8%	19.6%	.0%	15.1%	15.8%	8.4%	.0%	9.1%
	Water Bladder	.0%	.0%	.0%	.6%	.0%	1.0%	1.0%	.0%	.0%	.3%
	Surface water	.0%	.0%	4.8%	.0%	.0%	2.0%	5.1%	17.2%	2.7%	5.3%
	Tanker truck	18.1%	8.3%	22.0%	10.7%	.0%	4.0%	6.6%	17.4%	9.8%	10.1%
	Vendor	7.2%	.4%	10.7%	.0%	.0%	.0%	.0%	.0%	3.6%	1.4%
	Cart with small tank or drum	14.5%	.0%	5.4%	.6%	.0%	.5%	.5%	.3%	5.4%	1.7%
Type of toilet facility											
	Traditional pit latrine	82.0%	30.1%	88.7%	10.7%	86.0%	44.4%	30.6%	45.3%	96.4%	53.8%
	Improved latrine	2.9%	8.6%	4.8%	1.2%	.0%	2.3%	1.5%	3.8%	.9%	3.0%
	Bush, stream	15.1%	61.3%	6.5%	88.1%	14.0%	53.3%	67.9%	50.9%	2.7%	43.2%
Household members with special needs											
	No	92.1%	90.6%	89.3%	94.6%	92.3%	94.1%	86.2%	94.1%	93.8%	92.4%
	Yes	7.9%	9.4%	10.7%	5.4%	7.7%	5.9%	13.8%	5.9%	6.3%	7.6%
	Physical	7.1%	7.1%	8.3%	4.8%	5.8%	4.7%	12.8%	4.2%	4.5%	6.1%
	Mental	.7%	1.5%	.0%	.6%	1.1%	.7%	.5%	1.6%	1.8%	1.0%
	Both	.0%	.8%	2.4%	.0%	.8%	.5%	.5%	.2%	.0%	.5%
Working status											
	Employed	96.4%	86.8%	100.0%	90.5%	96.6%	98.3%	93.8%	92.7%	100.0%	94.6%
	Unemployed	3.6%	13.2%	.0%	9.5%	3.4%	1.7%	6.2%	7.3%	.0%	5.4%
Reasons for unemployment											
	No chance of work	.0%	48.6%	.0%	18.8%	25.0%	.0%	7.7%	11.9%	.0%	22.5%
	Didnot find a suitable job	20.0%	22.9%	.0%	37.5%	8.3%	16.7%	23.1%	33.3%	.0%	26.4%
	Illness, aging	60.0%	28.6%	.0%	43.8%	66.7%	83.3%	69.2%	54.8%	.0%	50.4%
	Security situation	20.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.8%
Main income sources (General)											
	Farming (self-employed)	76.3%	59.3%	82.6%	61.2%	78.6%	66.4%	53.0%	82.9%	69.6%	72.0%
	Agricultural labour	4.4%	5.2%	7.2%	1.3%	6.6%	.5%	6.6%	1.1%	4.5%	3.6%

	Skilled labour	5.9%	9.5%	1.2%	12.5%	2.5%	1.0%	4.9%	2.1%	6.3%	4.0%
	Non-skilled labour	10.4%	17.3%	4.8%	9.9%	9.3%	5.5%	21.3%	2.3%	13.4%	8.7%
	Public servant	2.2%	3.5%	3.6%	4.6%	.8%	4.8%	2.2%	2.4%	2.7%	2.9%
	Self-employed (Hand Craft)	.7%	5.2%	.6%	10.5%	2.2%	21.8%	12.0%	9.2%	3.6%	8.8%
Income sources (Detail)											
	Sale of cereals (sorghum, millet)	2.4%	4.8%	1.4%	.0%	.5%	17.3%	.0%	10.7%	1.0%	6.4%
	Sale of other crops	22.2%	14.9%	34.0%	.0%	15.4%	21.7%	2.6%	8.2%	29.3%	14.9%
	Sale of livestock and animal products	17.5%	14.5%	5.4%	13.0%	5.1%	6.2%	26.4%	7.3%	4.0%	9.9%
	Remittances	14.3%	15.3%	2.7%	13.0%	12.2%	2.3%	15.0%	27.5%	2.0%	13.8%
	Renting out donkey cart	.8%	.4%	1.4%	.7%	1.6%	1.0%	.5%	.9%	.0%	.9%
