Food Security and Emergency Markets Mapping and Analysis Assessment

Maiwut and Longechuk Counties, Adar State – Upper Nile, South Sudan

April 2016
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1. Introduction

The NPA and ROSS led food security, nutrition and livelihood assessment in Maiwut and Longechuk Counties, which was carried out from the 9th March through 30th March 2016. The objective was to understand how different rural population groups in the counties survive and cope with shocks and market systems.

Assessment team purposely sampled 12 areas in Maiwut and Longechuk Counties (Maiwut; 6 and Longechuk; 6). Furthermore, 3 markets were assessed (Maiwut County: 2 and Longechuk County; 1)

A total of 140 key informants were interviewed in Maiwut and Longechuk Counties (Maiwut; 74 and Longechuk; 66) using simple random sampling. Every household had an equal chance for being sampled. For EMMA, 28 traders and key informants (Pagak; 9, Maiwut; 9 and Mathiang; 10) were interviewed.

A combination of quantitative and qualitative methods was used, as they complement each other. Quantitative method was used to address questions that were predominantly based on the descriptive. Qualitative method was used to address issues from the theoretical and applied objective. Mixed methods were used to enable triangulation of data and increased analytical power as each data source assists in the interpretation of the other.

Much of the information collected were qualitative and quantitative, providing an insight into communities of Maiwut and Longechuk Counties and their present circumstance. Collecting quantitative and qualitative information that is objective and accurate requires the use of good interviewing skills.

 Participating learning and action (PLA) tools and techniques were used throughout the assessment (semi structured interviews, direct observation, triangulation, transect walk, trend and change analysis and problem analysis) to collect and analyse primary data at several levels; county, payam and boma levels. Semi-structured interviews were more utilized to allow a general discussion to unfold as the interview progresses. Assessment team was open to fresh questions and lines of enquiry during the interviews. The interviews were relaxed, informal and conversational. Questions were generally open-ended allowing answers to emerge from a guided discussion. Further, direct observation enabled cross-check information received from other sources.

The discussions with ROSS and NPA field staff provided further information for analysis. Assessment team conducted in-depth discussions with ROSS County Secretaries prior to the start of the field work.

The assessment methodology was largely based on the Household Economy Approach (HEA). The HEA helps to understand how much food a typical household in a certain socio-economic group and location normally consumes -- over a certain time period and how that food is accessed by the household through its various income and non-income sources, and then a baseline picture of its food economy can be developed. The baseline picture can then be compared with the expected situation guided by the analysis of several factors such as expected changes in socio-political environment, agricultural and livestock production, market conditions, prices, terms of trade etc.
NPA and ROSS used EMMA Methodology to conduct the assessment. Using a combination of existing tools, from seasonal calendars to market system maps, the EMMA combines gap analysis and market system analysis to offer a systemic and comprehensive understanding of the constraints and capacity of critical market systems.

2. Context

Two years after achieving independence from Sudan, divisions within the ruling SPLM prompted renewed conflict in South Sudan in December 2013. The conflict erupted in the capital city, Juba on December 2013 and quickly turned into ethnically motivated violence. The crisis became conflict with Jonglei, Unity and Upper Nile representing the primary states of fighting. Since the onset of the conflict in mid-December 2013, South Sudan is effectively a country split in two, the areas governed by SPLM-IO and government.

In early 2014, the fighting intensified and Gulguk Payam, Longechuk County was captured and became the battleground between SPLM-IO and government. It was until the 5th May 2014 that government forces captured Mathiang, Longechuk County. The Mathiang remained under the control of government forces until the 14th May 2014, when they withdrew from area back to Gulguk.

People were killed and internally displaced. The most affected payams were Gulguk, Darjo and Belwang (especially Mayen Boma) in Longechuk County. People in Mayen Boma of Belwang, for instance, were vulnerable to conflict for most of 2014 through to 2015 due both to the movement and actions. The people of Gulguk were displaced to Udier, Pamach, Malual Payams, while people of Darjo were displaced to Udier and Chotbora. Some people from Longechuk County did seek refuge in Maiwut County and others crossed to Ethiopia, as refugees. In Maiwut County, Burun tribe of Kigile Payam were entirely displaced to Ethiopian refugee camps for supporting Juba government. However, Burun tribe of Wadesa, Kigile Payam were not displaced because they did not involve in conflict.

The conflict and insecurity has had a profound impact on market chain actors, market linkages and market integration. However, the impact on overall food security and food access at household level has been significant. Maiwut and Longechuk Counties, prior to the conflict, was developing. At present the primary characteristics of the humanitarian environment are existing caseload of internally displaced and vulnerable population, a lack of liquidity, inflation and local currency devaluation and disruption of the development.

Presently the IDP and vulnerable populations represents the most vulnerable segment of the population. Targeted food distributions by WFP and its partners continue with supporting of the population. According to a report compiled by NPA to WFP, at the end of December 2015, there were 41,462 beneficiaries (Pagak; 17,018, Maiwut; 11,855 and Mathiang; 12,589) receiving food aid in Maiwut and Longechuk Counties.

Liquidity at household levels continues to be a concern and is further compounded by the depreciation of South Sudanese pounds. The pound officially trade at 18.5 to 1 USD but is traded on the black market at a rate of roughly 32-35 to 1 USD.
Although markets continue to function to a certain extent, in particular in areas not directly affected by the conflict, market-based responses in this crisis have received limited attention within the humanitarian community.

While there is a broad understanding of basic humanitarian needs in Maiwut and Longechuk Counties, there has been limited analysis of the current economic and livelihood challenges and opportunities in Maiwut and Longechuk Counties. Although high amounts of food aid are provided, livelihood interventions are extremely limited leaving people at risk of dependence on external emergency relief.

3. Food security

3.1. Crops

3.1.1. Crop performance

Maiwut County: In Maiwut County, 85 per cent of the respondents planted the crops, while 15 did not plant. For households who planted the crops, 100 per cent planted maize crop, while 13 per cent planted sorghum. Of the households, who planted sorghum, 50 per cent were found in Maiwut. Majority of the households planted maize in May, while sorghum in June.

Positive development, however, was negated by poor rains and dry spell in June and excessive rains in July and August that reduced maize and sorghum crop growth and development. Further, some households said pests (Nyan and Lota) somewhat damaged maize and sorghum.

Longechuk County: In Longechuk County, all households cultivated maize crop, while 20 per cent sorghum. Most households who sowed sorghum were found in Jangok (44 per cent). Majority of the households grew the maize in May-June, while sorghum was in July.

In most payams, respondents said that during the cropping season, the rainfall pattern was highly variable between payams and bomas but generally, amounts were somewhat below normal. The poor rains coupled with dry spells had a negative impact on crop growth and development. To the lesser extent, attacks of pests affected the crops.

3.1.2. Crop production

In Maiwut and Longechuk Counties, maize was eaten green in August and harvested between September and October. Majority of the households in Maiwut and Longechuk Counties harvested maize in September and October respectively. Sorghum harvest occurred in October. Majority of households threshed maize in November-December period.

In Maiwut County, 11 per cent of the respondents did not harvest the crops. The crops failed due to flooding and destruction by wild pigs. This was evident in Lolnyang, where 38 percent of the respondents failed to harvest crops.
Table shows crop production (kg) in 2015 per household in visited areas

<table>
<thead>
<tr>
<th>Areas</th>
<th>Maize</th>
<th>Sorghum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvest time</td>
<td>September-October</td>
<td>October</td>
</tr>
<tr>
<td>Maiwut County</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinydor</td>
<td>650</td>
<td>0</td>
</tr>
<tr>
<td>Yuaydin</td>
<td>729</td>
<td>0</td>
</tr>
<tr>
<td>Lolnyang</td>
<td>600</td>
<td>0</td>
</tr>
<tr>
<td>Yuambura</td>
<td>700</td>
<td>0</td>
</tr>
<tr>
<td>Jekow</td>
<td>570</td>
<td>0</td>
</tr>
<tr>
<td>Maiwut</td>
<td>764</td>
<td>388</td>
</tr>
<tr>
<td></td>
<td><strong>668</strong></td>
<td><strong>65</strong></td>
</tr>
<tr>
<td>Longechuk County</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biot</td>
<td>650</td>
<td>0</td>
</tr>
<tr>
<td>Malou</td>
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<td>0</td>
</tr>
<tr>
<td>Belwang</td>
<td>580</td>
<td>0</td>
</tr>
<tr>
<td>Majok</td>
<td>670</td>
<td>0</td>
</tr>
<tr>
<td>Jangok</td>
<td>563</td>
<td>50</td>
</tr>
<tr>
<td>Mathiang</td>
<td>633</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td><strong>616</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: NPA /ROSS Team Calculation, Pagak, 2016

**Maiwut County:** Results of assessment indicate maize production at 668 kg per household. In Pinydor, Yuaydin, Lolnyang, Yuambura, Jekow and Maiwut, maize production was estimated at 650 kg, 729 kg, 600 kg, 700 kg, 570 kg and 764 kg per household respectively. Better maize production was recorded in Maiwut, Yuaydin and Yuambura. Poor maize production was registered in Jekow.

**Longechuk County:** The maize production was estimated at 616 kg per household, which decreased by 18 percent from 2010 to 2016. The maize production stood at 650 kg in Biot, Malou; 600 kg, Belwang; 580 kg, Majok; 670 kg, Jangok; 563 kg and Mathiang; 633 kg. Majok, Biot and Mathiang recorded better maize production.

In both counties, the principal underlying factors contributing to crop vulnerability include poor rains and dry spells, excessive rains (Maiwut County), poor agronomic practices but also with biotic constraints, insect pests, lack of extension services and limited active labour force, as all men and youth were involved in fighting. Together, all above factors constitute a major obstacle in the crop production.
3.2. Livestock

Livestock production is an important activity being the main source of livelihood. The livestock are essential not only to achieve self-reliance but also for improving household food security. In Maiwut and Longechuk Counties, majority of households live in the rural areas and earn their livelihood from livestock rearing. Livestock in Maiwut and Longechuk Counties for the foreseeable future will remain the mainstay and engine of growth for the rural economy.

3.2.1. Livestock ownership

In Maiwut County, 81 per cent of surveyed households engaged in livestock rearing. Households who owned livestock in Pinydor were 100 per cent, Yuaydin; 50, Lolnyang; 50, Yuambura; 100, Jekow; 83 and Maiwut; 80. All respondents in Pinydor (100%) and Yuambura (100%) possessed livestock, followed by Jekow (83%) and Maiwut (80%). In Lolnyang and Yuaydin, only 50 per cent owned livestock.

