# Baseline Survey Report For Conducting A Market Assessment To Investigate The Implementation Gaps In Sustainable And High Demand Agricultural Commodities For Batil And Doro Refugee Camps In Maban, Upper Nile, South Sudan.

Maban County, Upper Nile State, South Sudan.

March, 2017

Table of Contents

## List of Tables



## Acknowledgments

With support from community leaders including Doro and Batil refugee camp leaders and residents, RI was able to complete the included market assessment. Additionally, without funding support from UNHCR to support livelihoods interventions in Maban County, RI would not be able to expand on current ongoing program activities. Finally, many thanks is given to the dedicated, hard-working staff of RI who conducted the on-the-ground, interviews and consultations to acquire necessary data which informed this report.

## Abbreviations

FGD – Focus Group Discussion

IDP – Internally Displaced Person

LWF – Lutheran World Relief

NGO – Non-governmental organization

PTA – Parent teacher Association

RI – Relief International

UNHCR – United Nations High Commissioner for Refugees

WFP – United Nations World Food Programme

## SUMMARY OF FINDINGS

### i) Sorghum value chains

Sorghum is consumed by majority of the household in both the host and refugee communities who consider it a staple food. It is consumed processed into flour and prepared as ***asida*** or ***kisra***. The major varieties consumed are the ***wad ahmed (white)*** and ***esh maban (red)*** sorghum which is accessible at local markets in Bunj and Renk town, for some of the consumers. The demand for sorghum is there all year round except in the period of drought when consumers seek for alternatives like wheat, rice and maize due to scarcity.

Processing is done traditionally for households using grinding stones, manually using a pedalled mill or donkey and mechanically using diesel run grinding mills. The quality of the sorghum is however not the best given that it at times has foreign bodies as a result of poor post-harvest handling by the farmers.

### ii) Vegetable value chain

The highly consumed vegetables are okra and ***kudra*** which are eaten fresh but also consumed dried during the dry season. They are considered a delicacy and a staple by most of the consumers. Eggplants are equally demanded and eaten majorly during the rainy season when it is available, the chain actors are not yet exposed to the option of having this also dried just like it's done for the okra and other vegetables.

The food vendors serve the vegetables as salad but also mixed with other meats especially meat and fish. Most of the dried vegetables are pasted with ground nut paste and consumed with sorghum ***asida.***

Production, processing and trade was seen to be occupied by the same people with a few exceptions. The market structure for the vegetables is small and does not give room for very many independent actors at a time. The price trend for vegetables has been seen to decrease over the years especially during the rainy season, because majority of households utilize the rains as a water source for their crops.

### iii) Maize value chain

Maize is commonly consumed fresh (roasted or boiled), the yellow corn variety being used for this purpose. The maize flour is a fairly new form that is still being adapted by the refugees and the host community. NGOs have been supportive in providing the ***Longe 4 and 5*** maize seed varieties from East Africa. These seeds are however not readily available on the market.

Households that frequently consume maize prefer it as porridge with a few making it into ***kisra*** or ***asida***. It is consumed along with vegetables and meat.

Most of the consumers purchase directly from the farmers (for the yellow corn) and other from the processors for the flour. Other actors in the open markets are the traders who equally supply the same commodity.

### iv) Ground nut value chain

Ground nuts are mostly produced by the host community with a few from Doro. The supply of most ground nut products is from Bunj where the traders in Doro and Batil buy and take to retail. The processors are equally located in the same place. The common consumed products are ground nut grains roasted or raw and ground nut paste. The paste is highly demanded and is added to a number of vegetables and meat, consumed by a number of people.

Ground nut oil processing and oil consumption is low. This is attributed to the availability of direct substitutes (vegetable oil distributed by WFP). Most producers sell the groundnuts unshelled to traders/producers in the market. Most of these traders shell the ground nuts themselves and sell them to processors and final consumers.

## CHAPTER ONE: INTRODUCTION

## *1.1* Background

### 1.1.1 The refugee traits

In 2011, conflict in Blue Nile, Sudan forced over 100,000 refugees to flee their homes. Although the situation has largely stabilized since 2011, refugees are unlikely to return in the near future due to on-going insecurity along the Sudan and South Sudan border. As a consequence, the vast majority of the 157,359 refugees continue to live in four camps: Yusuf Batil, Doro, Gendrassa, and Kaya.

Tension between the refugee and host population has increased significantly in 2015 and 2016.[1] The impact of the population influx on grazing areas, water, and fuel sources still comprises a major source of conflict between the host population and refugees. Deforestation as a result of charcoal production and timber harvesting are cited as a leading source of conflict. Charcoal production is utilized for personal use, local sale and sale outside of Maban County to Renk, creating multiple sources of demand for charcoal.[2]

In addition to environmental degradation, food insecurity both within and outside the refugee camps remains a concern. Food rations provided to refugees by the World Food Programme (WFP) were cut by

[1] In June 2016, members of the host community and refugees clashed in Maban over an alleged livestock dispute. A "buffer zone" separating refugees and the host community was then established as a conflict mitigation measure. UNHCR South Sudan Country Representative Ahmed Warsame reported concerns over the "heightened presence of armed groups in Maban camps as well as weapons circulation."

[2] Tension, as a result of livestock, natural resources, is not new and is further complicated as a result of militarization of camps. For a more recent analysis on refugee-host conflict, please see "A Crisis Normalised: Civilian perspectives on the conflict in Sudan's Blue Nile State" *International Refugee Rights Initiative*, 30 November 2016.For additional information on the refugee-host conflict as a result of natural resources and land, please also refer to Dr. Urs Bloesch and Annemarie Schneider et al., "Environmental inception mission," 4 – 22 June 2013.

30 percent in August 2015 and further reductions in 2017 are a growing concern within the county.[3] Many refugees have poor food production capacities and limited sources of income generation, making them extremely vulnerable to shocks. Food consumption scores among refugees remain poor and only 40 percent of respondents participating in focus group discussions as part of a market assessment conducted by RI in March 2016 consume vegetables on a daily basis. Although the majority of refugees supplement WFP rations with food produced at the household-level, an assessment conducted by UNHCR in December 2015 revealed over 90 percent of refugees identified WFP food rations as their primary food source. Most food produced by refugees is largely reserved for household consumption needs.[4]

Focus group discussions (FGD) held by RI in March 2016 further revealed refugees are using a number of concerning coping strategies following the reduction in WFP rations.[5] Due to a lack of income, a portion of WFP rations are typically sold and/or bartered at the local market in exchange for additional food commodities (e.g. sorghum, okra, tomatoes, cassava, and other vegetables). Local markets include markets both inside of Doro and Batil camps as well as small and medium—scale markets in Bunj town. Goods sold at the markets include produced food products, clothing, firewood, meats, construction materials, as well as services (photo printing, barbershops, grain processing, and restaurants). Despite the high demand for these items, production in Maban remains low and the majority of produce is transported to Maban from Renk (Upper Nile), Khartoum (Sudan), and Yusba (Ethiopia) which drives up already high prices. FGD participants and key informants cited the poor utilization of land and a lack of availability of agricultural inputs and technologies as major limitations to local production in Maban.

### 1.1.2 Host community traits

The Host community in Maban County near Doro and Batil Camps consists of mainly pastoralists with access to the main markets in Bunj town and Gentil town. The host community has seen much change in their land and environment since 2011 including tensions with the refugee communities. Since July 2016, the host community has also seen increased movement of temporary and permanent internally displaced persons (IDPs) from Malakal, Juba, and Yei towns. The security environment is expected to remain fluid and unpredictable, hindering access to goods and services in addition to development of hard and soft infrastructure.

## 1.2 Baseline Objective

The objective of the assessment was to investigate the consumer demand, market opportunities and available input and output markets for the host community, Batil and Doro refugee camps. The market assessment will identify or influence the sectors with the highest potential to be supported through any

[3] "A Crisis Normalised: Civilian perspectives on the conflict in Sudan's Blue Nile State" *International Refugee Rights Initiative*, 30 November 2016.

[4] This was also confirmed in RI's "Livelihoods Context Analysis" (March 2016) and RI's "Post Distribution Monitoring Report" (October/November 2016).

[5] "Livelihoods Context Analysis," Relief International, March 2016.

potential grant form donor targeting the given value chains. This is aimed at providing sustainable livelihoods to refugees and the host community using existent and adaptable value chains.

The assessment will advise RI on the areas of intervention in as far as financial and economic viability is concerned. The outcome of the assessment will guide RI in drawing feasible implementation strategies and building support for local private sector partners in the identified commodity value chains. Such strategies will be inclusive and participatory taking on board all the relevant actors taking a market driven approach for the profit oriented enterprises and making all actors active along the way.

✓ **Key Tasks accomplished**

- Conducted a targeted value chain analysis of Ground nuts, vegetables. Sorghum and maize. With a key focus on actors around the processors. This analysed the product demand and preference of the different commodities on the market. The consumer trend and preference were also captured.
- Analysed the gender dynamics associated with agricultural on-farm and off-farm activities.
- Analysed the economic infrastructure, market support services as influencers for business progress or regress.

### 1.3 Report layout

This report is organized as follows: Chapter One introduces the report with the background of the study, Chapter Two looks at the survey methodology. Chapter Three details the research findings; divided into sections I- Sorghum and maize products analysis, section II Vegetable product demand and supply, Section III Ground nuts production, and Section IV processing and consumption trends.

## CHAPTER TWO: SURVEY METHODOLOGY

### 2.1 Baseline Survey Purpose and Methodology

The market assessment was aimed at understanding the process and functions that are played by different market actors in sustaining the different agricultural enterprises and commodities in Maban County (Doro and Batil refugee camps). The study took a market and value chain analysis approach to establish the distribution channels that support the flow of goods, information and other services between the producers, consumers and other chain actors. This will support RI to understand the business relationships which connect the different chains and create mechanisms for increasing efficiency and ways to enable the actors to increase productivity and add value.

The market assessment gives suggestions for opportunities that are available to the different enterprises to upgrade the chain and benefit all the participants in the long run with some having immediate returns on investment. The environment in which the different value chains operate is also included with a targeted shift towards more attractive markets and business strategies. This will give RI and other implementers or actors a number of choices in delivering product quality, information and service thus also offering critical areas of chain improvement.

RI through its previous activities implemented in the communities identified market gaps in some agricultural value chains. As a result, the actors faced limitation to delivering their products and services and thus affecting sustainability of key enterprises. This assessment sought to identify the functionality of the selected value chains including the market linkages, barriers to sustainability and economic progress as well as profitability. The targeted chains are within the agricultural sector and these include;

- Ground nuts processing
- Vegetable processing
- Sorghum and maize production and processing

To achieve the above listed objectives, the market assessment used both secondary and primary data collection methods and sources. The secondary data collection methods used involved a literature review of reports of similar market assessment surveys carried out in Maban. These reports were supportive as they provided an overall view of the market situation. They however weren't specific to the contributions of the different actors in the market and value chains. This founded the need to further asses the interactions thus this market assessment.

Primary data was collected using administered structured questionnaires for focus group discussions, individuals and key informant interview.

### 2.2 Sampling Methodology

The assessment was carried out in Doro and Batil camps as well as the host community around them. The sample for analysis was chosen from there. All those that were interviewed were refugees and hosts

who were randomly selected and sampled for in-depth interviews and focus group discussions. There was no pre-meditated bias since the cohort was chosen from targeted group. The sample chosen was representative with both genders being captured in the response received.

### 2.3 Data Collection Methodology

Primary data was used from current RI intervention reports from UNHCR and FAO to inform the assessment. The secondary data sources were used to take a deeper assessment of the assumptions created during the reporting and recommendations to donors relating to the gaps identified.