	Gifts from family/relatives	.8%	.8%	.0%	2.2%	2.2%	3.4%	5.2%	.6%	.0%	1.8%
	Sale of food aid	.0%	.0%	.0%	.0%	.0%	.3%	.0%	.0%	.0%	.0%
	Agricultural wage labor	7.9%	8.4%	20.4%	7.2%	20.3%	2.3%	4.7%	3.6%	5.1%	8.4%
	Salaried work	4.0%	4.8%	5.4%	10.9%	3.0%	6.2%	1.6%	4.3%	4.0%	4.7%
	Skilled labor	5.6%	4.4%	1.4%	2.2%	6.5%	1.8%	3.6%	4.9%	6.1%	4.1%
	Wheal barrow/trolley	.0%	.0%	.0%	.0%	.8%	.0%	.5%	.0%	.0%	.2%
	Domestic labor	.0%	.4%	.7%	1.4%	.5%	.0%	.5%	.2%	2.0%	.4%
	Brick-making	.0%	3.2%	.7%	.0%	.5%	3.6%	1.6%	.9%	.0%	1.5%
	Construction	2.4%	5.2%	.7%	12.3%	2.2%	3.9%	1.0%	3.0%	.0%	3.3%
	Portering	.8%	2.0%	.0%	1.4%	.5%	1.6%	2.6%	1.1%	3.0%	1.3%
	Sale of water	.0%	.4%	.0%	.7%	.3%	.0%	.5%	.6%	.0%	.3%
	Tea seller/catering	.8%	.4%	2.0%	3.6%	1.4%	.5%	4.1%	1.1%	3.0%	1.5%
	Kiosk	.8%	1.6%	2.7%	.7%	1.4%	1.0%	2.1%	1.5%	7.1%	1.7%
	Rickshaw driver	.0%	.8%	2.0%	1.4%	.3%	1.8%	.5%	1.7%	2.0%	1.2%
	Sales of handicraft	.0%	.8%	.0%	.0%	.0%	1.3%	.5%	.2%	1.0%	.4%
	Sales of firewood/grass	4.0%	1.2%	.0%	2.9%	10.3%	2.6%	.5%	7.5%	1.0%	4.5%
	Sale of charcoal	.0%	1.2%	2.7%	2.9%	1.4%	.3%	.0%	.9%	2.0%	1.1%
	Other petty trade	11.9%	3.6%	7.5%	5.8%	7.6%	15.5%	11.4%	12.9%	11.1%	10.4%
	Begging	4.0%	10.8%	8.8%	17.4%	6.0%	5.4%	14.5%	.4%	16.2%	7.0%

Adopt coping strategies related to food consumption											
	No	64.3%	49.6%	66.1%	23.2%	43.0%	78.0%	67.3%	59.5%	45.5%	57.1%
	Yes	35.7%	50.4%	33.9%	76.8%	57.0%	22.0%	32.7%	40.5%	54.5%	42.9%
Coping mechanism											
	No coping	64.3%	49.6%	66.1%	23.2%	43.1%	78.0%	67.3%	59.5%	46.4%	57.2%
	Low coping	32.1%	39.1%	26.8%	65.5%	24.5%	17.5%	15.3%	25.6%	36.6%	28.5%
	Medium coping	2.1%	8.6%	5.4%	7.7%	16.8%	4.2%	4.1%	11.4%	17.0%	9.2%
	High coping	1.4%	2.6%	1.8%	3.6%	15.7%	.2%	13.3%	3.5%	.0%	5.2%
Receive food aid											
	No	85.7%	79.9%	61.3%	89.2%	99.7%	100.0%	100.0%	92.9%	67.9%	90.3%
	Yes	14.3%	20.1%	38.7%	10.8%	.3%	.0%	.0%	7.1%	32.1%	9.7%
	GFD	.0%	.0%	.0%	1.2%	.0%	.0%	.0%	.0%	.0%	.1%
	FFR_FFW/FFT	.0%	1.9%	.6%	6.0%	.0%	.0%	.0%	.7%	.0%	.8%
	SFP	.0%	.4%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%
	BSFP	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%
	School Feeding	14.3%	18.0%	35.7%	8.3%	.0%	.0%	.0%	6.4%	32.1%	8.9%
	Food voucher	.0%	.4%	.0%	1.2%	.0%	.0%	.0%	.0%	.0%	.1%
Child food groups											
	Less than four food items	52.5%	68.6%	42.7%	78.2%	89.8%	53.8%	69.6%	62.4%	37.3%	64.6%