Types of livestock owned in Maiwut County were 45 per cent cattle / goats, cattle; 39, sheep/goats/ cattle; 8 and sheep/ goats; 8 per cent. Majority of respondents owned cattle / goats and cattle. Assessment found that 3 respondents (Yuaydin; 2 and Maiwut; 1) possessed sheep and goats.

In Longechuk County, about 91 per cent of respondents indicated that they owned cattle. Assessment found that 100, 86, 88, 100, 89 and 90 per cent of respondents in Biot, Malou, Belwang, Majok, Jangok and Mathiang owned livestock respectively. All respondents in Biot and Majok owned livestock, followed by Mathiang, Jangok, Belwang and Malou with 86-90 per cent.

Types of livestock owned by households in Longechuk County, 70 per cent cattle / goats, cattle; 20, sheep / goats / cattle; 8 and sheep / goats; 2 per cent. Majority of the respondents owned cattle / goats and cattle. It was one respondent in Longechuk County who owned sheep and goats.

3.2.2. Milk cows and milk production

3.2.2.1. Milk cows

Maiwut County: An average household in Maiwut County owned around 2 milk cows at any particular time. A household in Pinydor, Yuaydin, Lolnyang, Yuambura, Jekow and Maiwuit owned 2, 1, 2, 2, 2 and 4 milk cows respectively. The highest number of milk cows was found in Maiwut. In Pinydor, all respondents had milk cows at home. In Maiwut, 40 and 60 per cent of the respondents had milk cows at home and dry season grazing areas respectively. Yuaydin, Lolnyang, Yuambura and Jekow, all respondents had their milk cows at dry season grazing areas.

Longechuk County: On average, a household in Longechuk County possessed 3 milk cows. A typical household owned 2 milk cows in Biot, Malou; 2, Belwang; 3, Majok; 3, Jangok; 2 and Mathiang; 3 milk cows. All respondents in Longechuk County had their milk cows at dry season grazing areas. The respondents in Belwang, Majok and Mathiang reported having owned high number of milk cows.
3.2.2.2. Milk production

In the dry season (January-May), average milk production in Maiwut and Longechuk Counties is estimated 1.5 and 1.25 litres per milk cow respectively. The respondents said that average daily off-take will increase to 2.5 litres in Maiwut County and Longechuk County; 2.1 litres of milk per cow in the wet season (from mid-June) with enhanced rains resulting in improved pastures.

3.2.3. Livestock diseases

The common cattle diseases that were prevalent in Maiwut County were ranked as Trypanosomiasis and Haemorrhagic Septicaemia / Contagious Bovine Pleuro pneumonia were prevalent. In Longechuk County, important endemic cattle diseases were ranked Trypanosomiasis, Contagious Bovine Pleuro pneumonia (CBPP) and Foot and Mouth Disease (FMD). In both counties, Trypanosomiasis and Contagious Bovine Pleuro pneumonia were significant cattle diseases.

During the June-September period, endemic parasites will be more common, mainly Contagious Bovine Pleuro pneumonia, endemic tick borne diseases, and worm infestation.

While in sheep and goats, Contagious Caprine Pleuro pneumonia (CCPP), Peste des Petits Ruminants (PPR) and shoat pox were reported to prevalent in Maiwut and Longechuk Counties. They are main threats for shoats.

A major constraint in improving productivity in Longechuk and Maiwut Counties’ cattle is the presence of cattle diseases and linked to this, the provision of animal health services. The network for controlling diseases and providing animal health services in Maiwut and Longechuk Counties deteriorated substantially during period of conflict and insecurity.

In livestock development, the impact of diseases is not only manifested as a cause of death, but also reduction in production during clinical diseases. It is more important to bear in mind the effect of diseases on feed intake and nutrient utilization. The diseases affect the owners of those livestock in terms of livelihood, welfare and food security.

3.2.3.1. Access to veterinary drugs and services

In Maiwut and Longechuk Counties, when cattle are sick, livestock owners access veterinary drugs from traders, ethno-veterinary, nowhere, and Palata Nomads (Sudan). Traders and Palata Nomads charge a fee for veterinary drugs.

In Maiwut County, livestock owners did access veterinary drugs from markets. In March 2016, majority (73 percent) of respondents purchased veterinary drugs in Kuergeng and Gambella, Ethiopia, 9 per cent in Pagak and Maiwut, nowhere; 9 and ethno-veterinary; 9 per cent. Assessment found that Kuergeng and Gambella, Ethiopia, were the main markets for veterinary drugs for livestock owners from Maiwut County.

On the contrary, majority of livestock owners (60 per cent) in Longechuk County did not purchase veterinary drugs when their livestock were sick. About 20 per cent of livestock owners reported to access
veterinary drugs from Palata Nomads from Sudan, 18 per cent purchased from Kuergeng and Gambella, Ethiopia. Only 2 per cent of livestock owners reported to have purchased veterinary drugs from Mathiang market.

Without animal health inputs and services provided on commercial basis to livestock owners, their accessibility would remain limited, thereby contributing to the low productivity.

3.2.4. Livestock sales

Livestock owners sell their animals in periodic rural markets. Sales are undertaken for a purpose, including earning a profit or livelihood. Livestock owners sell livestock to improve household incomes to reduce food insecurity and raise the standard of living.

**Maiwut County:** Assessment found 40 per cent of respondents sold livestock in January-March period. It was revealed that larger number of respondents in Pinydor (71 per cent), Jekow (60 per cent) and Maiwut (50 per cent) sold their livestock. Few respondents in Yuambura (13 percent) sold livestock, while no respondents in Yuaydin sold livestock.

On average, a respondent in Maiwut County sold 2 bulls and a goat in January-March period. The highest number of bulls sold was found in Lolnyang (4) and Maiwut (3), while a respondent in Pinydor and Jekow sold 2 bulls. In Yuaydin and Yuambura, no respondents sold cattle. With regard to goat sales, a respondent in Pinydor, Lolnyang, Yuambura and Jekow sold a goat, while Maiwut sold 2. No goats were sold in Yuaydin.

The respondents sold their livestock at negotiated prices. On average, a bull was sold at 2,675 Ethiopian Birr. The high price of a bull (3,000 Ethiopian Birr) was realised in Pinydor and Lolnyang. Average price of a goat was 512 Ethiopian Birr. The highest price of a goat was reported in Yuambura (600 Ethiopian Birr) and Lolnyang (500 Ethiopia Birr).

The respondents reported that markets for livestock were Kuergeng, Ethiopia (61 per cent), Pagak (28 per cent) and Maiwut (11 per cent). Kuergang, Ethiopia was the main market for livestock from Maiwut County.

**Longechuk County:** Over 61 per cent of respondents in Longechuk County indicated to have sold livestock in January-March period. Majority of the respondents in Biot (100 per cent), Majok (80 per cent) and Mathiang (63 percent) sold their livestock. A few respondents (29 per cent) in Belwang sold livestock.

On average, in January-March 2016 period, a respondent in Longechuk County sold 2 bulls and 2 goats. All areas assessed sold 2 bulls. By contrast, a respondent in Biot, Jangok and Maiwut sold 3 goats, while Malou and Majok sold a goat.

Average price of a bull was 1,247 South Sudanese Pounds (2,161 Ethiopian Birr). A goat was sold at 225 South Sudanese Pounds (600 Ethiopian Birr). Further, 57 per cent of respondents in Belwang bartered cattle for Maize. On average, a bull was bartered for 2 sacks (200 kg) of maize.

The respondents sold their livestock in Mathiang (58 per cent) and Kuergeng, Ethiopia (42 per cent) markets. The main market for livestock sales was Mathiang market.
In April-July period, there is possibility for livestock supply to be slightly higher than January-March period due to extended lean period. With the extended lean season, respondents with livestock will start to sell livestock. The IDPs and vulnerable households who are food insecure likely have exhausted their disposable livestock; additional sales would erode their assets.

Assessment results show that without food aid distributions in April-August period, majority of respondents will increase livestock sales. This will mainly be geared to meeting home consumption and protect people’s purchasing power. This will result in acceleration of asset stripping in order to purchase food thus eroding livelihoods.

3.2.5. **Dry season grazing areas**

A key feature of the Nuer (Gajaak) livelihood system is mobility. The general pattern is that cattle are moved towards permanent water sources at the start of the dry season. Access to distant grazing areas is one of the most important coping mechanisms in the face of limited pastures and water.

In Longechuk and Maiwut Counties, movement of cattle away from wet season grazing areas in search of water and pastures in dry season grazing areas was evident between December and January 2016. Cattle were sent away with the youths and adults to the dry season grazing areas.

In Maiwut County, the main dry season grazing areas were Lolnyang, Kalkech, Kuerkemp, Chueidekuach, Pinydor, Kempkoat, Pulolkaak, Makwac, Kuey, Wechlual and Doroajiok. For Jotome, Wunkiir and Uleng Payams, cattle were concentrated along river Sobat and Khor Machar. While in Longechuk County, common dry season grazing areas included Lang, Marol, Dutjock, Makuac, Dorbar, Kuergoy, Wechluak, Malual, Panomthejop, Baar, Kot and Buot.

The trekking and migration of cattle away from dry season grazing areas to wet season ranges is expected from late May to June when the rains establish resulting in improved pastures. In the wet season, cattle will be kept at or near the homesteads.

3.2.6. **Pastures and browse and livestock body conditions**

Livestock body conditions were fair due to deterioration of pasture availability and grazing conditions from impact of atypical dryness and poor pasture availability in the February and March. In some areas, water resources were deteriorating. Further, the competition from Palata Nomads cattle and sheep are having negative impact on the pastures.

From late May / June, rainfall will improve pasture availability and grazing conditions, although water resources are expected to fully replenish. Livestock body conditions will improve due to pasture regeneration.
3.3. **Wild foods collection and fishing**

3.3.1. **Wild foods**

In both counties of Maiwut and Longechuk, various wild foods are collected for consumption from November through May. The common wild foods include *Balanities aegyptica* (Lalop) fruits and nuts, *Tamarindus indica* fruits (Koat) and wild vegetables (Neet and *Balanities aegyptica* (Lalop) leaves. These wild foods are widely eaten as a result of availability. Maiwut County is endowed with *Balanities aegyptica* (Lalop) trees.

*Balanities aegyptica* (Lalop) fruits and nuts, *Tamarindus indica* fruits (Koat) and wild vegetables are consumed from December and will extend into May. Majority of respondents consume wild vegetables (*Balanities aegyptica* (Lalop) leaves (Pam)) are consumed from March through May. *Balanities aegyptica* (Lalop) fruits and nuts supply a more concentrated form of energy.

In Maiwut and Longechuk Counties, wild foods are incorporated into livelihood strategies of Nuer people. For instance, Nuer agro-pastoral system, a diet largely based on livestock and agriculture is usefully complemented with wild foods.