A team of nine (09) enumerators was put together by the RI human resource and livelihoods staff, selected from the most experienced data collectors around Maban. This comprised of three staff from RI and six hired with pervious working experience with RI assessments.

The team was oriented through a workshop that took a training approach for the questionnaires and this was also used as a platform to address potential risks and challenges towards the data collection exercise. This focused on how to carry out the in-depth interviews with the different categories of targeted market actors, data collection through focus group discussions and in-depth interviews. Quantitative and qualitative data collection and study tools were developed to collect information on;

i. Sorghum and maize production, processing and consumption (household consumers and food vendors)
ii. Vegetable production, processing and consumption (household consumers and food vendors)
iii. Ground nut production, processing, trade and consumption

### 2.4 Data Processing and Analysis

The qualitative and quantitative data which was gathered from the field was entered using MS Excel. It was thereafter cleaned, segmented and coded for analysis. The processing and analysis was done using SPSS. The analysis used proportions and frequencies to determine and describe the categorical and nominal variables for the quantitative data. Mean, range and the standard deviation were other measures used to determine change.

This whole data analysis exercise aimed at assessing the interaction of the various variables in the market for future RI interventions.

### 2.5 Enabling and Limiting Factors

The success of the assessment was enabled by the following factors;

- The enumerators had the experience in data collection thus their ability to interpret the questions and receive clear responses for the respondents
- RI provided all the necessary logistics for the completion of the assignment including transporting the enumerators
- The targeted respondents were receptive and offered the much needed data for analysis and interpretation.

The following limitations were equally encountered during the data collection exercise;

- Most of the recommendations received from the respondents were requesting for financial aid with just a few asking for skills enhancement.
- The activity was conducted along other activities with the same time span. The RI staff couldn't therefore be directly involved in the backstopping of the data collectors.
- One of the targeted value chains (diary production) was weak and the key actors were not near reach to the enumerators. This chain was later scrapped off from the list of enterprises to be analysed.

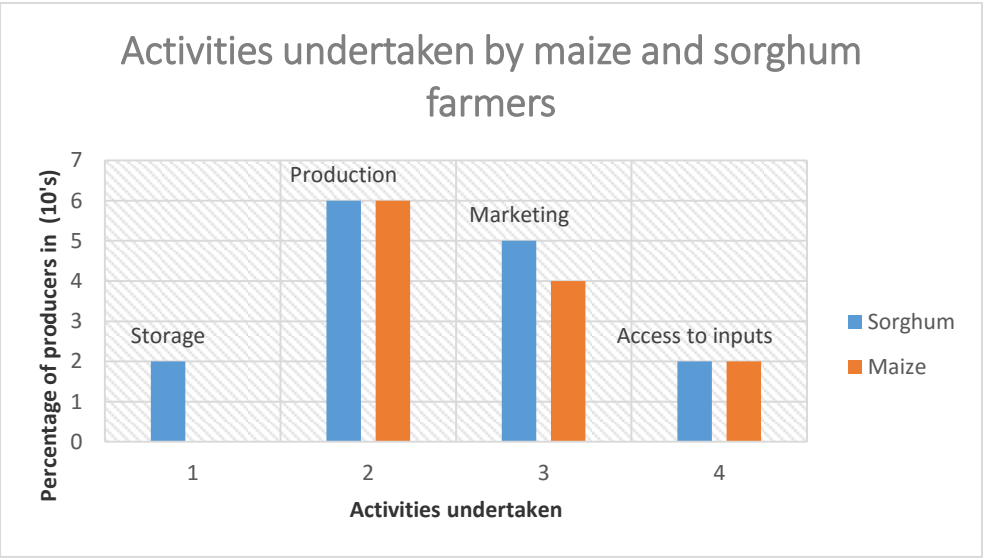
## CHAPTER THREE: FINDINGS

### *SECTION I: SORGHUM AND MAIZE PRODUCTS ANALYSIS*

### I. PRODUCERS:

The analysis sought to identify the relationship and interactions between the different sorghum and maize chain actors. This was in response to the gap identified in processing the two enterprises given high consumption of the said enterprises (sorghum and maize). This analysis studies the market dynamic between different actors that support the processors. The producers are key in this since they produce the commodity that's later processed. The analysis was carried out in Batil (50%), Doro (16.7%) camps and the host community 33.3%. A greater number of the respondents interviewed were male 83.3% and 16.7% female. This is attributed to the societal norms of land ownership being primarily a male dominant. Different farmers engage in different activities and they do not take part in the entire chain. Below is a table showing activities in which most producers are engaged in;

**Figure 1: Production Activities Undertaken By Maize and Sorghum Producers**




The farmers are engaged in the production of other enterprises in addition to sorghum and maize. The farmers in the camps have an average of two (02) ***fedans*** used for the cultivation of food crops. Out of this, 29% is used for sorghum, 28% maize and the other 43% is distributed among various vegetables and other legumes.

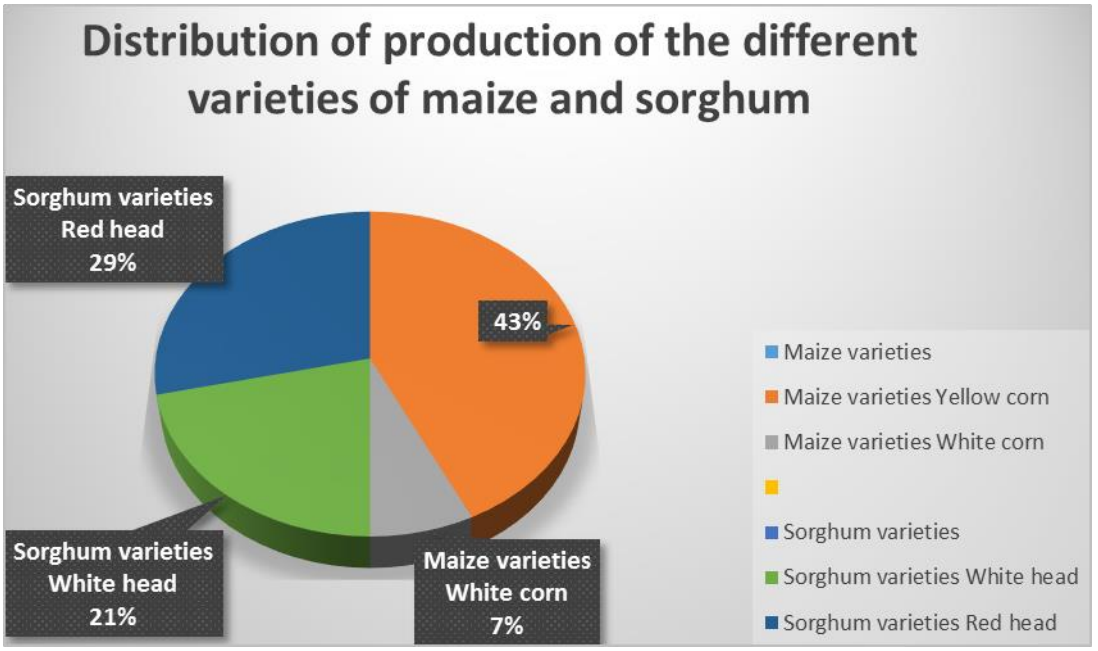
Most of the farmers interviewed have not attended training specific to production of sorghum or maize. 83% said they have never attended any training while 17% (from the host community) say they have been trained on the basic good agronomic practices by the Ministry of Agriculture, Maban County.

Seventy-one percent of the respondents plant their maize in May while 29% said they usually do the planting in June. As for sorghum, 29% of the respondents plant in May, 43% in June and 28% in July. The respondents attributed this season to the calendar of Maban where the rains start in the month of May.

Harvesting for maize takes place in August 28%, September 57% and October for 15% of the respondents. Sorghum similarly follows the same timeframe with 14% doing so in October, 43% in November and 43% in December.

Sorghum and maize varieties produced differ with the yellow variety being the most commonly grown. The producers attribute the preference to its sweet taste since most of the consumers like having it as fresh boiled or roasted corn. For the sorghum, most of the producers interviewed had a preference for the ***esh maban*** variety.

**Figure 2: Distribution Of Sorghum And Maize Varieties**




Of the categorical respondents, yellow corn was chosen for its attributes of; quick maturity (43%), long shelf life (14%), weather resilience (14% and sweet taste (29%). The red head sorghum was chosen for its attributes of; quick maturity (13%), long shelf life (29%), weather resilience (29%), high yields (29%).

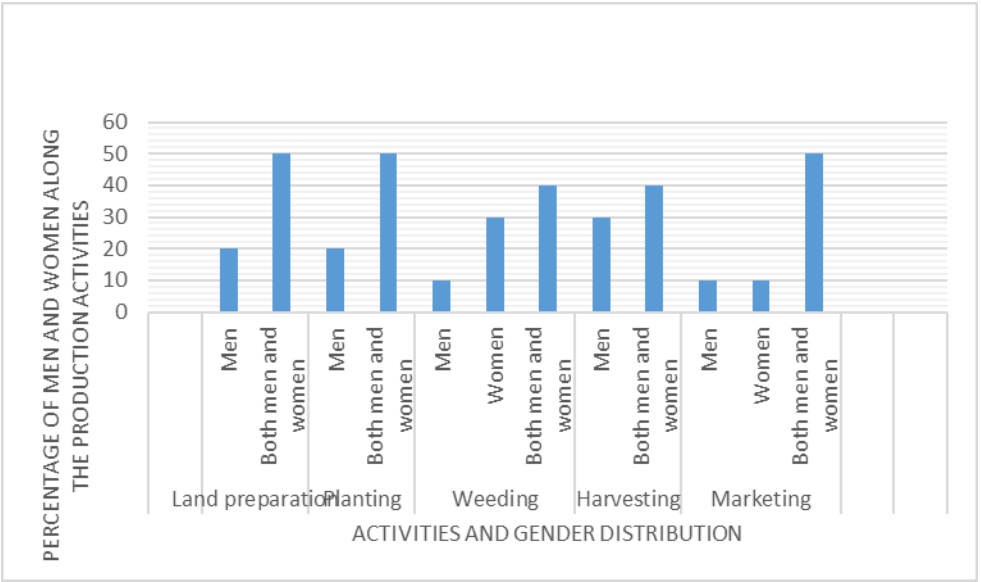
Eighty-six percent of the maize is sold fresh while 14% is sold as grain. Sorghum on the other hand is wholly sold as dry grain. The farmers who engage in off-farm activities of the maize do the following; drying (86%), threshing 14% and they all store in their family houses with a storage space of averagely 50 grain sacks of 50Kg weight.

Buyers of the maize are mostly consumers at 57%, traders at 29% and processors at 14%. The sorghum buyers are majorly processors at 43%, traders at 29% and consumers at 28%. These buyers are located in Batil 86% and Bunj 14%.

The prices for the produce is not fixed and is driven by different value chain actors. The respondents shared that the prices are mainly; buyer determined 43%, negotiable 29%, producer determined 14% and 14% is driven by the prevailing competitive market forces.

The production roles are shared across both genders as seen in the chart below;

Figure 3: Roles of Different Gender in the Production of Sorghum and Maize




The producers frequently interact with other chain actors with the most frequent being the traders. 57% of the respondents said that they receive information about the commodity markets from the traders, while 29% share this information with processors. The least interacted with are fellow producers (14%), with whom they share information about the input markets and pests and diseases.