	Four and more food items	47.5%	31.4%	57.3%	21.8%	10.2%	46.2%	30.4%	37.6%	62.7%	35.4%
Child health - Illness											
	None	68.5%	66.1%	51.8%	69.7%	66.0%	68.1%	74.2%	72.0%	45.0%	66.2%
	Diarrhea	6.1%	8.7%	10.6%	3.2%	6.1%	2.6%	5.1%	1.9%	14.1%	5.7%
	ARI	17.6%	16.1%	27.1%	16.8%	13.3%	6.3%	11.7%	18.4%	27.5%	16.0%
	Fever	7.9%	8.7%	10.1%	10.3%	14.6%	21.3%	7.8%	7.7%	13.4%	11.7%
	Measles	.0%	.4%	.5%	.0%	.0%	1.7%	1.2%	.0%	.0%	.4%
MUAC Measurements for children younger than 2 years											
	<= 115 mm	2.7%	3.1%	.0%	.0%	3.6%	1.9%	.0%	2.3%	3.4%	2.1%
	> 115 -125 mm	18.9%	20.0%	8.3%	17.6%	12.6%	15.4%	7.8%	9.4%	6.9%	12.7%

	> 125 mm	78.4%	76.9%	91.7%	82.4%	83.8%	82.7%	92.2%	88.3%	89.7%	85.2%
MUAC Measurements for children 2 - 5 years											
	<= 115 mm	.0%	.5%	.6%	2.5%	.0%	.0%	1.0%	.0%	.0%	.4%
	> 115 -125 mm	1.7%	4.7%	1.2%	5.7%	1.0%	2.5%	1.6%	.6%	4.1%	2.2%
	> 125 mm	98.3%	94.8%	98.2%	91.8%	99.0%	97.5%	97.4%	99.4%	95.9%	97.4%
Has your household cultivated crops this season?											
	Yes	95.0%	65.0%	94.6%	68.5%	95.8%	67.7%	52.8%	90.8%	90.2%	80.7%
	No	5.0%	35.0%	5.4%	31.5%	4.2%	32.3%	47.2%	9.2%	9.8%	19.3%
Area cultivated last year in Feddan											
	Millet	3.1	5.9	4.4	8.0	3.9	2.5	7.7	1.8	5.2	4.0
	Sorghum	2.0	1.1	2.1	.4	1.2	3.1	.7	4.1	2.1	2.4
	Groundnuts	2.4	.2	3.1	.0	3.6	1.2	.1	.8	2.7	1.7
	Sesame	.9	4.4	.6	.0	.2	3.5	.2	6.0	.3	3.0
	Watermelon seeds	1.3	4.4	1.4	1.8	1.4	2.5	1.5	.8	.7	1.7
Production this season by number of bags											
	Millet	.8	.4	1.9	.2	1.6	.9	.2	.1	2.5	.9
	Sorghum	1.0	.6	1.4	.0	.6	1.0	.0	3.5	1.0	1.6
	Groundnuts	7.4	.2	15.6	.0	16.0	1.6	.0	1.2	8.6	6.5
	Sesame (kentar)	1.0	1.5	.4	.0	.1	1.7	.0	6.4	.1	2.5
	Watermelon seeds (kentar)	.7	1.7	.5	.1	.3	.7	.1	.5	.2	.6
% of households describing rainfalls quantity this year											
	Better	17.1%	12.8%	28.3%	.0%	34.7%	12.5%	1.0%	14.5%	10.0%	17.3%
	Average	43.4%	32.0%	50.7%	4.3%	35.3%	27.6%	4.9%	31.5%	63.0%	32.7%
	Worse	39.5%	55.2%	21.1%	95.7%	30.0%	59.9%	94.1%	54.0%	27.0%	50.0%
% of households describing rainfall distribution											
	Good	2.4%	1.8%	5.4%	.0%	14.4%	2.4%	.0%	7.0%	2.0%	5.8%
	Even	22.0%	8.3%	58.1%	.0%	22.2%	15.7%	.0%	7.6%	50.5%	17.8%
	Uneven	75.6%	89.9%	36.5%	100.0%	63.4%	82.0%	100.0%	85.4%	47.5%	76.4%
Source of seeds this season											
	Own production	35.0%	41.7%	13.8%	53.6%	39.7%	47.0%	41.0%	56.0%	8.9%	42.2%

	Purchase	59.2%	57.1%	71.7%	44.6%	55.9%	47.7%	59.0%	40.8%	88.1%	53.5%