Wild foods are consumed not because they do not have grain but to provide an available and accessible source of diverse range of foods. In December – May period, wild foods form an essential part of food security. Wild foods are good sources of nutrients, vitamins, and minerals. The nutritional role of *Balanites aegyptica* fruits, nuts and leaves are to increase palatability, to provide essential nutrients and vitamins, to enhance the quality of protein in the diet. Further, wild foods help to achieve nutritional balance in diet and particularly ensure food security for women, children and the poor, who rely heavily on them.

Overall, wild foods do not play significant role in Nuer Gajaak food economy. Wild foods no longer play an important role as they did during the war.

3.3.2. **Fishing**

In Maiwut and Longechuk Counties, the off-farm food sources include fishing. Seasonal fishing has been an integral part of the subsistence economy of the counties. Fish is an important source of animal protein. Fishing is carried out using a variety of methods.

**Maiwut County:** About 81 per cent of the respondents practiced fishing. In Pinydor, Yuaydin, Lolnyang, Yuambura, Jekow and Maiwut 100, 88, 88, 100, 33 and 70 per cent of respondents practiced fishing respectively. 100 per cent of respondents in Pinydor and Yuambura practised fishing, while 88 per cent in Yuaydin and Lolnyang, Jekow; 33 and Maiwut; 70 were involved. Majority of respondents in Pinydor, Yuaydin, Lolnyang, Yuambura and Maiwut practiced fishing.

Fishing occurs in Rivers Jekow, Yuaydin, sobat and Pinythor. Assessment found that 47, 29, 16 and 8 per cent of respondents did the fishing in rivers Jekow, Yuaydin, Pinydor and Sobat respectively. Majority of the respondents did fish in river Jekow.
Assessment results show that fishing season takes place from January through May in Jekow, Pinydor and Yuaydin seasonal rivers. Fishing in river Sobat begins from February through June. High fish catches occur in March and April, when water levels is low.

Average number of household members who practised fishing was estimated at 3. A total of 3, 3, 2, 2, 4 and 4 household members practised fishing in Pinydor, Yuaydin, Lolnyang, YuAMBura, Jekow and Maiwut respectively. High number of respondents who practised fishing was found in in Jekow and Maiwut.

In Maiwut County, assessment estimated yield of 103 kg of dried fish are expected per household at the end of fishing season. Average yield will vary, with respondent in Pinydor, Yuaydin, Lolnyang, YuAMBura, Jekow and Maiwut catching 100 kg, 139 kg, 139 kg, 122 kg, 50 kg and 70 kg dried fish respectively. High fish quantities are expected to be realised in Yuambura and Lolnyang. The fish catches in 2016 are better than 2015 fishing season. About 71 per cent of the respondents reported the 2016 fish catches were better than 2015.

**Longechuk County:** Overall, 50 per cent of respondents practiced fishing. In Biot, Malou, Belwang, Majok, Jangok and Mathiang 80, 29, 50, 0, 78 and 50 per cent of the respondents practiced fishing respectively. The high number of respondents practicing fishing was found in Biot and Jangok.

Fishing is an important dry season activity, taking place when the cattle are moved to dry season grazing areas. The main season for fishing is from February to June. High fish catches are realised in March and April. During the dry season, use a variety of methods to augment their catches.

The main fishing grounds are Lang, Marol, Kech, Orgok, Nyabeek, Baar, Netmanyang, Tetengboaw and Pulguei. Pools are systematically fished on a communal basis.

In Longechuk County, average household had 4 members who practised fishing. Average household in Biot, Malou, Belwang, Jangok and Mathiang had 5, 5, 3, 3 and 4 members who do fishing while tending cattle within the dry season grazing areas (toics). Highest number of household members practising fishing was found in Biot and Mathiang.

On average, a household in Longechuk County was expected to collect an estimated 117 kg of dried fish. In Biot, Malou, Belwang, Jangok and Mathiang, average dried fish expected to be harvested is 158 kg, 104 kg, 152 kg, 85 kg and 85 kg, per respondent respectively. Biot and Belwang will register the highest fish catches.

In Maiwut and Longechuk Counties, fishing plays an important role in the food economy due to the presence of rivers and water pools. Fish caught in the dry season grazing areas (toics) during the dry season is a vital food source. Quantities of dried fish are brought back home for consumption (100 per cent) and sales (73 per cent) to eke out grain stocks in the hunger period.

The main constraints on household fish consumption and income are the inadequate fishing equipment rather than the level of fish stocks. In most times, the amount of fish is low, because spears and baskets are used. Further, inadequate handling and processing methods reduce nutrients, leading to nutritional loss.
3.4. Trade and markets

Households in Maiwut and Longechuk Counties registered poor performance of maize, which affected household stocks. As a result households have been supplementing own production with purchases from the market since early March 2016 when their food stocks started declining and prices of grain and other commodities kept on increasing.

In March 2016, it was found that 57 per cent of the respondents in Maiwut County had started food purchases from the markets. There were variations between and across areas in terms of the number of respondents involved in food purchases. About 43, 25, 75, 25, 83 and 90 per cent of the respondents in Pinydor, Yuaydin, Lolnyang, Yuambura, Jekow and Maiwut were involved in food purchases from markets respectively. Increased households’ involvement in the market purchases was recorded in Lolnyang, Jekow and Maiwut, which arises as a result of need to acquire consumption goods.

Households are gradually getting more and more dependent on markets, for the purchase of products of primary necessity. Households purchased maize, sorghum and wheat. Food purchases – mainly sorghum and maize-make up a significant proportion of expenditure for households. The assessment analysis in March 2016 showed 51, 33 and 16 per cent of the respondents purchased maize, sorghum and wheat respectively.

The main markets for food purchases were Kuergeng-Ethiopia, Pagak and Maiwut. About 77 per cent of respondents purchased maize, sorghum and wheat from Kuergeng, Ethiopia, followed by Pagak with 18 per cent and Maiwut with 5 per cent. Kuergeng market, Ethiopian is generally well supplied and continues to receive adequate food supplies.

On average, a respondent in Maiwut County purchased 63 kilograms, which was bought with 274 Ethiopian Birr. A respondent in Pinydor, Yauydin, lolnyang, Yuambura, Jekow and Maiwut purchased 150, 37, 40, 25, 30 and 95 kilograms of maize and sorghum respectively. Pinydor and Maiwut purchased large quantities of maize and sorghum from the markets.

In Longechuk County, assessment indicated that the biggest number of respondents (59 per cent) was accessing food from the market. A 50 per cent of respondents in Biot purchased foods from the market, 57 in Malou, 50 in Belwang, 60 in Majok, 67 in Jangok and Mathiang; 60 per cent. Majority of the respondents in Malou, Majok, Jangok and Mathiang purchased foods from the markets. Buying foods from the market was reported to be a major food source. Poor and IDPs households relied more heavily on purchased grains than middle and better-off households, who were still drawing more successfully on their own production.

Households purchased foods from the markets through the income earned from various opportunities and increased coping strategy. Purchased grains included maize and sorghum. Maize was commonly purchased. Nearly 83 per cent of respondents supplemented their calorie intake by purchasing maize, while 17 with sorghum.

Households sourced maize and sorghum from Mathiang (96 per cent) and Kuergeng (4 per cent). Majority of respondents purchased foods from Mathiang. In February and March, the Arab traders
brought sorghum from Sudan and were available in the market. In Mid-March arrived with sorghum from Sudan and sold it from the tractors.

On average, a respondent in Longechuk County purchased 74 kilograms of food in March 2016 from the market. A respondent in Biot purchased 88 kilograms, 70 in Malou, 69 in Belwang, 63 in Majok, 88 in Jangok and Mathiang; 63 kilograms. Large quantities of maize and sorghum were purchased by respondents in Biot and Jangok.

Agro-pastoral households in Maiwut and Longechuk Counties do not in general cover their grain consumption needs from their own production and make it up by large purchases funded by the sales of livestock. They source up maize and sorghum from markets. In Maiwut and Longechuk Counties, food purchases are common practise.

Food purchases from the markets remain the second option for overwhelming majority of households but access to cash is a challenge. Poor households tend to be net buyers of food, even in rural areas where agriculture and staple food production determine the principal livelihoods for many. However, households are constrained in their ability to afford food commodities due to the high prices of cereals in the markets.

The high and rising food prices are eroding purchasing power and are an additional source of vulnerability for households that are already grappling with diminishing household food stocks. Price of maize and sorghum which is the most consumed cereal has increased as stocks get exhausted.

3.5. Food sources, meals, dietary diversity and daily energy consumption

Majority of foods in Maiwut and Longechuk Counties is accessed either through own production or market purchases. Own crop production is more common as a food source. Almost all households report this as their primary food source. Market purchases are most common in areas where households have better access to markets.

Own crop production and market purchases remain the most important sources of food. Likewise, similar patterns are seen in terms of which are most dependent on own production. Notably, however, own crop production becomes a much more important food source.

Milk is not a common source of food for households in any counties, though it is most prevalent in dry season grazing areas.

In March 2016, majority of households in Maiwut County met their food needs through household stocks, market purchases, fishing and milk production in descending order. Own crop production was an important source for all households.

In Longechuk County, own crop production and market purchases were typically the main sources of food. In March 2016, the main food source was household own crop production, supplemented by market purchases. Own crop production significantly contributed to household food security.

In Maiwut and Longechuk Counties, children and adults continue to consume two meals a day and daily calorie intake above 2100 kilocalories in March 2016. The dietary diversity of the households remained
somewhat good. Assessment found that household diet composed of maize, wild vegetables, fish and wild fruits. However, in the dry season grazing areas (toies), milk was widely consumed.

In the past 7 days prior to assessment, the number of times that foods from main food groups are consumed varied. In Maiwut County, maize and sorghum, wild vegetables, wild fruits, fish and milk were eaten 7, 5, 4, 4 and 4 times per week respectively, depending on the area.

In Longechuk County, maize and sorghum were consumed approximately 7 times per week. Wild vegetables and fruits were consumed about 5-6 times, while fish was consumed 2 times per week. Fish and milk were consumed least often in Longechuk County.

In March 2016, households in Maiwut and Longechuk Counties consumed 4-5 food groups. Consumption of milk in the household diet will improve in June as the peak milk production period established with the return of livestock from the dry season grazing areas. This will only be available with at least lactating cows.

According to assessment results, average person in Maiwut County consumed 2,730 kilocalories of maize and sorghum per day. The kilocalories varied between and across the areas with Pinydor; 1,867, Yuaydin; 2,213, Lolnyang; 2,537, Yuambura; 2,769, Jekow; 2,847 and Maiwut; 3,719. Caloric intake per person appears to have been roughly good, with exception of Pinydor.