**Challenges faced by producers:**

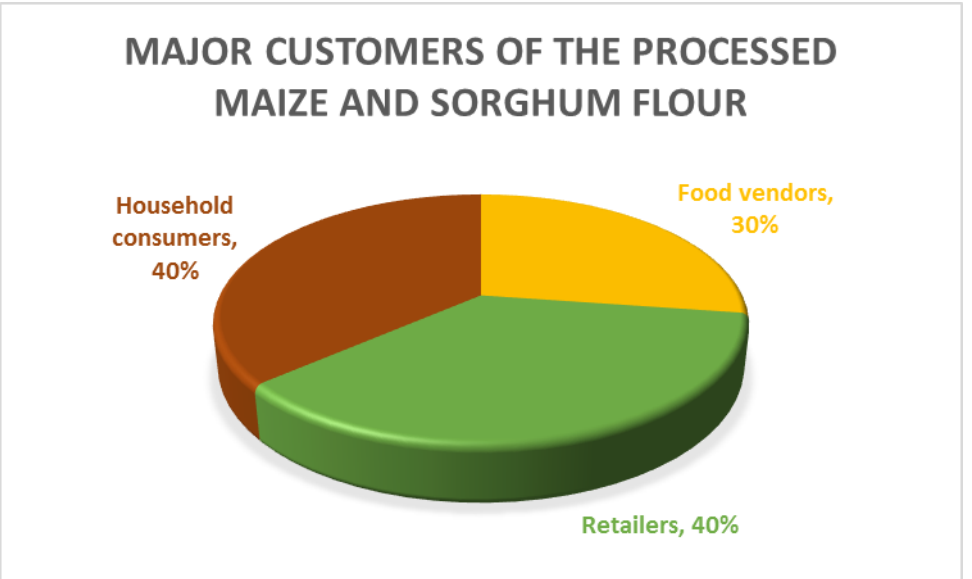
- Some of the seeds that they receive have a low yield and are slow maturing
- There is little focus by the NGOs on training farmers on how to grow sorghum and white corn maize
- Low prices offered by buyers of maize and sorghum makes them not to grow much for sale
- The fear of their crops being stolen in the garden causes most of the farmers to sell the maize fresh upon maturity.

## II. PROCESSORS

Most processors interviewed were from the host community located in Bunj town (67%), Batil and Doro camps had an equal representation of 17% each of the respondents. 100% of the sorghum grain is processed into flour while only 50% of what is produced is processed. For both, whole grain is used as a raw material.

Of the grains processed, 67% is ***wad ahmed and arfa gadam*** sorghum while 33% is ***esh maban*** sorghum. Of the 50% of the maize processed, 17% is yellow corn while 33% is white corn. The customers for these products range from household consumers, food vendors and retailers. The chart below shows the percentage of each category of clients;

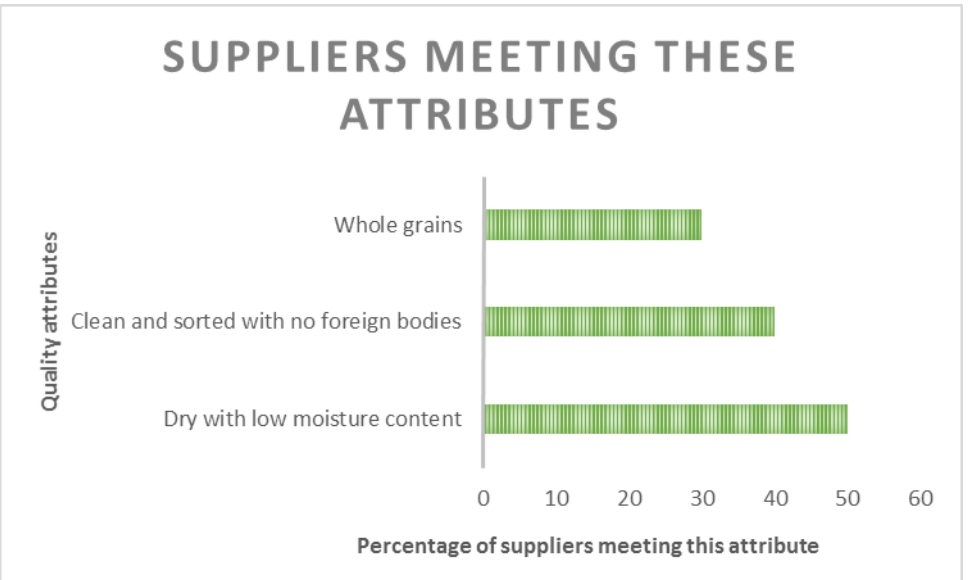
Figure 4: Major Customers of Processed Sorghum and Maize Flour




The flour is processed using a locally fabricated hand mill that is pedalled or manned by a donkey. 83% of the processors in Bunj and Batil use this and 17 % are using the diesel-run mill. Access to the diesel mills is limited and even when accessed, the cost of fuel is high, leaving the processors one option of using the manual one.

The machinery has desired quality attributes that support the production of good flour that doesn't also spoil the functioning of the machine. The percentage of suppliers that meet the attributes is illustrated below;

Figure 5: Sorghum and Maize Grain Quality Attributes




Pricing of the processed products is determined by competitive market forces as noted by 50% of the respondents. The other 33.3% noted that prices are determined by the processors themselves and 16.7% left the pricing to negotiations between the buyer and the seller.

Out of a total of 25 employees reported by the respondent, 16 (64%) are male and 09 (36%) are female. The gender distribution in labour is attributed to the skills needed to operate the mill, which the majority women do not have.

There are interactions among several chain actors and information related to the sorghum and maize enterprise is shared. The processors reported to share 50% of information with the farmers, specifically on farming technology. Traders shared 20% on commodity prices and 30% with consumers on the different consumers' needs.

All respondents reported that there are no intervening organisations offering services that seek to improve the performance of their business.

### Challenges

- The poor technology used during the milling makes the work tedious. This was attributed specifically for the traditional methods and the manual mills.

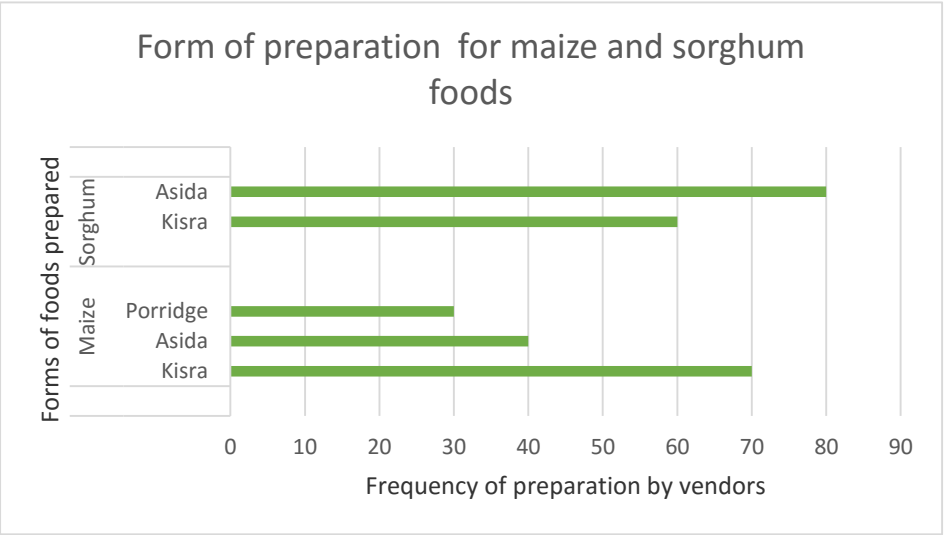
## III. FOOD VENDORS

The respondents interviewed were located in Batil 28%, Doro 22% and Bunj having 50% in total 14 food vendors were interviewed. The vendors are dispersed throughout the various markets in the two camps with Ardeaba and Darfur markets in Batil having 14% and 14% respectively. Doro had 22% of the respondents while Bunj had 50% of the respondent food vendors.

The gender distribution showed that the food vending business is dominated by the males as seen with the segregation of the respondents. 42% female and 58% male. 36% of these have been in the food vending business having taken 3 to 5 years. 35% have been in the business for 1 to 3 years, 12% have taken 5 years and above in the food vending business. New business establishments were also identified from 7% of the respondents whose businesses have taken less than 1 year in business. Of these, 50% of the respondents never went to school, 43% attended primary school and 7% attended higher education.

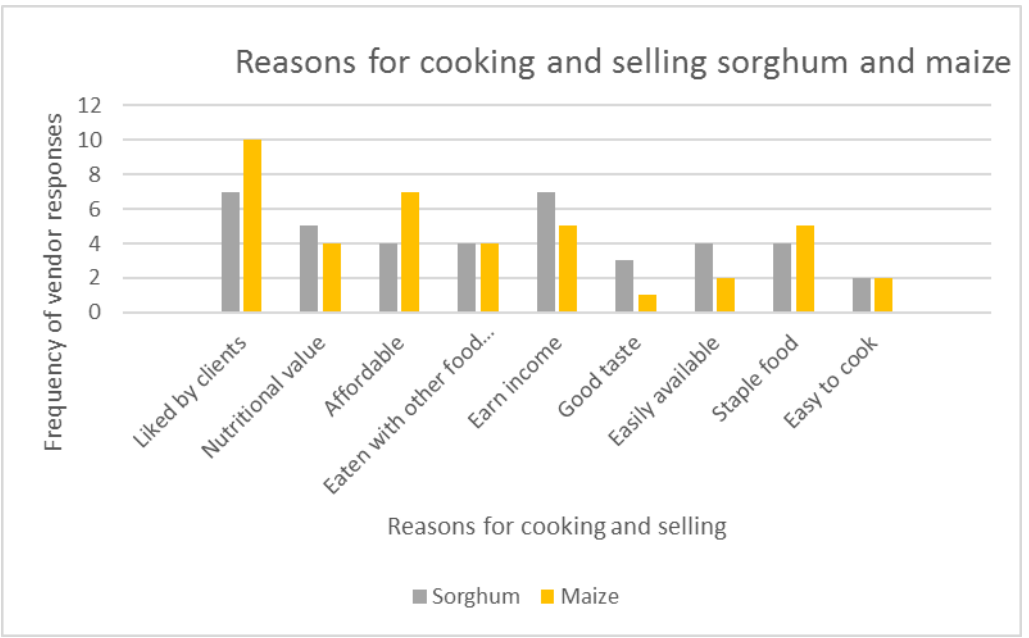
The vendors prepare the maize and sorghum in three delicacies that are preferred by the customers. The food is prepared as either ***kisra*** *(made as a fluffy flat bread)*, ***asida*** (*cooked and mashed/mingled together to form a dough*) or porridge.