	Donation (FAO, NGOs, GOS)	5.8%	1.2%	14.5%	1.8%	4.5%	5.3%	.0%	3.2%	3.0%	4.3%
% of animal holding											
	Cattle	14.3%	.8%	13.1%	2.4%	3.7%	13.5%	2.0%	4.4%	14.3%	6.7%
	Sheep and Goats	80.7%	75.6%	79.8%	86.9%	82.0%	74.1%	91.3%	65.3%	83.9%	77.0%
	Poultry	7.1%	14.3%	6.0%	17.3%	1.9%	7.9%	14.3%	9.4%	2.7%	8.8%
	Donkey	85.7%	86.8%	78.6%	89.3%	70.9%	72.4%	93.4%	73.0%	81.3%	78.4%
	Camel	60.7%	47.0%	78.6%	37.5%	56.1%	60.8%	45.9%	56.1%	77.7%	56.6%
Wealth index											
	Poorest quintile	7.9%	13.2%	15.5%	44.0%	46.6%	4.4%	31.1%	10.1%	16.1%	19.8%
	Second	17.9%	12.4%	13.1%	24.4%	30.7%	18.7%	19.9%	18.8%	17.0%	19.9%
	Third	26.4%	24.4%	14.9%	17.3%	13.0%	29.6%	12.8%	27.0%	18.8%	21.8%
	Fourth	22.1%	27.1%	16.1%	8.9%	7.4%	29.6%	17.3%	29.8%	12.5%	21.3%
	Richest quintile	25.7%	22.9%	40.5%	5.4%	2.4%	17.7%	18.9%	14.3%	35.7%	17.2%
Food Consumption Score											
	Poor	2.1%	2.3%	1.2%	4.2%	7.9%	1.2%	3.1%	2.3%	.9%	3.0%
	Borderline	15.7%	13.9%	3.6%	7.1%	24.1%	14.0%	2.0%	10.8%	3.6%	12.3%
	Acceptable	82.1%	83.8%	95.2%	88.7%	68.0%	84.7%	94.9%	86.9%	95.5%	84.7%
Relative Expenditure on Food											
	<65%	35.0%	60.0%	38.7%	47.6%	29.4%	38.9%	58.8%	44.2%	37.5%	42.9%
	>65%	65.0%	40.0%	61.3%	52.4%	70.6%	61.1%	41.2%	55.8%	62.5%	57.1%
Absolute Expenditure (Minimum Healthy Food Basket)											
	< 1 MHFB	13.6%	8.7%	6.0%	9.5%	41.3%	11.4%	5.2%	17.3%	3.6%	15.9%
	1-2 MHFB	49.3%	37.0%	38.7%	51.8%	42.6%	42.7%	30.9%	39.4%	54.5%	41.6%
	> 2 MHFB	37.1%	54.3%	55.4%	38.7%	16.1%	45.9%	63.9%	43.3%	42.0%	42.4%
Food Security											
	Food Insecure	5.0%	4.9%	2.4%	6.0%	18.5%	4.2%	1.5%	5.2%	.9%	6.5%
	Vulnerable to food insecurity	20.0%	9.1%	7.1%	7.7%	33.9%	13.6%	5.7%	17.8%	5.4%	15.8%
	Food Secure	75.0%	86.0%	90.5%	86.3%	47.6%	82.2%	92.8%	77.0%	93.8%	77.8%

	Estimated Population Size (2011)	196,600	398,704	283,108	255,210	320,789	597,050	299,647	700,610	172,511	3,224,229
	Estimated Food Insecure	9,830	19,559	6,741	15,191	59,405	25,061	4,634	36,681	1,540	178,643
	Estimated Vulnerable to food insecurity	39,320	36,109	20,222	19,748	108,627	81,081	16,990	124,716	9,242	456,055
	Estimated poor FCS	4,213	8,993	3,370	10,634	25,459	7,353	9,173	15,867	1,540	86,603
	Estimated poor Absolute Expenditure (MHFB)	26,681	34,604	16,852	24,306	132,389	67,813	15,446	121,048	6,161	445,300
	Estimated poverty	15,447	52,461	43,814	112,414	149,362	26,470	93,257	70,793	27,725	591,744