In March 2016, assessment data showed the daily average dietary energy consumption in Longechuk County was 2,492 kilocalories per person per day. The daily energy consumption level was 2,911 in Biot, 2,075 in Malou, 2,292 in Belwang, 2,200 in Majok, 2,805 in Jangok and 2,598 kilocalories per person per day. Almost all areas had kilocalories above the minimum standards of 2100, with the exception of Malou.

3.6. Income Sources

A large number of households seeking to augment their incomes increased participation in income generation activities. Income, however limited, was utilized by a number of households, to purchase food and other necessities from time to time.

Maiwut County: In March 2016, nearly 92 per cent of the respondents participated in income generation activities. In Pinydor 57 per cent, 75 per cent in Yuaydin, 100 per cent in Lolnyang, Yuambura, Jekow and Maiwut of respondents reported to participate in income generation activities. All respondents in Lolnyang, Yuambura, Jekow and Maiwut participated in income generation activities.

Main cash-earning activities that have become important to household livelihood were ranked as sale of firewood, sale grass and sale livestock. In 2013, respondents had diversified income sources to include sale local beer, remittances, salaries and sale livestock. Others included sale of firewood and grass.

Longechuk County: Assessment showed that 93 per cent of the respondents participated in income generation activities. All respondents in Biot, Majok, Jangok and Mathiang reported to participate in income generation activities, while 86 and 75 per cent were involved in Malou and Belwang.
Majority of respondents employed a variety of livelihood strategies to maintain their well-being and preserve their household food and nutrition security. The strategies were ranked as (i) sales of livestock, sales of local beer and sales firewood and thatch grass. Majority of middle and better off households generated more income from the sales of cattle. Sales of firewood, thatch grass and local beer are traditionally considered women’s work. The positive aspect of this is that women enjoy greater control over deciding of returns from the activities.

In 2013, the main income sources in Longechuk County revolved around sales of local beer, sales of livestock and sale of thatch grass and firewood.

In Maiwut and Longechuk Counties, income generation activities bring money, complement individual savings and provide a source of finance. Further, the cash helps to smooth consumption. The households with income expect an increase in market purchases for food requirements. Increased sales are not adequately compensating for high prices for poor households, who report facing increasing difficulties accessing minimum daily energy requirements.

3.7. Coping strategy index (CSI)

The severity and frequency of coping strategies were used to standardise household coping into a coping strategy index (CSI). The coping strategies index (CSI) measures the intensity of the coping strategies that households adopt when exposed to food shortages at the household level due to shocks. To establish CSI, numeric values are assessed to each coping strategy based on the relative frequency any particular coping strategies taken by households.

Coping is computed based on the severity and frequency of coping strategies used. Based on this, households are then classified into three groups CSI value 0 – 21 good coping; 21 – 43 medium and above 43 bad coping. In general households with high CSI are likely to be food insecure. A high coping strategy index indicates severe stress and implies use of negative coping strategies that undermine the household future ability to meet its needs.

During the assessment, it was found that 34 per cent of respondents in Maiwut County used the coping strategies, while 66 did not use. The respondents using coping strategies were found in Pinydor (71 percent), Yuaydin (38 per cent), Lolnyang (38 per cent), Yuambura (0 per cent), Jekow (33 per cent) and Maiwwut (30 per cent). Majority of respondents did not use the coping strategies. By contrast, no respondents in Yuambura used the coping strategies.

In Longechuk, 64 per cent of respondents used coping strategies, while 36 did not use. Coping strategies were used in all areas with Biot, Malou, Belwang, Majok, Jangok and Mathiang recording 80, 71, 75, 40, 56 and 60 per cent of respondents respectively.

The average coping strategy index scores in Maiwut County was 4.6. The coping strategy index scores varied between and across the areas, with respondents in Pinydor, Yuaydin, Lolnyang, Yuambura, Jekow and Maiwwut reporting 5.4, 3.6, 5.4, 0, 3.5 and 5 respectively. Among the areas, Pinydor, Lolnyang and Maiwwut reported the highest CSI but within good coping.
For Longechuk County, coping strategy index score was 3.9. Average coping strategy score in Biot, Malou, Belwang, Majok, Jangok and Mathiang was 4.5, 3.2, 5, 7, 3 and 3.9 respectively. Biot, Belwang and Majok reported the highest CSI.

Common coping strategies applied by respondents in Maiwut and Longechuk Counties were limited portion size at meals and restrict consumption by adults in order for small children to eat.

Overall, the CSI in Maiwut and Longechuk Counties was good coping. All areas recorded CSI value of good coping. This reflects somewhat better food security situation in March 2016.

3.8. Internally displaced persons

Since January 2014, there were increasing IDPs population movements in Maiwut and Longechuk Counties following the 15th December 2013 problem and subsequent fighting in Jonglei, Upper Nile and Unity. Further, reports indicate that some refugees from Ethiopia are returning back to their places in Maiwut and Longechuk Counties. The refugees’ movement was prompted by the fighting between the Nuer and Anguak of Ethiopia.

Maiwut County: Assessment found that 30 per cent of respondents in Maiwut County reported to host IDPs. In Pinydor, Yuaydin, Lolnyang, Yuambura, Jekow and Maiwut, 29, 37, 12, 50, 33 and 20 per cent of respondents reported to have hosted IDPs respectively. Yuambura and Yuaydin recorded the highest number of respondents who hosted IDPs. Reports revealed that some IDPs had integrated within the host community.

Most IDPs came from Mathiang, Maban, Nasir, Poloch and Renk. Majority of IDPs came from Maban, Mathiang and Poloch. The most likely timing for IDPs coming was between January 2014 and June 2014.

The respondents reported that on average they hosted 4 persons.

ROSS figure of IDPs in Maiwut was not forthcoming. However, NPA Office in Pagak reports a figure of 2,500 IDPs in Pinydor, Pagak.

Longechuk County: The assessment analysis shows that 25 per cent of respondents reported to have hosted IDPs. It was found that 20, 57, 0, 60, 22 and 10 per cent of respondents in Biot, Malou, Belwang, Majok, Jangok and Mathiang hosted IDPs. The highest number of respondents who reported hosting IDPs was found in Malou and Majok.

Although, assessment was not conducted in Udier and Chotbora, but reports are that there is high concentration of IDPs from Darjo and Gulguk Payams.

The respondents reported that IDPs came from Poloch, Malakal, Gulguk, Renk and Mangok. However, majority of the IDPs came from Gulguk.

On average, a respondent hosted 5 IDPs members.

There were no figures of IDPs from NPA and ROSS Offices in Longechuk County. The figures from ADRA in Mathiang for some areas are 1,142 IDPs (Mathiang; 476, Malou; 347, Jangok; 137 and
Warweng; 182). This number could be much higher with addition figures from other areas of Longechuk County.

In Maiwut and Longechuk Counties, the IDPs will continue to face crisis levels of food insecurity.

3.9. Food security outlook March to August 2016

Food security plays an important but not always predominant role. The essential elements of food security are availability, accessibility, utilization, stability, quality, sustainable and entitlements. They are precondition for establishment of food at the household level.

The calculation of food needs is based on the international minimum caloric requirement of 2100 kilocalories. The calculation was based on household size of 7 in Maiwut and Longechuk Counties.

Annual contribution of 668 kilograms of maize is about 45 per cent of total food needs in Maiwut County, while 616 kilograms in Longechuk County is estimated at 41 per cent. The contribution of maize to food needs has been reducing each year following the eruption of conflict and insecurity. Maize contribution to food economy of Maiwut and Longechuk Counties is on declining trend.

If the maize production is converted into number of days it will last, would translate into 163 days in Maiwut County and 150 days in Longechuk County. Using a rough planning estimate of 2100 kilocalories per person, this amount would last until mid-April 2016 in Maiwut County and early April 2016 in Longechuk County, assuming an average household size of 7 persons.

For Nuer Gajaak of Longechuk and Maiwut Counties, cattle are indisputably of great asset to food security. This is through their contribution to people’s welfare in terms of diet. Milk is important in the Nuer Gajaak food economies in terms of food supply.

Milk is a source of animal protein. In March-May period, it is likely that the contribution of milk to the diet will be around 14.3 per cent of food needs in Maiwut and 18 in Longechuk County. Nuer Gajaak households of Maiwut and Longechuk Counties will derive 24 and 30 per cent of their food needs from milk in the wet season (from mid-June) respectively. In wet season, milk forms the chief items in the diet of most Nuer Gajaak. Households in Longechuk and Maiwut Counties will access milk over a good portion of the year. Household consumption of milk is an important component in the diet for animal proteins and fats.

Although milk will be available at beginning of June, it is not expected to compensate for household consumption deficits.

Fish represents a valuable source of proteins and nutrients in the diet of Maiwut and Longechuk Counties and its contribution to food security. Fish is important source of food and income for most of the rural households. Most of the catches are for home consumption with the surplus for sales. In dry season, fish become the most common source of animal protein. In Maiwut and Longechuk Counties, typically fish will contribute between 5 and 10 per cent of annual food requirement.

Given the 2015 poor crop harvest, carryover stocks are expected to be depleted for households (poor, IDPs and middle) in most parts of Maiwut and Longechuk Counties in March / April, instead of May / June, leading to an early start to the lean season in March / April. However, in some parts of Maiwut
County (Jotome, Wunkir and Uleng) are expected to maintain adequate carryover and current food stocks and / or to enable them meet basic food until May.

Cereal prices are expected to continue increasing significantly throughout the outlook due to high inflation, poor crop production and restricted trade flows. Maize and sorghum prices will follow seasonal trends, but remain above average in many markets. Prices are likely to peak from April to September and decline in October as harvest become available.

Households will depend on the market for food purchases earlier in the season, and market purchases will remain important through September. Households will have decreased purchasing power given limited income and high prices.

Food insecurity will begin to increase earlier than normal, as food stocks are depleted in many areas and households turn to the market for food purchases. The lean season, which typically begins in May, has already begun in some areas, and will continue through September. Given the expectation for prices to rise above current levels, most poor and IDPs households will face difficulty accessing food on the market. Access to markets will be further restricted. People are likely to face crisis levels of food insecurity, based on the expectation of highly food consumption gaps among the population.

The conflict and insecurity have directly and / or indirectly disrupted all of the livelihood strategies by limiting the ability to engage in market activity and income opportunities. Households have limited methods to increase their coping strategies during this extended lean season. Traditionally, livestock sales, kinship support and remittances have been the methods to stretch incomes and food consumption, but after two years of using these extensively their assets may be eroded. Households have reported their livestock sizes are smaller than in past years. The coping strategies are greatly limited due to restrictions and inability to access cash. Households have increased their use of coping strategies, since March, but are unable to meet their minimum food needs.