Figure 6: Form Of Maize And Sorghum Foods Prepared




The food vendors also noted that most of their purchases is influenced by the demands of the customers for the different foods. The market drivers for their purchases valued towards client satisfaction which needs have been illustrated below;

Figure 7: Reasons for Cooking and Selling Maize and Sorghum




Sorghum and maize are sourced from various markets within the reach of the vendors. The major reason for purchase form their different sources is attributed to price offered by the seller, proximity to the vendor, customer relationship, ability to offer on credit, availability of the product on the market and quality of the product. The table below shows the distribution of the market sources of sorghum and maize;

Table 1: Distribution of Market Sources for Sorghum And Maize

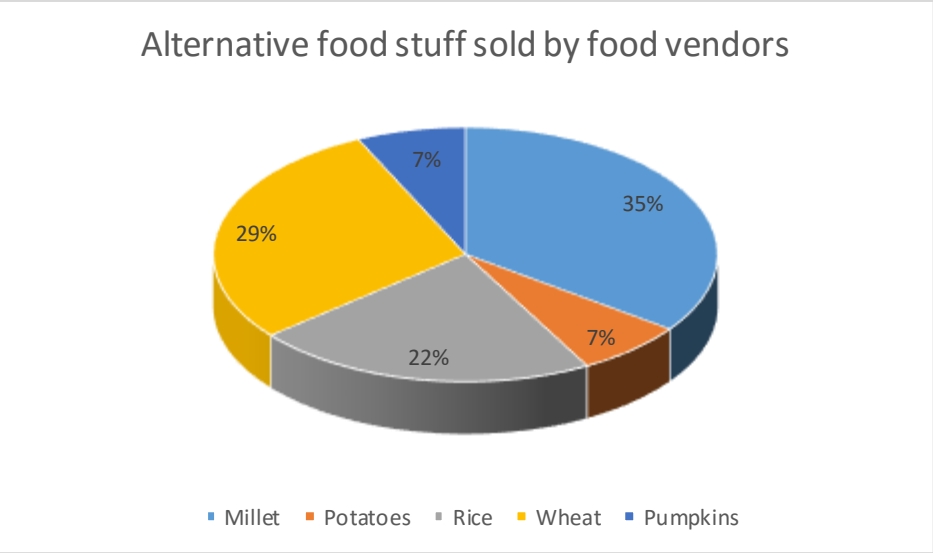
| Distribution of the market sources for sorghum and maize (multiple responses) | | | | |
|---|---|---|---|---|
| | Frequency | | Percentage | |
| Markets | Sorghum | Maize | Sorghum | Maize |
| Open Markets | 13 | 14 | 30.95238 | 41.17647 |
| Farmers | 11 | 7 | 26.19048 | 20.58824 |
| Processors | 4 | 7 | 9.52381 | 20.58824 |
| Retailers | 14 | 6 | 33.33333 | 17.64706 |

The price trend for maize and sorghum has been noted to increase and decrease as reported by the food vendors interviewed, this is as for the past three (03) years. The price of maize is reported to have increased by 72% and decreased by 28% of the respondents. Sorghum also faced similar fluctuations with 79% reporting an increase and 21% a decrease in price. This has been attributed to the current high rate inflation thus thrusting the prices of different commodities as well. The high costs of transport was yet another reason given since in many cases the sorghum and maize is brought in from Renk.

The consumption of maize and sorghum for the past three (03) years has also been affected. For maize as noted from the food vendors, 50% reported an increase in consumption, 35% a decrease consumption of maize products in the food businesses. 15% of the respondent however said that the consumption has remained the same as they did not note any significant changes in the demand of maize products. 57% reported an increase in the consumption of sorghum while 43% a decrease.

The price trend having an effect on the quantities of sorghum and maize products demanded has made the food vendors offer alternative foods to keep the clients served. Scarcity or shortage of the maize and sorghum offers the client alternative foods to choose from so as to meet their demand of satisfaction of hunger. A range of foods shown below is provided as the next best alternatives;

Figure 8: Maize And Sorghum Alternatives




### Challenges faced by food vendors

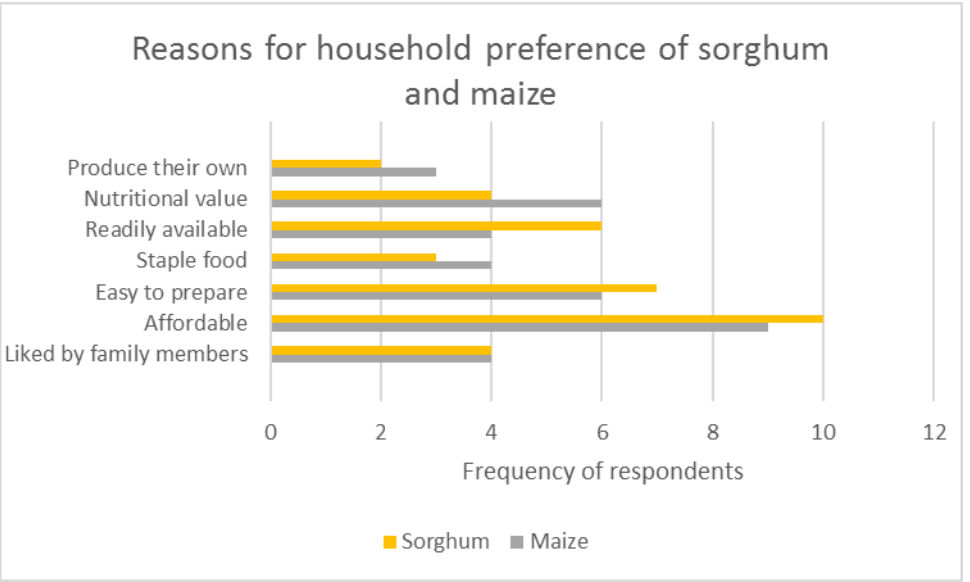
- The months of low supply of the sorghum and maize led to the purchase of high price substitute products such as wheat.
- The quality of the sorghum and maize produce locally is poor. The farmers do not carry pour post-harvest handling to the maximum.
- Costs of purchase of the sorghum from Renk is high. The transport costs, as such the price of sorghum increases.

## IV. CONSUMERS

The sorghum and maize consumers interviewed were from the host community in Bunj as well as Batil and Doro refugee camps, 62% of the respondents were male while 38% were female. The average household size is 6 persons per household with the lowest household having 3 persons and the highest having 10 persons. Of the respondents, 56% range within the age of 21-30 years, 38% within 31-40 years and 6% within 20 years and below. Their literacy levels are also average with at least 50% of the respondents having attended primary education, 5% secondary and 45% never gone to school.

All the respondents interviewed purchase and consume sorghum in their household. 89% had a preference for it while 11% did not bother. 62% on the other hand purchase and consume maize while 38% neither purchased nor consumed it. Of those that consume the maize, 50% had a preference for it while 50% did not. The reasons for preference of maize and sorghum varied form household to household with however majority noting affordability as the primary factor. The chart below shows the different reason noted for preference of the maize and sorghum by all consumers interviewed;

Figure 9: Household Preference of Sorghum and Maize

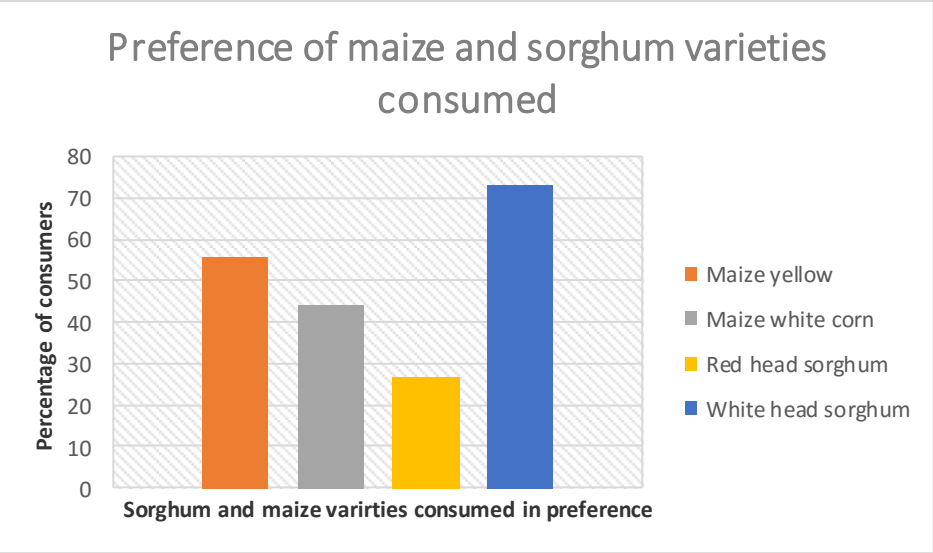



All the interviewed respondents who consume sorghum reported acknowledged that it is a staple food. Looking at the consumption trend, 17% reported that they consume maize on a daily basis, 22% weekly, 23% fortnightly while the rest do not consume at all. These reported that they do not consume the maize because of its scarcity on the market and are not used to having it as food, specifically for the refugees. For sorghum 83% of the respondents purchase and consume it daily while 17% weekly.

Sorghum is reported to be consumed alongside other foods with 16% of the respondents mentioning okra, 34% ***kudra***, 17% beans, 11% fish and 17% meat. 5% of the respondents highlighted that they were not specific on what they have along the sorghum as any available food would do. The most common form of preparation for sorghum are ***kisra*** and ***asida***. Maize on the other hand is eaten whole as boiled cob by the majority.

The most common varieties purchased are the yellow corn for maize, consumed as a snack and ***esh maban*** sorghum. Much as the red head variety is preferred more by the farmers, the consumers like it for its good taste but prefer the ***wad ahmed and arfa gadam*** sorghum for the ease in grinding. This was noted by mostly households that processed the sorghum by themselves domestically.

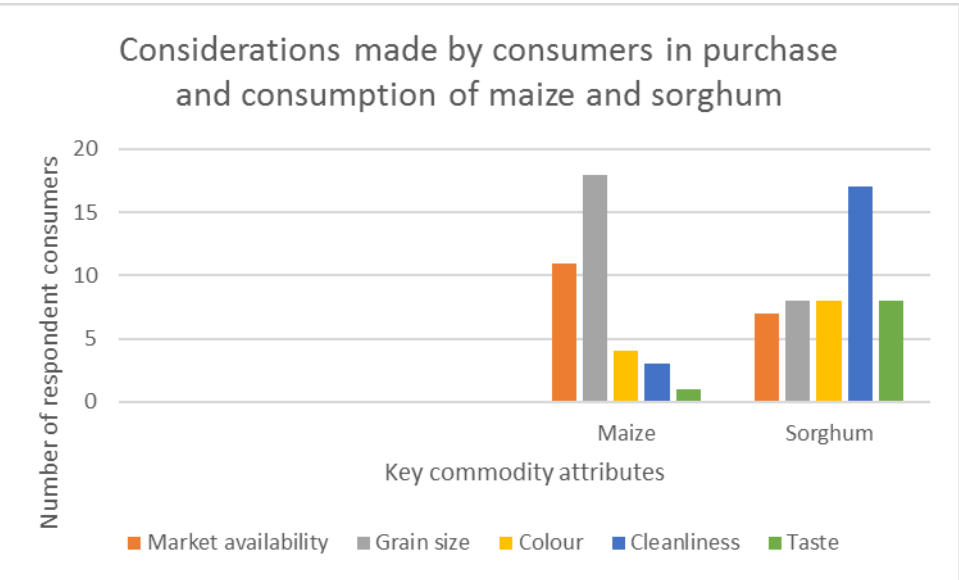
Figure 10: Preference of Sorghum And Maize Varieties




Of the consumers interviewed, 38% noted that they purchase the maize and sorghum commodity from Bunj (host community), 55% purchased from the camps, Doro and Batil. 7% of the others reported they actually buy their sorghum from Renk.

The key attributes guiding the consumers as they purchase the maize and sorghum are;

Figure 11: Considerations in Purchase and Consumption of Maize and Sorghum




The products purchased are maize grains, flour and the fresh cob. For this, majority of the consumers of maize, 59% purchase fresh maize cob which is mostly bought from the farmers on farm. 22% purchase grains from farmers and open markets and later process it into flour. 19% of the maize consumers buy already processed maize flour for consumption. Sorghum on the other hand is purchased more as grain 38%, with these consumers either taking it to the commercials processors for processing or doing it themselves in their homes manually with a grinding stone. 30% of the sorghum consumers do not

purchase sorghum but rather consume what they have produced themselves. 325 however prefer and purchased the already processed sorghum flour.

