

# **SPECIAL REPORT**

## **FAO/WFP ASSESSMENT OF THE IMPACT OF 2007 FLOODS ON FOOD AND AGRICULTURE IN EASTERN AND NORTHERN UGANDA**

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**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, ROME**



**WORLD FOOD PROGRAMME, ROME**

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### **HIGHLIGHTS**

- Excessive rains in the period July-September 2007 caused extensive flooding in certain areas of Uganda, particularly in Amuria and Katakwi Districts of Teso sub-region, where crop losses, both pre and post-harvest, were very high.
- An FAO/WFP mission assessed the food security conditions in the worst affected areas of Teso, Lango, Karamoja, and Acholi sub-regions<sup>1</sup>.
- It found that there is a looming food crisis in Katakwi and Amuria Districts and in parts of neighbouring ones, which requires immediate action to avert impending human suffering and possible loss of life. Food prices in some rural markets are rising fast and are double their levels a year ago.
- The mission noted that 312 118 people in the worst affected sub counties in Teso, Lango and Karamoja received a one-month food ration during September-November 2007.
- For Amuria, Katakwi, Bukedea and Soroti Districts in Teso and Lira District in Lango, the mission recommends immediate implementation of General Food Distribution to 219 915 people living in the worst affected sub counties until the next harvest or full market recovery.
- The mission further recommends that well before the start of the next planting season in March 2008, seeds, cassava cuttings and sweet potato vines should be distributed to targeted households in these areas.
- For Karamoja, the mission also recommends General Food Distribution to 100 999 people in specific sub counties, beginning in March/April 2008. It is important to note that flood damage is only one factor contributing to food insecurity in Karamoja. In that sub-region, the food security problems stem mainly from prolonged insecurity, drought in 2006, a late start to the 2007 cropping season, falling livestock prices and a severe attack of honeydew on sorghum, the main staple.
- In Acholi, the impact of floods on agriculture was not significant, being confined to localized low-lying swampy areas and river courses. Second season planting has been normal, and long-cycle sorghum and pigeon peas planted during the first season are due for harvest in January 2008. Therefore, no additional food assistance is necessary over and above the ongoing assistance to IDPs. Cash for work may be explored as a possible means of providing this ongoing assistance where the market is stable and the intervention will not interfere with activities for the agricultural season.
- Overall, then, 320 924 people will require fresh assistance in 2008, (at least partly) as a result of the floods.
- In the medium to longer term, the mission recommends restocking in Teso, a nation-wide programme to improve on-farm food storage and one to improve the collection of agricultural statistics which are grossly inadequate and unreliable at present (see Section 7.2).

## **1. OVERVIEW**

Eastern and Northern Uganda experienced heavy rains during the three months of July, August and September 2007 that resulted in severe floods in many locations. At the height of the floods in September, many rivers burst their banks and could not be crossed on foot, some bridges were washed away and roads became impassable. In the worst affected areas some schools, health centres, homes and other infrastructures were destroyed or badly damaged and many families were displaced and forced to seek shelter in school buildings on higher ground. Emergency responses by the Uganda Government and humanitarian agencies included provision of temporary shelter, food, drinkable water, sanitation facilities, medicines, and even helicopters and boats to assist those stranded. As the floods began to subside and movement improved, however, it was felt by the Government and its development partners that there was an urgent need to ascertain the extent of flood damage to the food and agriculture sector. For this reason, the Government requested the Food and Agriculture Organization of the UN (FAO) and the UN World Food Programme (WFP) in late September to assist in carrying out an assessment of the impact of the floods on food production and household food security in the affected areas. The target areas were to be Eastern and Northern Regions.

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<sup>1</sup> An emergency food security assessment (EFSA) simultaneously examined the conditions and needs in *all* flood affected areas, whether they were categorized as 'worst affected' or 'moderately affected' (see Annex 3 for a list of sub counties covered by the assessments and Annex 4 for a map).

In response, the two agencies jointly fielded a three-week crop and food supply assessment mission (CFSAM) to Uganda, starting on 23 October 2007. The mission was joined by an officer from the Office of the Prime Minister (OPM), another from the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and two officers from the USAID-funded Famine Early Warning System (FEWS-Net). In addition, FAO's Country Office seconded two staff members to the mission. All these officers participated fully in the assessment and their contributions are gratefully acknowledged. At district level, local staff of the Department of Agriculture, as well as local FAO Emergency Coordinators, accompanied the mission on field visits.

The first four days were spent in Kampala collecting secondary data, planning field visits and meeting relevant officials from government, UN agencies and non-governmental organizations (NGOs). In the field starting on 28 October, the mission commenced with Teso sub-region, then moved on to Lira District where it divided into two after the assessment, with one sub-team going to Karamoja sub-region and the other sequentially covering the districts of Pader, Kitgum and Gulu.