Despite the early start to the lean season in many areas, better-off households in some areas of Maiwut and Longechuk Counties, are likely to meet basic food and livelihood needs through market purchases or reliance on food stocks throughout the outlook period, and will therefore face no acute food insecurity. In other parts of the two counties that had poor harvests, or which have less access to food on the markets, food security is likely to deteriorate over the course of the outlook period.

The problem of food insecurity in rural areas of Maiwut and Longechuk Counties has two dimensions. One dimension is the inability of the household to produce all its food requirements because of inadequate access and diminishing quality of productive resources combined with an unfavourable or highly variable production environment. The other problems relates to the inability to acquire food from the market because of inadequate household incomes and unreliable markets that deliver food at very high prices.

The general food security situation is on worsening trend with most IDPs and vulnerable resident households becoming more and more vulnerable. The households will face highly food insecurity due to abnormally high food prices and seasonal food shortages. The purchasing capacities may limit their ability to purchase food commodities. The food security conditions for households will be worrisome during the April-August period.
3.10. Conclusion and recommendations

3.10.1. Conclusion

Food insecurity is driven broadly by generally poor crop harvest, higher prices in the markets and effects of conflicts. In many areas, dry spell and excess rains affected areas and lean season has started one to two months earlier than normal.

In general, nominal sorghum and maize prices in March were higher than the five-year average. High prices are driven by the reduced supply of maize and sorghum, to markets because of the poor production, insecurity and conflict curtailed the movement of maize and sorghum by disrupting trade routes as well as restricted market access in areas affected by conflict in Maiwut and Longechuk Counties. The factors resulted in a drop in the supply from Renk, Maban, Kuergeng (Lara) and Gambella markets and thereby an increase in price households had to pay to acquire maize and sorghum. Demand is steadily increasing due to gradual depletion of food stocks at household level. Prices increase on markets, inflation, and the local currency devaluation have also influenced prices.

In conflict-affected areas of Maiwut and Longechuk Counties, food security remains a major concern amid on-going restrictions on trade flows.

The population will face some food consumption gaps. The size of the food consumption gaps will increase through September (reaching high levels during the May-September period). Consumption gaps will likely be most acute during the peak of the lean season June-August. With poor food intake and poor nutrition status are expected to increase among children five years. Households will not be able to meet minimum food needs with engaging irreversible coping strategies. Without assistance these populations would face crisis levels of food insecurity.

Poor access to water, sanitation, veterinary services and drugs, inadequate access to and utilization of health services and poor agronomic practices are problems faced. These major episodes cause disruption and destruction in addition to their human consequences.

3.10.2. Recommendations

Integrated pest management: Use a combination of management methods in a strategy to maintain insect pest abundance or damage below levels that cause economic loss. Put priorities on cultural and biological management methods. Use crop production practices to enhance or suppress survival, abundance, and severity of damage of insect pests. The practices can be used to avoid conditions that favour insect pests or activate conditions detrimental to an increase in insect pest abundance or damage. Biological management methods reduce insect pest abundance or damage by use of natural enemies (predators, parasites and pathogens) that kill insect pests.

Fish post-harvest and processing: Improve post-harvest handling and processing of fish to ensure high quality and safety.
**Diversification of crops:** Encourage crop diversification by providing alternative crops. There is a need to encourage farmers to grow legumes and oil seed crops to improve dietary diversity. Legumes, oilseed and nut crops are rich sources of better quality proteins, B – complex vitamins and iron. When complemented with the protein found in cereals, an adequate level of amino acids can be achieved.

**High yielding crop varieties:** Introduction of appropriate high yielding crop varieties (maize, cowpea and sesame) to enable farmers expand cultivation and increase crop yields. High yielding crop varieties will significantly contribute and continue to be a major contributor to increased household food security. Use trials to introduce high yielding crop varieties. Thereafter, spread to progressive farmers and ordinary farmers.

**Extension services:** Since the majority of households depend on farming for their livelihoods, any steps taken to increase agricultural production and productivity quite often translate into enhanced food security. Effective extension system in payam and boma levels will enable farmers to have access to improved and appropriate technologies. Extension service is likely to result in yield increase ranging from 10% - 50%.

**Provision of relief assistance:** Provide relief assistance from April through September 2011. The relief assistance will provide entitlement support in times of food stress. The food security conditions will be worrisome during the April to September period.

**Veterinary drugs and services:** Support livestock production through livestock health interventions such as disease surveillance, treatments and vaccination of livestock against diseases to reduce losses and consolidate herd sustainability and promotion of husband practices. Ensure that livestock owners have access to essential veterinary drugs and services at fee at payam and boma levels to prevent further spread of preventable diseases. The provision of preventive and curative measures will reduce the number of affected livestock, hence increased production and productivity.

**Use Ox-plough Technology**

Use ox-plough technology to improve tillage – hence increased food production. Implement a pilot by use of ox-plough technology in Chotbora and Pamach – Longechuk County and Maiwut, Turu and Pagak Payams – Maiwut County.
4. Emergency market mapping and analysis (EMMA)

4.1. EMMA methodology

EMMA is a rapid market analysis designed to be used in the short-term aftermath of a sudden-onset crisis. It is premised on the rationale that a fuller understanding of the most critical markets, an emergency environment enables key decision makers to consider a broader range of responses. It is not intended to replace need assessments, detailed household analysis or fuller market assessments, but rather outline the structures and functionality of crucial markets so that programming response can more fully reflect market realities. Also, EMMA can highlight gaps in knowledge to be targeted for future investigation and assessment.

NPA and ROSS undertook EMMA in Maiwut and Longechuk Counties. The EMMA team was made up of 4 NPA and ROSS staff. The group was organised in one team, with covering 2 selected market systems. The EMMA concepts, logic and processes were outlined by NPA team leader.

The EMMA assessment was carried out over 14 days from the 14th March until the 29th March 2016. Field assessment was carried out in Pagak, Mathiang and Maiwut markets, with secondary sources complimenting field collected information.

The assessment included qualitative and quantitative data collection from key informant interviews, and individual interviews with a variety of actors in the market system. The source of information for assessment was traders and other key informants. Key informants interviews were chosen as the most appropriate data collection methods. Primary data was gathered from semi-structured interviews with 12 key informants (Pagak; 5, Maiwut; 3 and Mathiang; 4) and 16 market actors – traders and representatives of traders associations (Pagak; 4, Maiwut; 6 and Mathiang; 6)

4.2. The target population

For the assessment of market systems, IDPs and vulnerable households were of critical importance. They have otherwise been affected by the conflict. The largest population for the assessment and any recommended interventions comprises of the vulnerable resident and displaced.

4.3. Critical market systems

According to the EMMA toolkit, critical market systems are those that “played, play, or could play a major role in ensuring survival and / or protecting of livelihoods in an emergency context”. While the EMMA methodology would normally call for a full and participatory identification of the critical markets it was understood that with Maiwut and Longechuk Counties context, the clear and primary threats to food security were inability to maintain existing levels of maize and sorghum consumption.

Maize and sorghum market systems were analysed by NPA and ROSS because they were considered essential components of diet and a good indicator of the overall functioning of food basket. It was
therefore agreed that sorghum and maize, as the foundation of the household food basket, would need to be assessed.

The EMMA methodology investigates market systems separately as every good or service has its own particular market system. In order to select the critical markets for analysis within the context of the assessment, the EMMA team created a list of potential markets for assessment including sorghum, maize, wheat, wheat flour and sorghum flour and assessed them against the following agreed criteria: a) which markets enable to meet their urgent needs; b) has the market been affected by the shocks; c) which markets are in line with mandate and priorities.

Following the exercise, two critical market systems were selected for analysis- maize and sorghum. These market systems were selected due to their importance in target areas, as sources of staple food. The two principal markets for prevailing livelihoods were analysed, with intention of developing a logical strategy around which appropriate immediate and longer-term responses to improve food security could be designed.

Maize is the counties’ main staple food grown and consumed everywhere in Maiwut and Longechuk Counties. Maize, therefore is one of the main determinants of food security at both household and community level. The final figures for 2015 put maize at 668 kg and 616 kg in Maiwut and Longechuk Counties respectively. Sorghum is cultivated by few households in Maiwut and Longechuk Counties, but is purchased from the markets. On average 28 per cent of respondents in March 2016 purchased sorghum from Pagak, Maiwut, Mathiang and Kuergeng (Ethiopia) markets.

Maize and sorghum were selected due the following: (i) staple commodity in two counties was maize and sorghum (to lesser extent), providing large calorie intake. Maize and sorghum play a primary role in the diet of the communities (ii) the main shock leading to this assessment was identified as conflict and insecurity. Conflict and insecurity was found to impact on maize and sorghum. Maize and sorghum was seen as main markets affected overall, as the local production of maize was also reduced by poor rains, dry spells and excessive rains and (iii) in the context of potential cash transfer programming, it is important to identify the market on which people will prioritise their spending.

4.4. Trade flows

4.4.1. Baseline Year (2013)

The critical market systems in Pagak, Maiwut and Mathiang were maize and sorghum. Pagak, Maiwut and Mathiang are the largest markets in Maiwut and Longechuk Counties, the main hub for imports from Ethiopia, local purchases from rural areas and Renk / Maban.

Pagak, Maiwut and Mathiang markets receive domestic production from farmers. In the markets, much of this consists of maize, sold by farmers in small quantities. Local traders procure maize locally or buy locally seasonally, importing maize from Ethiopia the rest of the year when the local supplies are unavailable. Much of the surplus local maize came from Jotome, Wunkir and Uleng, Pagak and Turu Payams, Maiwut County and Malual, Longechuk, Jangok and Pamach Payams, Longechuk County. In Maiwut Market, some traders locally purchased surplus sorghum from Kigile Payam, Maiwut County. In Kigile Payam of Maiwut County is inhabited by Burun tribe who are farmers and produced surplus.
Local traders stocked the maize at household level and transported it to their stores in Pagak, Maiwut and Mathiang.

Before the conflicts, Ethiopia offered the main access for Maiwut and Longecheuk Counties. The scale of imports into Pagak, Maiwut and Mathiang is difficult to estimate as accurate data is unavailable. Maize and sorghum (to lesser extent sorghum) were imported from Kuergeng (Lara), Gambella and Jimma in Ethiopia. Pagak was more oriented towards sorghum purchases from Ethiopia.

Most maize and lesser extent sorghum imports into Pagak, Maiwut and Mathiang markets came from Ethiopia. Local traders purchased maize and sorghum from Kuergeng (Lara) and Gambella and, to a lesser degree, Jimma. Pagak, Maiwut and Mathiang markets’ main trade routes go through Pagak.