Just like other agricultural commodities, sorghum and maize are also faced with fluctuations in consumption attributed to the seasonality of the crops. The months of high purchase ranged from July to September for 51% of the respondents, attributed to the on-set of a new farming season creating availability. October to December 44% noting availability of harvest in the market. 5% noted that their purchase increased in January to March because of increase in household size as relatives joined in pursuit for food.

The months of low purchase were noted as January to March for 62% of the respondents. This is reported to be due to the high costs of agricultural commodities as a result of drought. April to June at 38%, citing the new rainy season thus pulling in consumers to resume purchase.

50% of the respondents said that they compare prices of maize on the markets before buying while the other half did not bother. The household consumption trend for maize remained constant for the household interviewed, while that of sorghum increased. The increase in the price of maize caused 6% of the respondents to buy the same quantity, 17% increased on the volume bought while 77% reduced on the quantity bought.

For sorghum 73% of the respondent household compare the prices of the sorghum before they buy while 27% did not bother about the different prices. An increase in the price of sorghum would cause 45% to reduce the quantity bought, 44% to increase in anticipation of further price increases and 11% would still buy the same quantity they've been purchasing.

*SECTION II: VEGETABLE DEMAND AND SUPPLY*

## i. FOOD VENDORS

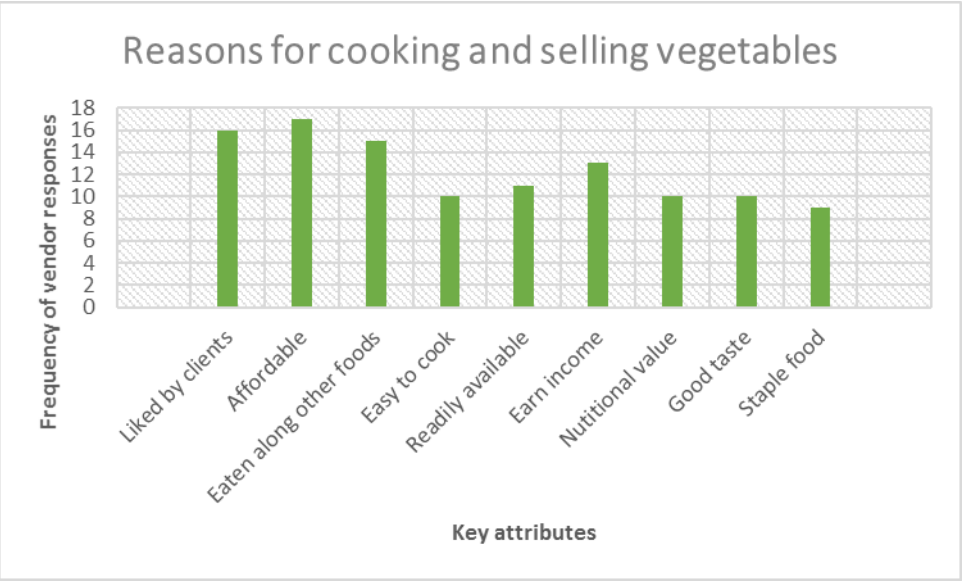
The food vendors interviewed were from Batil (32%) and Doro (68%) camps. Of these, 53% were male while 47% were female. The food vendors had wealth of business experience in the business with 37% having been there for 5 years and above. 11% spent less than a year while 26% have spent 1 to 3 years. An equal number of 26% have spent 3 to 5 years in the business.

The respondents had varied literacy levels with 58% never gone to school, 26% attained primary education and 16% attending secondary school.

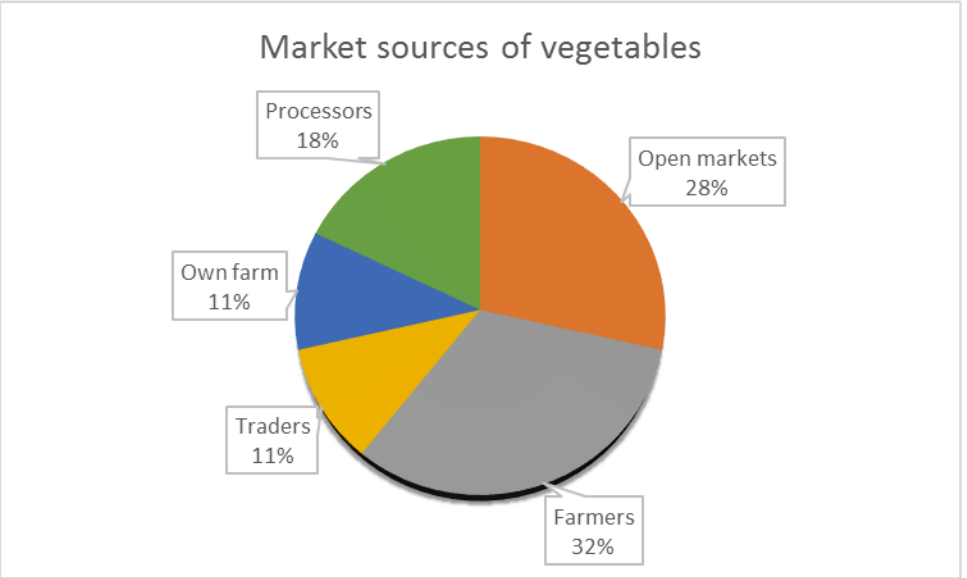
95% of the vendors trade in fresh and cooked vegetables while 5% only sell the fresh ones, thus they do not cook. The most common vegetables prepared by the food vendors are; Eggplants, okra, Pumpkin, cabbage, tomatoes, kale, kudra, onions, amaranthus and cow peas leaves.

The highly demanded vegetables by the customers according to the food vendors are; okra 69%, kudra 16%, and eggplants, jirjir and tomatoes all at 5% each. Of the vegetables cooked, 69% is steamed and 31% is fried. These vegetables are prepared considering the likes and tastes of the customers and also other reasons as presented below;

**Figure 12: Reasons For Cooking And Selling Vegetables**




The vegetables are always served as a mixture with other vegetables or with meat, fish and G. nut paste. The suppliers of the vegetables range from different markets and each being chosen for particular reason. The vegetables are purchased from various markets as illustrated below;




The reasons for purchase from the various markets ranged from proximity, availability of credit to the food vendor, product variety, customer relationship and rapport with the food vendor and also majorly the affordability of the price offered.

The food vendors purchased between 12 to 40 Kgs of vegetables per week ranging between 17 to 180 SSP per kg. The purchase behaviours of the food vendors involve price comparisons of the different markets with 37% noting that they always compare prices before purchase. 67% of the food vendors interviewed reported that they at times compare while 11% said that they never bother. The comparisons are aimed by the vendors at having a lower investment cost and higher return on the vegetables sold.

Ninety percent of food vendors reported that the price of the vegetables over the past three years had increased. 6% of the same respondents reported a decrease while 4% said that it remained constant.

Of the food vendors interviewed, 58% reported an increase in the consumption of vegetables over the past three years, 32% a decrease and 10% a constant demand. The increase is highly attributed to availability during the rainy season and the awareness created by relief agencies on benefits of consumption of vegetables.

An increase and decrease in the price of the vegetable commodities has an effect on the quantity of vegetables purchased and consumed. An increase in the price of vegetables causes 17% of the food vendors to buy the same quantity, 62% to reduce the quantity and 21% to increase the quantities purchased and sold, according to the vegetable food vendors interviewed. Those that reported to increase on the quantities purchased anticipated an increase in the demand for the vegetables citing a deficit surplus.

A decrease in the price of the vegetable commodities causes 57% of the food vendors to increase the quantities purchased, 37% would buy the same quantity while 6% would reduce the quantity purchased.

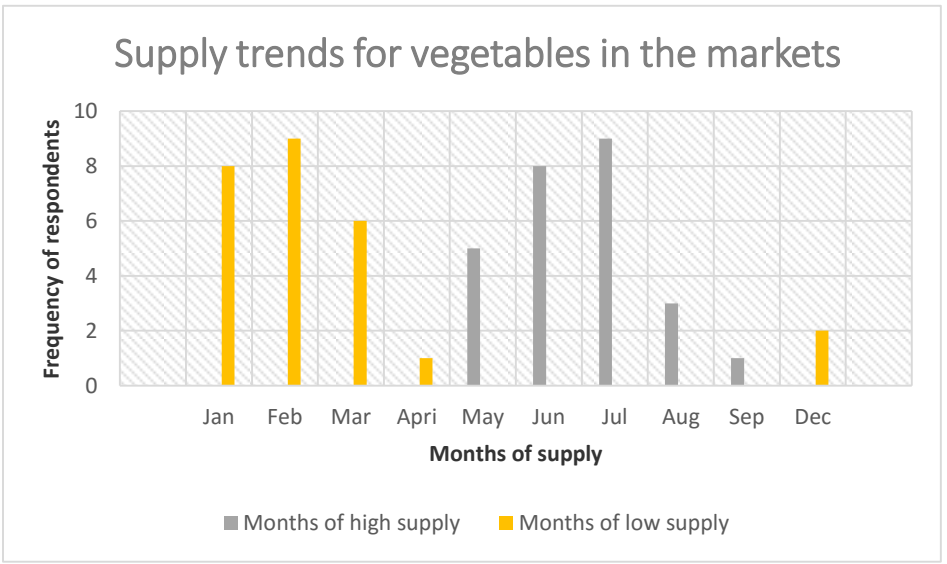
### ii. TRADERS/PRODUCERS/PROCESSORS

During the market assessment, it was identified that majority of the traders are equally doing production and processing as well. The market structure is small and so a variety of chain activities are handled by the same actors. Vegetable traders interviewed had 88% male and 12% female. Of these, 11% were within the age range of 20 years and below, 34% between 21 to 30 years while 55% were between 31 to 40 years. 88% of the respondents owned the business while 12% were employed. All of the traders were retailers and 75% of them produced and processed the vegetables as well. Majority of the traders 68% had taken 1 to 3 years in the business, 22% had taken less than a year while 10% had an experience of 5 years and above. Most of the refugee traders produced these vegetable from their kitchen gardens with a few of the host community doing so by the river side.

The most common vegetables sold by the traders were; tomatoes 25%, *kudra* 20%, onions 30% and okra 25%. Of these, the traders reported a high demand for okra and tomatoes with 88% noting the highest vegetable demand being for okra and 12% tomatoes. The reasons for the high demand is that these two vegetables can be consumed and availed throughout the year the fresh (rainy season) and dried (dry season) form.