Maiwut and Mathiang markets were used to be oriented towards Renk for their sorghum purchases, while some traders in Mathiang also purchased sorghum from Maban County. The main local source of sorghum was Renk. Renk sorghum was destined for Mathiang Market, but some of it fed Maiwut market. The trade flows to Maiwut and Mathiang markets were dominated by sorghum purchases from Renk, which represent about 90 per cent of the total sorghum volume. Several local traders interviewed mentioned that they used to regularly go to Renk to buy sorghum, as often as once or twice a month, bringing back around 70-100 sacks (100 Kg sack) each trip.

In 2013, WFP food aid increased in rural areas, which further reduced demand. As a result of this, a system of purchase was established whereby local traders visited beneficiary households following WFP food distributions in Pagak, Maiwut and Mathiang to purchase small amounts which households sold to access other goods, would be bulked for sales. The sorghum would be bought back by consumers once other supplies were exhausted.

Local traders who did not purchase sorghum themselves from wholesalers in Renk, Maban and Ethiopia: Those with trucks, who sold their sorghum grain directly off the back of the trucks, and those who own stores. Off-the-trucks selling took places in Mathiang and Maiwut, and to lesser extent Pagak; depending on demand and season between one and three trucks may be trading at any one time.

4.4.2. Emergency year (2016)

Conflicts and insecurity have had negative impact on the markets. Cycles of violence and retaliations have spiralled out of control, resulting in appalling atrocities against civilians by all sides.

Insecurity and conflict have had a direct impact on markets. Market in Mathiang was looted when it was captured by the government on the 5th May through 15th May 2014. Many traders lost everything. Traders started to return to Mathiang in late 2015, but maize and sorghum remained limited and fear of insecurity and continued conflict persisted. A visit to Mathiang market in March 2016 assessment team noted a partial resumption of trade, only a few traders had returned. Only 47 per cent of local traders involved in the sales of sorghum and maize were operational and the market was functioning at 30 per cent of its pre-conflict level.

The Pagak and Maiwut markets were intact, but the trading activities went down as the traders were involved in the fighting. The conflicts paralysed the trade, meaning that traders, no longer have enough supply for their maize and sorghum. The internal trade flows was curtailed until the 2015. In March
2016, assessment found 40 per cent of traders in Pagak market were active and 36 per cent in Maiwut market. The Renk-Polo-eh-Mathiang and Maban-Adar-Gulguk-Mathiang trade routes are un-functional. The on-going conflict and subsequent closure of the main trade and supply routes have resulted in inadequate availability of maize and sorghum in the markets. This has disrupted the flow of critical market systems.

Traditional trade routes are closed and unsafe, because of actual or threatened attacks from the government forces. Most traders have simply gone out of businesses.

Conflict and insecurity continue to undermine trade flows into the three markets and therefore imposing constraints on households’ access. The disruption of trade flow patterns will continue to affect household food security well beyond the duration of the conflict.

Due to the fact that a large number of traders were purchasing sorghum from Renk and Maban during the baseline year, the closure of Renk-Polo-eh-Adar-Gulguk-Mathiang and Maban-Adar-Gulguk-Mathiang trade routes had a profound effect on the market. The sorghum supply route linking Pagak, Maiwut and Mathiang markets to Renk was completely closed. Sustained conflict and insecurity in Gulguk, Melut and Renk has disrupted cereal trade flows from Renk and Maban.

Since the conflict in South Sudan, the Ethiopian government’s restrictions of goods to South Sudan have had a significant impact on imports of maize and sorghum into, and trade flows within Maiwut and Longechuk Counties. However, the restriction of the border has greatly reduced the trade. Informal trade through smuggling of goods continues, in particular near Pagak and Jekow, but figures are difficult to come by as trade is dispersed along the border. Despite maize and sorghum being smuggled across the border, quantities have reduced drastically with local traders relying more on the maize supplies from households in the payams. Poor rains, dry spells and excessive rains that occurred did reduce the maize production.

Restrictions by Ethiopia government on trade flows are likely to continue, though small quantities of food will continue to be smuggled into Pagak, Maiwut and Mathiang, with increased risks for those taking goods to South Sudan. If trade restrictions are loosened, and either the Ethiopian government allows some flow of goods into Pagak, Maiwut and Mathiang, or key trade routes into Maiwut and Longechuk Counties are assured; this would enable flows of food. However, given the high prices, as well as likely added costs of bringing commodities into Maiwut and Longechuk Counties, most food commodities would still be inaccessible to internally displaced and vulnerable populations.

In Maiwut and Longechuk Counties, households are utilising maize that they have produced for own consumption during and after harvest period. In December and January 2016, some middle and better-off households with surplus maize sold maize to local traders in order to access cash to buy other needed items.
4.5. Market system map

A main tool in EMMA is market system map. The maps and other data make comparisons between the baseline and emergency situation. As they give a brief visual representation of the impact of the impact of a shock on a market, the maps are a key communication tool for decision makers.

The aim of market system map is to rapidly draw up comprehensive baseline and emergency affected pictures of the system, which capture the most relevant available information about the situation before and since crisis onset.

Using analysis of interview and focus group information, a market map depicting the maize and sorghum market systems is show. The maps for markets vary slightly; the map provides an overall picture of the common features with maize and sorghum markets.

The map is broken into 3 sections: a) Top: describes the market environment- laws, rules, norms and trends within which the markets operates; b) Middle: describes the market chain-those involved in buying and selling maize and sorghum linking from the producers to customers; c) Bottom: describes the infrastructure, inputs and services which are required for the market chain to function.

The market system map shows how the market system worked prior to the crisis, and how it has been affected by conflict. Each map features elements of the market environment that affect how the supply chain functions, how the infrastructure and inputs that enable market interactions have been impacted and the effects on market actors themselves.
Market actors in maize and sorghum market systems

The main actors in the maize and sorghum and maize value chain were producers, wholesalers, traders, small shops and consumers.

Producers: Farmers, often regardless of amount of land they have available, plant maize. During the harvest, surplus maize is sold. The traders go to rural areas and purchase small quantities from the producers. Thereafter, traders also sell the same maize to local consumers.

Wholesalers: Wholesalers are located almost exclusively at the central market in Kuerpeng (Lara), Gambella and Jimma, Ethiopia and, Renk and Maban, South Sudan. They receive domestically grown and imported sorghum. Wholesalers sell maize and sorghum onto other wholesalers, but also to traders and individual customers. Large amount of maize and sorghum is sold to traders. Volumes are difficult to estimate and vary seasonally. They sell onto traders and, before the emergency, to occasional bulk-purchasers. The lead time on restocking is usually one day.

Traders: It is not wholesalers who import goods: traders, even smaller ones, also do at times. The decision on whether to import or buy locally is heavily influenced by the exchange rate and availability of, and traders’ access to, foreign currency and Ethiopian Birr. During the dry season, traders arrive with their trucks to Renk, Maban, Kuerpeng (Ethiopia), Gambella (Ethiopia) and Jimma (Ethiopia). However, during the rainy season only Pagak-Maiwut road remains passable.

Traders purchase sorghum and maize where they are produced in surplus. Not only that but travelled to Renk, Maban, Kuerpeng, Gambella and Jimma to purchase from wholesalers. Furthermore, they sourced maize directly from producers.

Smaller shops: Smaller shops source sorghum and maize from traders or directly from producer. Occasionally, the smaller shops travel to Kuerpeng, Ethiopia to buy cheaper maize and sorghum.

Beneficiary households from WFP: During the WFP food distributions in Pagak, Maiwut and Mathiang, beneficiary households sell some of their food rations to traders in order to acquire cash. The beneficiary households use the cash generated from food aid sales to meet basic needs, which are not in the food basket.

Consumers: The two main sources of sorghum and maize were personal production and from the markets. Most residents of Maiwut and Longechuk Counties purchase maize and sorghum regularly from the markets. On average, a household of 7-8 persons consumed 7 kilograms per day and up to 200 kilograms per month, and consumers purchase directly from smaller shops and traders.

Transport

Traders and wholesalers transport maize and sorghum to the markets by hiring trucks. Trucks are hired in Gambella, Jimma, Kuerpeng, Renk and Maban and operate independently of traders. Transporters in Gambella, Jimma, Kuerpeng, Renk and Maban who take maize and sorghum operate independently. Checkpoints along the roads are a major factor driving up the prices of goods. Traders have to pay at each unofficial checkpoint.
4.6. Seasonal calendar

A seasonal calendar is a visual method of showing the distribution of seasonally varying phenomena (such as economic activities, resources, production activities, problems, migration and natural events / phenomena) over time. It helps to understand seasonal differences during livelihoods and vulnerability analysis. It tells about seasonal variations in vulnerability, risk, and access to assets and resources.

It collates and summaries important factors including priority activities, risk factors and variations in people’s lives and the market system. Seasonality of rainfall impacts the most important socio-economic activities of agricultural production, cattle keeping, fishing and local trading.

The maize and sorghum market can be seen as seasonal, as the market is more vibrant following the exhaustion of the majority household stores. However, even at this time, the market remains constrained, as IDPs and poor resident households are unable to generate sufficient income to cover their consumption needs.

Thus inability of households to meet consumption needs through combined income and production, results in a hunger gap which occurs directly prior to harvest time.
Seasonal Calendar - Mainwai and Longendale Country

- Food Purchasing
- Rainfall
- Harvest
- Migration
- Fishing
- Milk
- Wild Fruits Collection
- Insect Control
- Trade Volume
- Margrass
- Red Suckers
- Rasper Whorl
- Leek Whorl

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul
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<td>Trade Volume</td>
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<td>Margarita</td>
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*Note: The chart shows peak periods for certain activities.*
4.7. Maize and sorghum prices

The buying prices of maize and sorghum have fluctuated widely since the start of the crisis both in terms of price evolution over time and variations in prices. Buying prices of maize and sorghum continued to climb in markets in conflict areas.

A spike in buying prices was observed in 2014, 2015 and 2016 following the conflict, but levels have not returned to normal, mostly due to insignificant influx of imports from Ethiopia. Buying prices of maize and sorghum are generally high compared to prices for the same time in 2013. In 2013, the buying price of a sack (100 kg) of maize by traders in Pagak, Maiwut and Mathiang was 200 South Sudanese Pounds. The continued crisis has negatively impacted on the buying price of maize. In March 2016, the buying price of a sack of maize stood at 500 Ethiopian Birr (500 SSP), Maiwut; 500 SSP and Mathiang; 325. The buying price of maize increased by 150%, 150% and 125% in Pagak, Maiwut and Mathiang markets respectively.

The buying price of sorghum was 200, 350 and 400 South Sudanese pounds per sack (100 kg) in Pagak, Maiwut and Mathiang respectively. In March 2016, buying price of sorghum was reported at 600 Ethiopian Birr (600 South Sudanese Pounds) in Pagak and Maiwut; 500 SSP per sack, possibly indicating a slightly higher price. Since 2013, buying price of sorghum has increased by 200 percent in Pagak and Maiwut; 43 percent per sack. Buying prices in Pagak and Maiwut markets indicated a substantial increase. There has been substantial movement in buying price.