The supply of vegetables is all year round with other months having fewer supplies while other have lower supplies. The rainy season is known to create providence for a greater supply of fresh vegetables while the dry season offers a few dried vegetables and river-side grown fresh ones. The chart below illustrates the supply:

**Figure 13: Supply Trends Of Vegetables In The Markets**



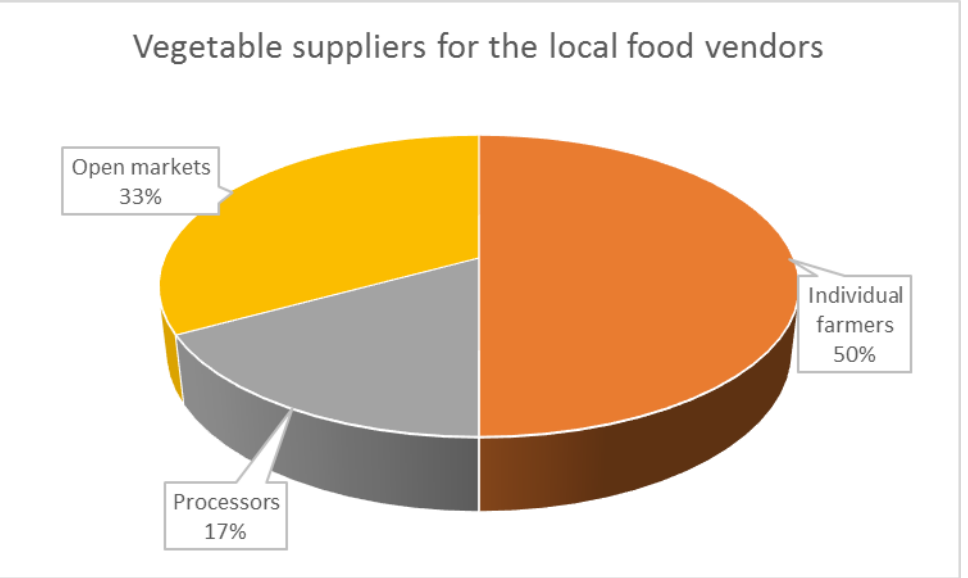

Sixty-six percent of respondents attributed the high supply months to rains thus creating a high production. In this period also, it was noted by the same that the production is high since even kitchen gardeners produce for sale. 34% on the other hand noted the supplementary vegetables coming from the host community as well thus boosting the quantities in the market.

The low supply on the other hand was attributed to drought leading to low production. Most of the vegetable producers who supply the trade market depend on the seasonal weather patterns for rains that grow their crops. Those that grow by the river-side are few and cannot sustain the demand during the dry season thus leading to a deficit in supply. The refugee traders mentioned that they do not have access to water for vegetable production within the camps as the water provided is restricted for household consumption. 45% of the traders who produced vegetables mentioned that they had tried to set up their gardens near the water source so that they could gather from the spill over for watering their gardens.

On the losses incurred in the business, 66% of the traders mentioned rotting as the major loss. 22% mentioned physical damage attributed to post-harvest handling and poor storage. 12% of the traders who mentioned that they equally produced the vegetables reported that they incur losses as a result of theft of the produce while still in the gardens.

The major suppliers for these vegetables to the traders are individual farmers, producers and processors who occupy the supply market as follows:

**Figure 14: Input Market Of Vegetables For The Food Vendors**

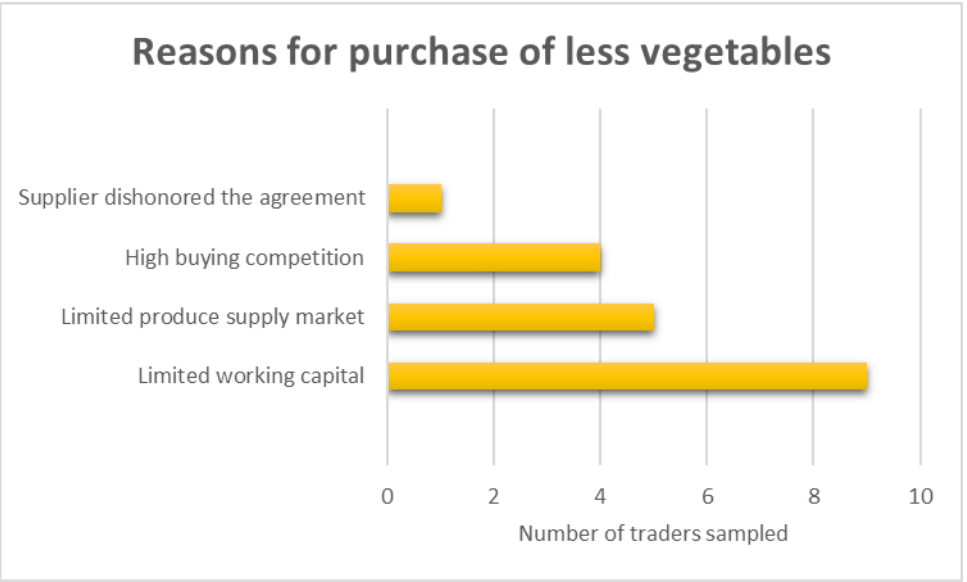



The traders noted key challenges faced with the different suppliers with 45% reporting high prices set by the suppliers. 22% noted that the suppliers are unreliable in their supply thus creating an inconsistent supply chain. 11% reported poor quality while 22% of the traders mentioned that the suppliers breach supply agreements.

Looking at the traders' purchase behaviours, 66% of the traders bought and sold less than the anticipated quantities. 34% bought more than the desired quantities. These reported that they had anticipated an available market due to the drought and thought of saving some dried vegetables to cater for the demand during this season.

Those that bought and sold less attributed the limitations to a number of factors as shown below;

Figure 15: Reasons For Purchase Of Less Vegetables




On the issue of high competition, it was noticed that a number of actors is entering the vegetable value chain to provide products that meet the demand of the consumers, but also to earn an income. The traders reported their competitors as being; middlemen 26%, fellow traders 36%, processors 10 % and producers 28%. All these were listed as similarly selling the products to the end consumer and most often at a fairer price. Much as all these are competitors, the traders stated that they do share information with other chain actors concerning the vegetable value chain. The nature of information shared includes;

Table 2: Information Sharing Among Vegetable Value Chain Actors

| S/N | Information shared | Value chain actors | Percentage of traders sharing this information |
|---|---|---|---|
| 1. | Prices of vegetables | Consumers and food vendors | 100% of all traders interviewed |
| 2. | Consumer needs | Producers and middlemen | 33% |
| 3. | Vegetable production technology | Producers | 11% |
| 4 | Basic business skills | Fellow traders | 34% |

The major customers of the traders were identified as individual and household consumers 67%, Food vendors 23% and institutional buyers as 10%. The pricing mechanism employed by the traders was reported by the traders as; market price determined 45%, negotiation between trader and buyer 33%, trader determined 12% and others considered the costs incurred in purchase of the vegetable 11%.

The price considerations depended on the a number of factors as 67% of the respondents mentioned quality of the vegetable products as key, 22% highlighted the relationship with their customers while 11% mentioned the volume of products being purchased by the customer as an important attribute to pricing.

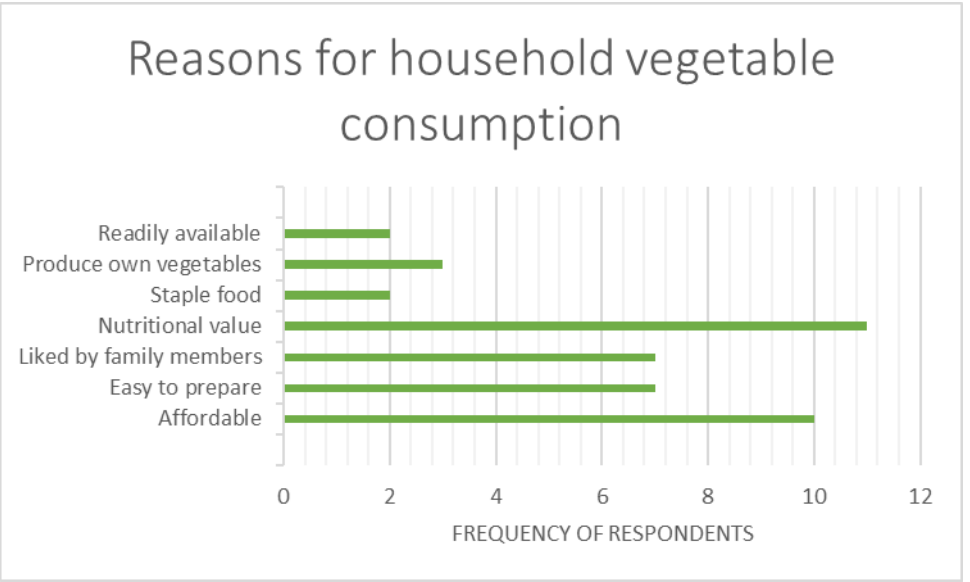
The traders identified other opportunities along the vegetable value chain as; growing and processing own vegetables 23%, accessing tools for production form NGOs and 44% noted that all year round availability of customers for vegetable products.

### iii. CONSUMERS

The vegetable consumers were equally interviewed to understand what drives their demand for particular vegetable types. Of the respondents interviewed, 53% were male while 47% were female. All the respondents were from the rural population with varying literacy levels as 60% reported having attended primary school, 7% secondary school and 33% have never gone to school.

All the respondents come from vegetable consuming households with an average household size of six people. The average monthly food budget across the respondents was 9,500 SSP with an average vegetable expenditure of 4,327 SSP per month. The respondent reported to consume vegetables on a daily basis 675 with 33% doing the same weekly. Varying reasons were noted for consumption of vegetable for the households and these are;

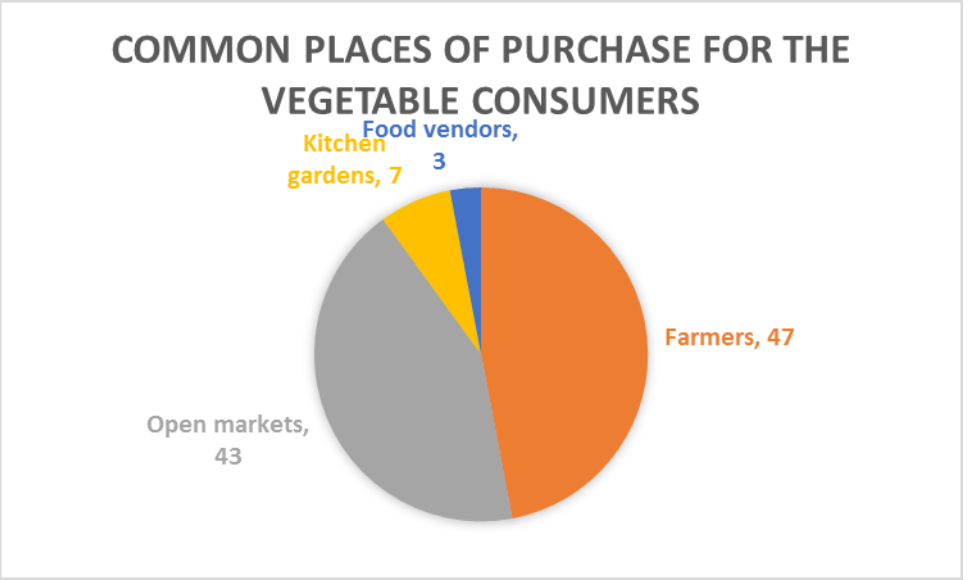
**Figure 16: Reasons for Household Consumption Of Vegetables**




The most frequently consumed vegetables by these household are; okra, *kudra,* kale, eggplants, cowpeas leaves and amaranthus. Of these, the highly demanded by households are okra, followed by ***kudra*** and egg plants ranking third. The vegetables are usually consumed fresh during the rainy season as noted by 63% of the respondents and consumed dried during the dry season.

The most common place of purchase for the vegetables by the consumers are farmers, open markets, kitchen gardens (only harvest for those who produce their own) and food vendors.