Maize price in Pagak, Maiwut and Mathiang has been highly volatile since the conflicts in December 2013. There are enormous price difference between different markets due to weak market integration across counties, mainly due to poor roads, expensive fuel, taxes and scarcity of maize and sorghum. Generally, the further from purchase point, the less integrated markets become, and the more likely it is that prices will be higher.

On average prices for maize and sorghum have slightly increased. On average a 100 kilograms sack of maize in 2013 was retailed at roughly 400 SSP in Pagak, Maiwut; 400 SSP and Mathiang; 400 SSP before the conflict began. In Pagak, Maiwut and Mathiang markets, a 100 kg sack of maize in March 2016 was reportedly sold for 700 Ethiopian Birr (700 SSP), Maiwut and Mathiang for 550 South Sudan pounds. The maize selling prices increased by 75, 38 and 38 percent in Pagak, Maiwut and Mathiang respectively.

Sorghum prices followed maize trend, but remained above average in three markets. In 2013, the traders in Pagak, Maiwut and Mathiang markets sold a 100 kg sack of sorghum at 400, 400 and 417 South Sudanese Pounds respectively. In March 2016, a 100 kg sack of sorghum was sold at 700 Ethiopian Birr (700 SSP) in Pagak and 600 South Sudanese pounds in Maiwut and Mathiang markets. The price of maize has increased by 75, 50 and 44 per cent in Pagak, Maiwut and Mathiang markets respectively.

Prices for maize and sorghum are on a severe upward trend. Prices for sorghum and maize have significant increased, compared to the 2013. High food prices are caused by rising inflation and depreciation of the local currency, diminishing purchasing power, depletion of household stocks and a high cost of living.
Further prospects in terms of maize and sorghum prices heavily depend on whether markets will remain adequately supplied, and whether maintain the same South Sudanese Pounds per sack price. If maize and sorghum supply remains high the prices will follow the normal trend, getting to the peak around May and August.

Access to food can be disrupted through volatility. While some annual variability in prices is expected, excess variability can be caused by a number of factors, including dependence on markets, the Ethiopia government continued to prohibit trade to Maiwut and Longechuk Counties, insecurity and conflicts and many other factors.

Table shows the buying and selling price of a sack (100 kg) of maize and sorghum in three markets of Pagak, Maiwut, Mathiang

<table>
<thead>
<tr>
<th>Markets</th>
<th>Maize (100 kg)</th>
<th>Sorghum (100 kg)</th>
<th>Maize (100 kg)</th>
<th>Sorghum (100 kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pagak</td>
<td>200 Birr</td>
<td>200 SSP</td>
<td>400 SSP</td>
<td>400 SSP</td>
</tr>
<tr>
<td>Maiwut</td>
<td>200 SSP</td>
<td>300 SSP</td>
<td>400 SSP</td>
<td>400 SSP</td>
</tr>
<tr>
<td>Maithinag</td>
<td>200 SSP</td>
<td>0 SSP</td>
<td>400 SSP</td>
<td>400 SSP</td>
</tr>
</tbody>
</table>

Source: Traders, Pagak, Maiwut and Mathiang, 2016

4.8. Traders, demand trends and stock held

4.8.1. Traders

Prior to the events of December 2013, there were 5 traders in Pagak market, Maiwut; 14 and Mathiang; 19 were registered and engaged in the maize and sorghum sales. The number of traders is considerably high, and varies, not posing any constraint to competition. The traders had a higher capacity to influence prices. By March 2016, it was estimated that number of traders involved in the sale of maize and sorghum had declined to 3 in Pagak market, Maiwut; 9 and Mathiang; 10.

In three markets, some traders had dropped out of maize and sorghum businesses. Assessment found that 40, 36 and 47 per cent of traders in Pagak, Maiwut and Mathiang markets respectively were unable to re-engage with the market, due to insufficient capital and lack of access to credit to revive their businesses. The Darfuri traders in Mathiang and Maiwut markets were forced to close their businesses and return to Sudan due to this inability to continue trading.

Table below shows the number of traders involved in maize and sorghum sales in 2013 and 2016

<table>
<thead>
<tr>
<th>Markets</th>
<th>Number of traders in 2013</th>
<th>Number of traders in 2016</th>
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</thead>
<tbody>
<tr>
<td>Pagak</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Maiwut</td>
<td>14</td>
<td>9</td>
</tr>
<tr>
<td>Mathiang</td>
<td>19</td>
<td>10</td>
</tr>
</tbody>
</table>

Source: Traders, Pagak, Maiwut an Mathiang, 2016
4.8.2. Demand trends

Demand generally mirrors availability, purchasing power and food prices. In 2013, an average trader in Pagak, Maiwut and Mathiang markets traded 18, 14 and 15 sacks of maize per day, while in 2016 sold 10, 7 and 8 sacks respectively. The interviews suggest that sales have gone down at least by 44, 50 and 47 per cent in Pagak, Maiwut and Mathiang markets respectively. For sorghum, a trader in Pagak, Maiwut and Mathiang markets sold 15, 14 and 13 sacks in one day, while in 2016, sold 8, 6 and 0 sacks respectively. The sorghum sales to households have gone down by much as 47, 57 and 100 per cent in Pagak, Maiwut and Mathiang markets respectively. Low maize and sorghum sales in emergency year 2016 are due to disruption to livelihoods and insecurity.

Demand trends are dictated by the limited purchasing power of IDP and host communities and by the available supply of maize and sorghum. The volumes of sales are low but increasing with trends following the availability and purchasing power.

Conflict and insecurity continued to disrupt maize and sorghum sales across the markets and have led to a surge in the nominal sales for maize and sorghum. The 2013 and 2016 comparison shows that the maize and sorghum sales have dramatically reduced.

Table shows number of sacks (100 kg) sold by a trader a day in Pagak, Maiwut and Mathiang markets in 2013 and 2016

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</thead>
<tbody>
<tr>
<td>Pagak</td>
<td>18</td>
<td>10</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>Maiwut</td>
<td>14</td>
<td>7</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Mathiang</td>
<td>15</td>
<td>8</td>
<td>13</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Traders, Pagak, Maiwut and Mathiang, 2016

4.8.3. Maize and sorghum stock level held

Assessment found the sorghum and maize stocks held by traders are less than normal. As of the 9th - 29th March 2016, at the time of the assessment it was estimated that a trader in Pagak, Maiwut and Mathiang markets held on an average 19, 8 and 41 sacks (100 kg) of maize respectively against 46, 82 and 100 sacks held in 2013. The maize stocks held by a trader in Pagak, Maiwut and Mathiang markets have reduced by 59, 90 and 59 per cent respectively.

Average sorghum stock level held by trader in 2016 was 15, 20 and 0 sacks (100 kg) in Pagak, Maiwut and Mathiang markets respectively against 56, 87 and 83 sacks in 2013. This represented a reduction by 73 percent in Pagak, Maiwut; 77 and Mathiang: 100.

The maize and sorghum stocks held by traders in March 2016 were far below the pre-crisis (2013). The conflict disrupted the trade flows. Overall maize and sorghum stocks have decreased significantly, as supply of domestic production cannot compensate for fall in stocks. The availability of grains are limited in most markets due to reduced trade flows and low local production in the last season; food prices continue to rise, primarily because of the currency devaluation.
Traders cannot restock and scale up prepositioning, access to Ethiopian Birr and foreign currency remains the main constraint to food imports.

Table shows number of maize and sorghum stock held by a trader in Pagak, Maiwut and Mathiang markets in 2013 and 2016

<table>
<thead>
<tr>
<th>Markets</th>
<th>Maize</th>
<th>Maize</th>
<th>Sorghum</th>
<th>Sorghum</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>2013</td>
<td>2016</td>
<td>2013</td>
<td>2016</td>
</tr>
<tr>
<td>Pagak</td>
<td>46</td>
<td>19</td>
<td>56</td>
<td>15</td>
</tr>
<tr>
<td>Maiwut</td>
<td>82</td>
<td>8</td>
<td>87</td>
<td>20</td>
</tr>
<tr>
<td>Mathiang</td>
<td>100</td>
<td>41</td>
<td>83</td>
<td>0</td>
</tr>
</tbody>
</table>

*Source: Traders, Pagak, Maiwut and Mathiang, 2016*

4.9. Market integration

A market system is integrated when linkages between actors are working well. In simple terms, market integration assesses how well goods flow between markets and particularly between surplus and deficit areas.

Before the conflicts (2013), market systems were somewhat integrated. Any imbalance of supply and demand in one market was compensated for by the relatively easy movement of goods from other nearby or county markets. Goods were flowing from one market to the other at various speeds, with prices reflecting the fair cost of transport, for example, and no further distortions. Before the conflict, a price change in one geographically different market is transmitted completely to another geographically different market (for the same good), allowing for transport costs. Thus, what it points to is the degree to which markets are isolated, and therefore the response capacity of markets to accommodate changing flows for example, without affecting prices disproportionately.

During the assessment (March 2016), it was found that the maize and sorghum markets within Maiwut and Longechuk Counties are poorly integrated. This is largely due to poor infrastructure which makes trade flows between counties and payams extremely difficult. Due to poor integration, a shortage in one market cannot easily be filled by movement of goods internally across counties and payams. This situation means that there are large inequalities in market prices across different market places which can impact heavily on customers.

4.10. Challenges facing traders

- Reduced income earning opportunities for many households while at the same time wiping out their purchasing power
- Availability of maize and sorghum grains are limited in most areas due to significant reduction in trade flows and low local production in the last season; food prices continue to rise, primarily because of the currency devaluation. Traders cannot restock and scale up pre-positioning; access to Ethiopia Birr, foreign currency and restrictions by Ethiopian government remains the main constraint to food imports.
- Conflict and insecurity have significant limited trade flows to markets. The blockade of trade routes due to on-going conflict and insecurity has cut-down sorghum supplies from Renk and Maban. These factors have resulted in a typical prices increase, defying seasonal trends.
• The upsurge in conflict and insecurity has affected purchasing power, the prices of staple foods are volatile and increasing, income opportunities are limited. Furthermore, disruptions to road access and supply lines have hampered deliveries of foods, which have contributed to price increases in many affected areas.
• Many traders are not stockpiling in order to take advantage of higher prices during rainy season, they are constrained in stockpile due to lack of sufficient capital to purchase increased amount of maize and sorghum
• Communities are unable to meet their maize and sorghum needs due to inadequate purchasing power as a result of limited income opportunities coupled with low levels of own production. This lack of purchasing power constrains the market, as customers are unable to purchase.
• Traders do not have access to enough capital to significantly increase the amount of sorghum and maize, they are to bringing into the markets. In general, the traders are undertaking small-scale operations, due to lack of access to credit. Traders cited the high cost of doing business and low customer purchasing power as key issues.
• In three markets, access to maize and sorghum stocks is severely reduced and also faces trade restrictions from Ethiopian government. Current restrictions have resulted in steep prices hikes, which combined with depreciation of South Sudanese pounds, are having a devastating impact on food security. Given the restrictions, goods are being smuggled across Ethiopian into Maiwut and Longechuk Counties, quantities are drastically reduced with traders relying more heavily on maize supplies from some middle and better-off local producers. The situation has been exacerbated by the conflict and insecurity.