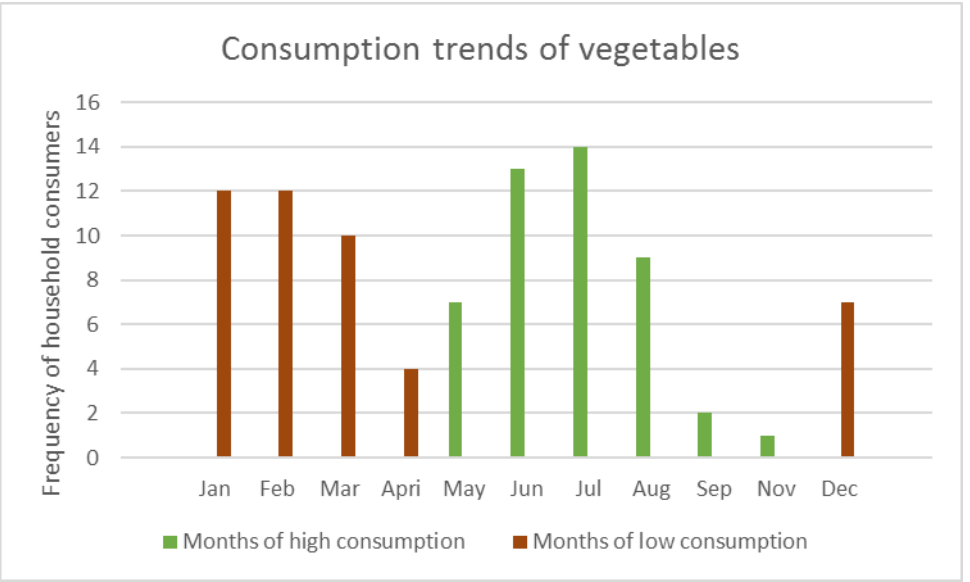
Figure 17: Vegetable Markets for Household Consumers




Thirty percent of household consumers their choice of purchase to affordable prices, 33% noted proximity to the seller, 30% highlighted that the seller offers a variety of vegetables while 7% reported that the relationship between the seller and the consumers dictated their choice of purchase. 60% of the consumers reported always making price comparisons form different sellers before they buy from their place of choice. 34% of the respondents did the same occasionally while 6% never bothered with any comparisons.

An increase in the price of vegetables caused 67% of the consumers to reduce on the quantities of vegetables bought, 13% bought the same quantities, while 20% increased on the quantity. Those that increase attributed this to an equally high price of substitute products. A decrease in the price of the vegetables would have 60% of the households increase the quantities of vegetables bought, 27% would maintain the usual quantities while 13% would reduce. Those who would reduce mentioned a reduction in the prices of alternative products which they would vary in consumption at this point. The consumption periods fluctuated throughout the year with some consumers reporting higher consumption and lower consumption ate different periods in the year.

Figure 18: Consumption Trend Of Vegetables For The Past Three Years




The months of high consumption were majorly attributed to availability of the vegetables on the market as a result of the on-set of rains, thus increased production. 75% of the households as well reported having kitchen gardens at home where they grew the basic vegetables for their households. The months of high production also meant an abundance of fresh vegetables on the market. 80% of the household noted that availability of the vegetable products caused them to increase the quantities bought and consumed, 13% reported that the volumes bought remained the same while 7% mentioned that they would reduce on the volumes purchased.

The months of low consumption were attributed to scarcity of vegetables on the market, low production as a result of drought and limited access to water facilities for off-season production. Those vegetables that were processed and sold dry were equally noted to be highly priced and thus not an option for some of the households.

80% of the respondents also noted that there was an increase in the price of vegetables throughput the past three years while 20% reported the price to have decreased. Household consumption trends had also been reported to have increased by 67% of the respondents. 27% reported a decrease while 6% said it remained constant.

### Limitations to vegetable consumption

Forty percent of respondents noted that the poor quality of some of the vegetables on the market limited their consumption, 47% reported scarcity during the dry season as they had to almost give up for 4 to 5 months, while 13% of the consumers noted the high market prices especially during the dry season, as a great hindrance to vegetable consumption.

## SECTION III: GROUND NUT PRODUCTION, PROCESSING AND CONSUMPTION TRENDS

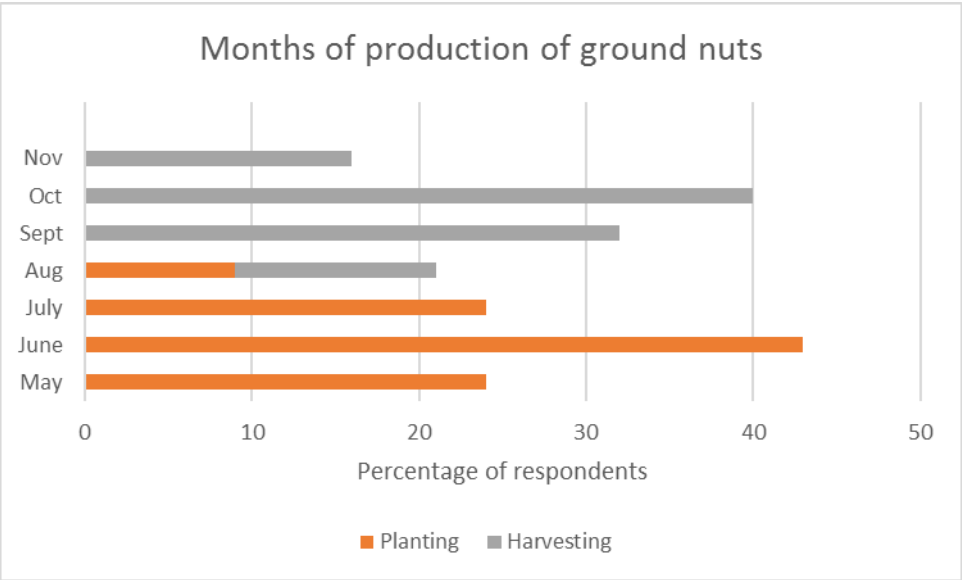
### i. PRODUCERS

The respondents around the ground nuts value chain were 90% male and 10% female. These were noted carrying out different activities around production which included; on-farm cultivation, marketing, accessing inputs, markets and credit for production purposes. Of these, 27% reported to have attended a training on ground nut production while 73% had never. The training for those who attended was in the areas of good agronomic practices or on-farm management. Some of the respondents cited NGOs and Government as the training providers.

The farmers were equally noted to be producing other commodities like beans, sorghum, maize, vegetables and sesame alongside the maize enterprise. The average land size per farmer was noted to be two (03) ***feddans*** of which average 1.5 ***feddans*** was put to ground nut production. The average harvest was noted to be 2 bags (50Kgs) per feddan according to most of the producers.

55% of the producers planted and harvested the red beauty variety with most of them choosing it for its high oil content. 45% planted and harvested the brownish variety chosen because most of the customers liked to have it roasted and raw. The planting season according to the producers ranged from May to August and harvest from August to November. Different producers had their own timing of the activities within the season.

**Figure 19: Months Of Production Of Ground Nuts**

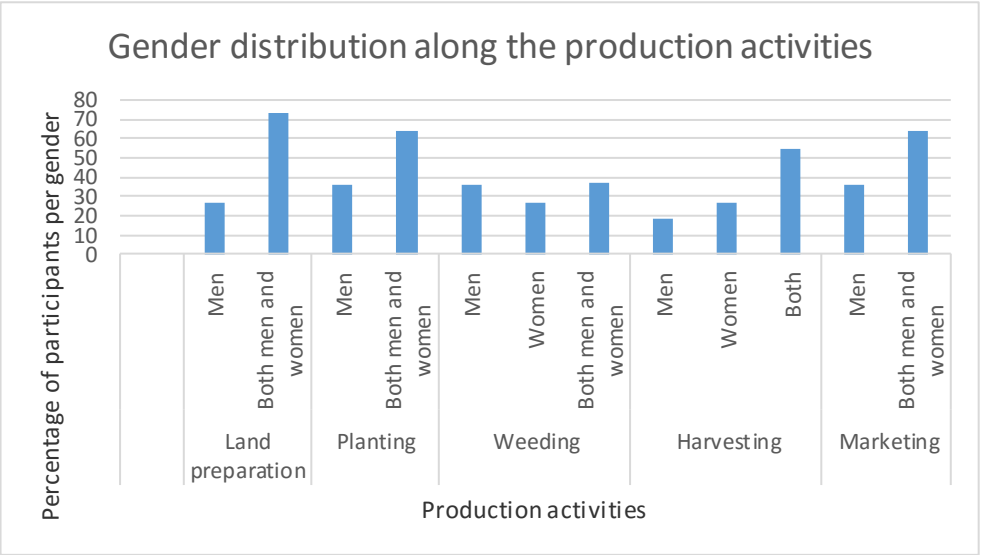



The main inputs used during production are seeds which are accessed by all the farmers from different sources. 37% used organic manure and 9% reported to use pesticides during the production period. Most of the farmers who accessed these inputs 46% mentioned NGOs as being the providers, other got from fellow farmers 37%, while the rest reported purchase from traders in the market. 54% of the producers acknowledged that they accessed timely inputs always, 37% mentioned that they did so occasionally

while 9% said their access to inputs was always delayed. Majority of the producers used extra labour with an average utilizing averagely 04 persons per feddan. Of these, 02 persons are unpaid family labour.

The farmers interviewed reported that the average harvest per season for all the area cultivated is three (03) bags of the 50Kg weight. Of these, one bag was consumed at home, one and a half sold and the remaining half bag given out as hand-outs to relatives and friends. The customers who buy the ground nuts from the farmers are traders 73%, final consumers 18% and processors 9%. However, it was noted that majority of the traders on the market do the processing as well. The exclusive processors are few so many traders control more activities within the value chain as well.

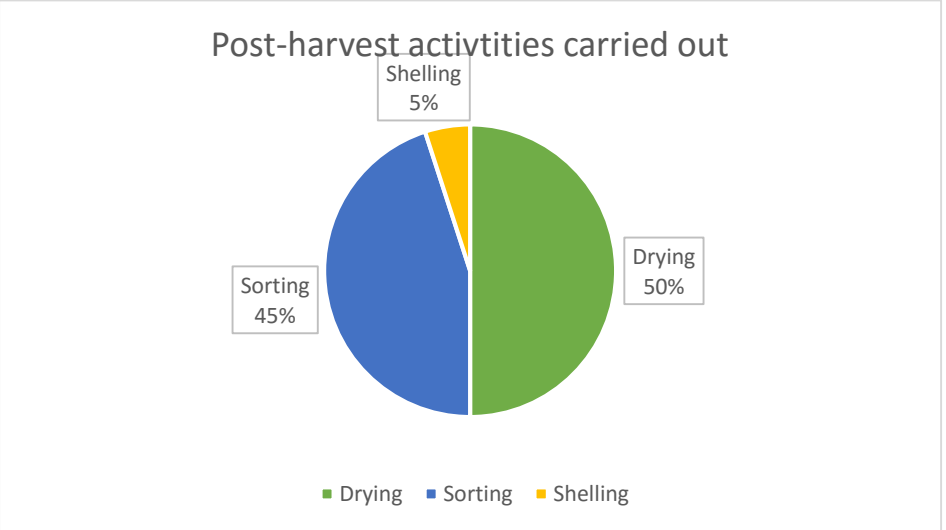
The gender distribution along the production indicated that both genders were involved in the cycle with one gender occasionally dominating one activity as illustrated below;




10% of the producers did not store their produce while 70% stored in their family houses and 20% had stores. The average storage capacity is 25 bags of 50Kgs each. The prices of the ground nuts is determined by different forces with 30% of the producers saying they determined themselves. 30% mentioned the prices to be buyer determined, 30% through negotiations and the rest 20% left the pricing to the competitive market forces. 91% of the customers paid cash on delivery while 9% of the producers received cash in advance for the ground nuts.

On the post-harvest activities carried out; drying and sorting were the major activities reported by the producers while shelling was left for the buyer. 95% of the producers sold the ground nuts unshelled.

Figure 20: Showing Post-Harvest Activities Carried Out




**Challenges faced by producers:**

- Access to the right seeds is a challenge. Some of the seeds that are sold on the market have a poor yield affecting the quantity and quality of harvest.
- Lack of skills in good agronomic practices thus using traditional production mechanisms.
- Lack of the necessary labour to open up more land for cultivation.
- Recurrent reliance on rains for agricultural production limits the quantity of food produced both for the household and the market.

### ii. PROCESSORS/TRADERS

Seventy-five percent of processors interviewed were equally traders. Of these, the same number 75% were male while 25% were female. They sold and processed ground nuts grain into paste and some into ground nut oil. The major products out of processing is a thick paste that is made by half-roasting the ground nuts and later grinding them either traditionally on a stone or using a grinding mill. 15% of the processors processing grain into groundnut oil. However, the consumers of ground nut oil were few keeping the demand low. This according to the processors is because of the direct substitute of vegetable oil distributed by WFP.

The major variety of ground nuts sold is the white grain that 50% of the traders mentioned is liked by the consumers. They said is sold either as raw and unshelled or shelled. An insignificant number or traders mentioned that some consumers prefer to buy the ground nuts fresh after harvest, which is boiled and consumed as such.

The processors on the other hand attributed the white grain variety to being easy to grind into paste. Those that processed ground nut oil mentioned using the red variety due to its high oil content. The processing is done using locally fabricated grinders.

The main customers for the ground nut products are the individual consumers 45% and food vendors 55%. The price at which the products are sold is determined by the competitive market forces 73% and 27% customer relationship with the buyer.

75% of the traders bought already dry ground nuts while the other 25% purchased it fresh from the farmers and did the drying themselves. The supply markets were noted as 65% open markets and 35% from both the farmers and the other traders. The desired quality attributes for the ground nuts according to the processors/traders, are that it should be dry with low moisture content and clean and sorted. However, only 50% of the suppliers meet the desired attributes.

The traders and processors hire casual labourers to help in sorting and roasting the ground nuts. 75% of the people employed are female while the other 25% are male. The male usually support as sales people and to operate the mill.

### Challenges

The main challenges faced by the processors/traders were mentioned as high prices of the ground nut grains 50%, poor quality of grains produced by the farmers 25% and limited supply of ground nits on the market.

The suggested that the existing NGOs support to train the farmers to produce quality, clean groundnuts that will be appreciated by the consumers. The traders/processors also suggested providing the farmers with the necessary inputs especially seeds so that they can grow more groundnuts.

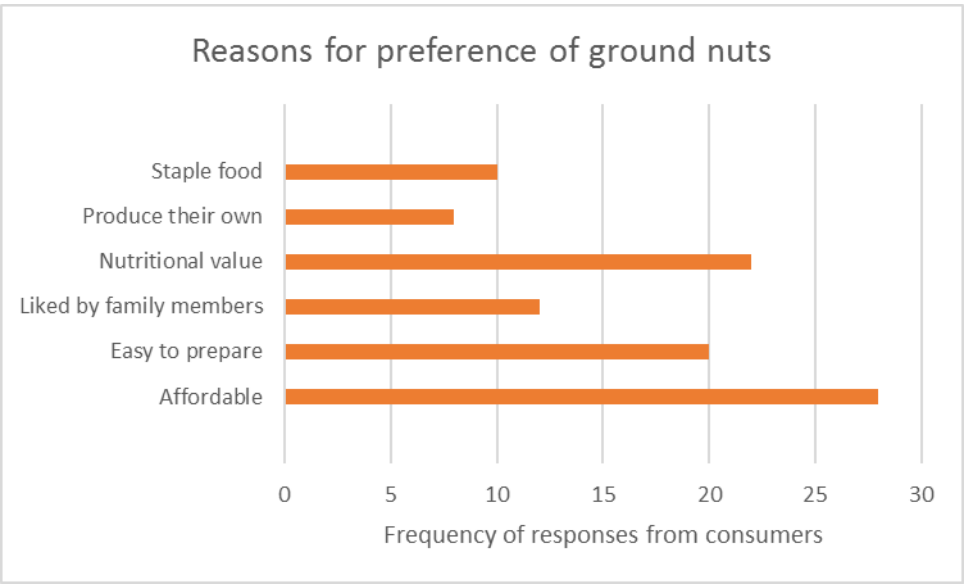
### iii. CONSUMERS

The ground nut consumers that were interviewed were 42% female and 58% male. These showed a low level in literacy with 50% never having gone to school, 42% having attained primary education and only 8% having reached secondary school. Their ages ranged from 20 years below having 8% respondents, 21-30years having 34%, 31 – 40 years being 50% of the respondents and 41-50 years being 8%.

All respondents who consumed ground nuts (95%) reported that they consumed both grain and processed ground nut paste. Only 5% of the consumers reported to consume ground nut oil as well. The frequency of consumption was reported as 42% daily, 42% weekly and 16% consuming fortnightly. The most available alternative for ground nuts was mentioned as simsim, however, only 75% of the respondents reported consuming it in the event that there wasn't ground nuts on the market. 25% of

the respondents noted that they didn't consume simsim if they didn't access ground nuts. The figure below shows reasons for preference of ground nuts;

**Figure 21: Reasons for Preference of Ground Nuts**



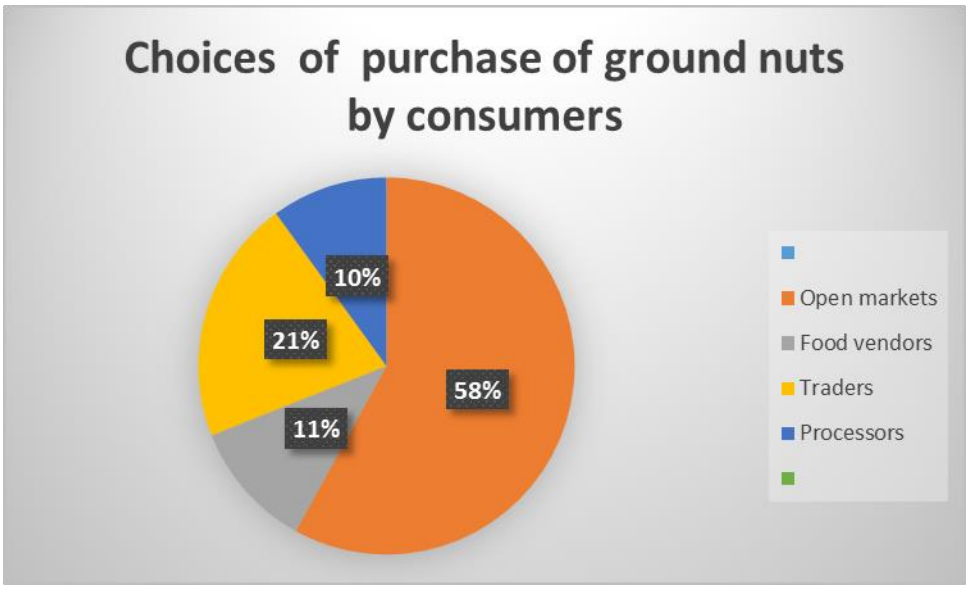

Much as the key reasons for preference was this, the consumers also had other attributes towards their purchase of ground nuts. The choice of market of where to purchase from guided by the following factors;

**Table 3: Consumer Considerations Made When Choosing A Place of Purchase For Ground Nuts**

| S/N | Key attributes/considerations when choosing to buy | Number of responses (multiple responses) |
|---|---|---|
| 1. | Affordability | 20 |
| 2. | Market availability | 812 |
| 3. | Taste of the ground nuts | 15 |
| 4. | Cleanliness | 12 |
| 5. | Shelf life | 15 |
| 6. | Colour | 17 |
| 7. | Price of substitutes | 10 |

The consumers reported a price change in the ground nuts over the past three years. 75% reported an increase while 25% reported a decrease. This partially determined the market choices of the considers from which they purchased the ground nuts as illustrated below:

Figure 22: Output Markets of Ground Nuts Accessed By Consumers




58% of the consumers had reported an increase in the quantity of ground nuts consumed, 34% reported a decrease while 8% said their consumption had remained the same with the period of three years.

### Challenges Faced By Consumers

The consumers noted the following challenges that era limitation to a consistent consumption of ground nuts;

- Poor sanitation of the ground nut vendors especially those selling as a processed product
- High prices of the commodity
- Poor quality of some of the grounds nut products
- Limited availability on the market

## CHAPTER FOUR: CONCLUSIONS AND RECOMMENDATIONS

### *4.1 Conclusions:*

From the sorghum value chain, it was noted that there is a high demand for sorghum across all actors and consumers. The demand is consistent although it is interrupted by periods of shortage during the dry season. All the sorghum is consumed and processed creating a necessity for sustainable value add component. Unreliable local supply and high prices locally were cited as main reasons some sorghum consumers and traders moved to Renk to purchase sorghum. This movement of sellers creates a lapse in the growth of local markets to serve the surrounding population.

Maize, on the other hand is currently consumed fresh from the garden. Processed maize is equally consumed but with low demand attributed to the scarcity of the longe four and five maize varieties in Maban. Maize flour can be consumed in a variety of ways and can be made available to the consumers. Maize flour is easily adaptable and will have more and cheaper alternatives to sorghum flour.

It was also noted that vegetable consumption and demand is present year-round for both fresh and dried vegetables. The fresh vegetables are consumed more during the period of availability in the rainy seasons. Most producers do not have ease of access to alternative water sources to create a year-round supply of vegetables to an already existing market. Dried vegetables (especially okra and tomatoes) are consumed during the dry season. Additionally, eggplant are in high demand and consumed during the rainy season however, the producers, processors, and consumers do not have the skill needed to dry eggplant to lengthen its consumption period.

Alternative water points mentioned by the community are depressions created by murram excavation during road construction. The only available haffir is said to have been set up with support from Oxfam and is not well utilized by the host community for vegetable production. It was noted that some of the respondents had taken long without reaching the said haffir with many complaining about its proximity to the population. A guess of one respondent mentioned that it took two hours to reach the haffir located in Congo Mamur village.

The consumers of all the enterprises complained about the quality of the products that were provided on the market. It was evident that the producers are not skilled enough in practising proper post-harvest handling or entire off-farm activities of varying enterprises. One of the key attributes for purchase of commodities was mentioned as cleanliness and quality of the commodity.

The demand for ground nuts especially for the paste was registered as high and yet supply is noticed as low. In addition, most of the consumers who consumed ground nuts attributed their consumption to the nutritional value of the legume. The market gap between demand and supply is so big and even

those that try to produce it limit their inputs to averagely two ***feddans***. In addition to this, majority of the refugee population does not grow ground nuts and cultivation has been left to the host community. The major limitation the refugees mentioned was land access.

### 4.2 *Recommendations:*

The comprehensive market assessment yielded the following recommendations for programming interventions:

- There is an ardent need to support the production of sorghum and maize in high volume to boost the growth of the local market to provide the commodities. This will also support providing the food throughout the year. The processors of maize and sorghum equally need to be supported to set up efficient processing units which will provide all product variation options to the consumers as well.
- Support food vendors to innovate varieties of forms of maize and sorghum preparation to help boost the business but also introduce a wider range of food to choose form.
- Train food producers in good agronomic practices and post-harvest handling techniques to improve the quality of produce in the market. This point is applicable for all enterprises.
- Promote the processing of vegetables (including dried vegetables) to create availability for consumers in the markets and for the purpose of household food security.