4.11. The impact of food aid on markets

In 2015, WFP and NPA targeted 41,462 beneficiaries in Maiwut and Longechuk Counties (Maiwut; 11,855, Pagak; 17,018 and Mathiang; 12,589) with food aid. During the distributions, only registered beneficiaries received food aid. The rest of the population continued to depend on markets. Food aid has been crucial for the IDPs and vulnerable populations in the conflict affected counties of Maiwut and Longechuk.

The assessment found that the impact of food aid on domestic markets varied from year to year, depending on the size of the food gap. Food aid has been crucial; at least in preventing the food security situation from worsening, markets continue to function to varying degrees across the counties. Food aid helped to stabilise prices, easing price burdens on households in Maiwut and Longechuk Counties, as this was the main source of food for the market. Given that food aid was properly targeted and managed, it has had no potential to distorting markets by depressing prices and creating disincentives for food producers. Food aid has played a significant role in improving food security in Maiwut and Longechuk by bridging the food gap.

To lesser extent, assessment found little evidence of market distortions arising from increasing food aid. For example, freely available humanitarian food aid has been found to reduce the demand for sorghum and maize, resulting in unintended excess stocks of maize stocks in market, which exerted a dampening effect on consumer prices.
4.12. Key findings

- The maize and sorghum stocks held by traders in March 2016 were far below the pre-crisis (2013). The conflict disrupted the trade flows. Overall maize and sorghum stocks have decreased significantly, as supply of domestic production cannot compensate for fall in stocks. The availability of grains are limited in most markets due to reduced trade flows and low local production in the last season; food prices continue to rise, primarily because of the currency devaluation. Traders cannot restock and scale up prepositioning, access to Ethiopian Birr and foreign currency remains the main constraint to food imports.

- Markets for staple foods are somewhat functioning that any intervention should be market-oriented.

- There is no enough local maize in Maiwut and Longechuk Counties to take the households through the lean season. The harvested maize will be depleted between March and April, 1.5 months earlier than normal.

- Traders in Maiwut County have not suffered significant disruption of their access and ability to return in businesses. The issue is depreciation of South Sudanese pounds and not accepted by Ethiopian traders. In Pagak markets, every item is sold in Ethiopian Birr. South Sudanese Pounds are not accepted in the market. In Maiwut market, traders are using both Ethiopian Birr and South Sudanese Pounds. There are certain goods sold in Ethiopian Birr but SSP. Mathiang market is using South Sudanese pounds.

- Maize and sorghum are widely used at the household level and should be directly brought to the markets. There is a need for strategies that directly support markets with maize and sorghum. Combine with vouchers for identified IDPs and vulnerable resident households should be replicated in any contingency planning. There are limited availability of maize and sorghum in Pagak, Maiwut and Mathiang markets. A result of limited availability, sorghum and maize are very costly. This is a weakness in the market systems that undermine food security and livelihoods.

- Currently, own production and to lesser extent market purchases are supporting households in meeting their food needs, but evidence shows that low households’ income and limited access to cash do not enable the communities to cover other needs, including livelihoods. However, opportunities for investment exist to restore livelihoods, which would empower households to develop greater resilience and have the economic capacity to deal with repeated shocks.

- The main challenges that small business owners face are: limited capital, mainly due to a decreased demand (loss of customers’ purchasing power), difficulty to move goods and high operating costs.

- Markets are functional in Pagak, Maiwut and Mathiang access in SPLM-IO but with a limited capacity as supply lines are constrained.

- The government of South Sudan has blocked trade routes – mainly supply routes for Maiwut and Longechuk Counties. Livelihoods in Maiwut and Longechuk have traditionally been strongly linked and communities have become co-dependent on each other for trade and commodities. The blockade of trade routes meant no trucks could cross. The combination of these factors had a significant impact on food security in both the short and medium-term.
• Food prices had increased dramatically and a wide range of commodities had disappeared from the markets as traders struggled to find alternative supply routes.
• The closure of roads from Malakal and Renk had catastrophic effects on all markets as many traders have nothing left to trade.
• Local production and market access are disrupted, and households do not have the capacity to address structural seasonal food deficits that typically occur in the lean season. The crisis also resulted in a reduction in volume of essential commodities in the markets, increased costs of doing business in the counties and reduced purchasing power of households.
• Trade has been affected by the limited market access from Renk and Maban. Maiwut and Longechuk Counties used to rely on supply from Renk and Maban. Since the onset of crisis, the flow of commodities along Renk-Poloch-Gulguk route stopped and Gambella-Kuergeng-Pagak-Maiwut route decreased dramatically.

• Livelihoods, including small business have been severely affected. Traders report a reduction in the overall amount items, including sorghum and maize available in markets; furthermore, communities have little to no purchasing power because they have already exhausted what little cash savings they have. The number of traders in business dropped by 42 per cent with a 77 per cent reduction in the volumes sorghum and maize traded in the markets.
• Before the crisis, households in Maiwut and Longechuk Counties faced some deficit in accessing adequate quantities of sorghum and maize, the situation was made worse by market disruptions and supply constraints resulting from conflict. The crisis has resulted in a reduction in volumes of essential commodities in the markets, increased costs of doing business in the counties and reduced purchasing power of households due to limitation in income earning opportunities.
• Amount of sorghum and maize purchased has significantly decreased compared to 2013. Inflation also significantly reduced the amount that customers and in particular internally displaced persons and vulnerable populations could afford to buy. As a result of the dip in demand in rural areas, some traders stopped operating. This had a knock-on effect of making markets less accessible for rural communities.
• Despite the crisis, markets in Maiwut and Longechuk Counties continued to play a major role in accessing food and continued to function on limited scale and with hugely inflated prices.
### 4.13. Response options matrix

<table>
<thead>
<tr>
<th>Response option</th>
<th>Feasibility</th>
<th>Advantages</th>
<th>Disadvantages</th>
<th>Timing</th>
</tr>
</thead>
</table>
| 1. Cash for work                                     | medium      | - indirect support to people and domestic production will help in the medium and long-term  
- there is plenty of labour availability               | - many of the important improvement require skilled labour and heavy equipment, not appropriate for traditional cash for work  
- identification of beneficiaries and operational logistics would be challenging and costly                                                    | 3-6 weeks to design                                                                                                   |
| 2. Cash grants to traders                            | High        | - free up trades’ capital for further investment in business  
- will increase traders resilience to continued instability or future economic shocks  
- easy to transport and distribute  
- stimulate local economy  
- flexible and give choice                               | - potential for corruption  
- might not spend on business  
- pressure from other family members or lean sharks to share cash  
- could increase inflation                                                                                                     | - can be designed in less than a month.  
- implementation is rapid once funding is secured                                                                         |
| 3. Facilitate and support establishment of farmers and extension groups | High        | - facilitate agriculture extension services (knowledge and skill transfer) on improved production practices at community level  
- stimulate local level innovations and solutions for crop production related problems  
- create local level platform for improved technology demonstration and dissemination | - costly and difficulty to co-ordinate                                                                                                                                             | Started with 2-3 weeks |
| 4. Food voucher and unconditional cash transfer to IDPs and vulnerable resident population | High        | - households will be able to access essential commodities while traders will be guaranteed demand  
- support to market actors will ensure the functionality of the markets                                                | - traders will need to stock adequate quantities of essential commodities-capacity of market to replenish may be limited until larger traders and transporters return to do businesses | - can be implemented within good time.  
It is a quick short-term intervention |
| 5. Address supply constraints including addressing infrastructure, informal fees, taxes and opening of | Low         | - holds key to addressing the persist supply chain deficits of maize and sorghum                                                                 | - requires large investment and political goodwill both locally and nationally                                                                 | High impact         |
## 4.14. Recommendations

**Support livelihoods:** Supporting livelihood resilience implies that humanitarian actors expand interventions beyond life-saving support, to address longer-term livelihood needs by supporting restoration of income generation for households. The following set of recommendations are intended to help achieve this goal with interventions designed and implemented in complementary and co-ordinated manner so as to support, demand.

**Support services:** The conflict and insecurity have brought a completely new situation for communities. Agriculture and small businesses have been heavily affected. Developing capacities and supporting local initiatives can help stabilise affected communities to get back on track and become more resilient in difficult circumstances.

**Promote local markets:** By providing access to markets, the heavily affected rural economy can be improved and growth can be generated. Since the import of required inputs is a major challenge. The easing of cross-border trade restrictions and opening of trade routes should be considered to support local economies.

**Use cash and vouchers:** Consider the use of cash and vouchers for future assistance, and the effects of long-term food aid. When food is available for purchase from traders, a cash and voucher based response could be more efficient than free food distribution. Cash and voucher transfers improve purchasing power and close the income gap in the lean season.

**Provide business and financial support:** Markets were partially disrupted and that actors within the market chain need support to restore their operational capacities, to recover capital and improve access to capital. Provide business and financial supports to some local market actors that may need access to credit or loan to enable them replenish markets immediately to meet the anticipated increased demand as households move into lean season.

**Cash for work:** Engage in cash for work activities that will assist the counties recover and will support market interaction. In general, the activities carried out as cash for work projects should be community or public works of pre-determined extent and duration. Examples of the types of work which are suitable for schemes are small-scale water harvesting structures, tree planting of selected indigenous species in degraded areas where natural regeneration will be slow or difficult; construction and maintenance of community amenities; construction and maintenance of infrastructure such as roads. The activities will be identified in partnership with ROSS, civil authority and local communities and will focus on activities that have an immediate impact.
Cash for work activity timing should consider seasonal livelihood activities and opportunities to ensure labour availability.

**Regular Monitoring:** Regular monitoring of market trends, increasing food supply and prices, and updating of current analysis are crucial. Change in market prices will play a key role in determining the food security of households in many parts of Longechuk and Maiwut in the months to come. Careful monitoring of market trends, including prices, stock levels held and the availability of maize is key. Markets is therefore required. It is obviously important to update the current analysis from time to time, as actual market price trends become clearer.