The method of work was as follows. At each district headquarters the mission first held a meeting with the political leadership, i.e. the Local Council V (LCV) Chairman often accompanied by the Chief Administrative Officer (CAO) and senior technical staff such as the District Agricultural Officer (DAO) and District Veterinary Officer (DVO). Here the mission obtained an overview of the impact of floods in the district, with a ranking of affected sub-counties from worst affected to least affected. This was followed by a meeting with staff of UN agencies and NGOs resident in the district. Then, accompanied by the DAO and local emergency coordinators, the mission divided into sub-teams and travelled to the sub-counties. The first meeting at that level was held with the sub-county chief together with the Local Council III (LCIII) chairman accompanied by local councillors. A local briefing was received and a first general interview was conducted. The teams then fanned out to interview farmers at random and to inspect crops. Common checklists/questionnaires were used as instruments for collecting information. Furthermore, price data was collected from local markets. On returning to Kampala, a debriefing meeting was held on 14 November attended by representatives of the government, the donor community, UN agencies and NGOs.

The main findings of the mission are summarized below:

Commodity price analysis leads to the main conclusion that from an agricultural and food security standpoint and as far as the impact of 2007 floods is concerned, Amuria and Katakwi Districts in Teso sub-region were the worst affected and urgently need assistance. The two districts are extensively covered by swampy and low-lying areas and are generally of flat terrain. As a consequence, they serve as a water 'sink' for water flowing from surrounding higher areas of Kabong, Moroto, Kotido and Nakapiripit districts in Karamoja sub-region. Moreover, their soils are of low water permeability, which maintains high ground water levels. Thus, with the excessively high rainfall in 2007, serious flooding was inevitable.

Karamoja is next in need of assistance, but not mainly because of floods. The sub-region has been in the grip of insecurity for some time, which has curtailed cropping and livestock activities. Moreover, harvests in 2006 were poor due to drought. A severe attack of honeydew this year on the main staple, sorghum, and falling livestock prices due to unfavourable supply/demand conditions have compounded the food security problems. Thus, where they occurred, floods only aggravated an already precarious food security situation. The suggestion for food assistance for Karamoja, in this document, is only for areas where people's vulnerability worsened due to floods. There might be relief food needs beyond these areas in Karamoja, for which a separate needs assessment should be undertaken.

Flood damage in the Northern Region, as far as food and agriculture are concerned, was not significant. Crop damage was limited to edges of swamps and rivers and was quite localized. Planting during the 2007 second season has been normal, with increasing numbers of returnees engaged in crop production since early 2007. Food prices are stable or declining compared to last year, reflecting increased supplies on the market, particularly in Acholi sub-region. The Northern Region therefore does not require additional food assistance over and above the ongoing food aid programmes for IDPs. However, certain parishes in the sub-counties of Abako, Omoro, Aloji, Apala, Oromo, Olilim and Okwang in Lira District need food assistance for immediate relief and at the same time close monitoring in the coming months would suggest future response strategy, based on market recovery and the extent of second harvest (in January-February 2008), particularly in these worst affected sub counties.

Food balance sheets for Amuria and Katakwi for the period July 2007 to June 2008 indicate that Amuria would have a deficit of 16 419 tonnes of cereals, 27 743 tonnes of roots and tubers while Katakwi would have a cereal deficit of around 3 315 tonnes but small surpluses in roots and tubers and pulses. The shortfalls are relatively small and can be imported by businesspeople from other districts, but the crucial limiting factor will be the purchasing power of the local population. Many households in both Amuria and Katakwi suffered total losses of some crops, especially cassava, sweet potato and groundnuts, and need to be immediately identified and targeted for assistance. Food assistance, in the form of General Food Distribution (GFD) is suggested as an immediate need for the survival of the people in the worst affected sub counties. Cash and food for work activities could be implemented in Acholi where market supplies are stable. These activities should target the flood affected returnees and those in transition to facilitate the return process. Cassava cuttings, sweet potato vines and some seeds (especially groundnuts) will need to be provided directly to targeted families.

## 2. SOCIO-ECONOMIC AND AGRICULTURE SECTOR CONTEXT

### 2.1 General

Administratively, Uganda is divided into regions, districts, counties, sub-counties and parishes. Teso and Karamoja sub-regions fall in Eastern Region, while the districts of Lira, Pader, Kitgum and Gulu fall in Northern Region. These were the areas affected by the 2007 excessive rains and/or floods at varying intensities. Elsewhere in Uganda, the situation was normal, with a relatively good agricultural season. Nationally, therefore, the food security situation is quite favourable. Food shortfalls in the affected regions can be covered by imports from elsewhere in the country. The table below gives some indicators of the socio-economic conditions prevailing in Uganda<sup>2</sup>.

**Table 1 - Basic Fact and Socio-Economic Indicators about Uganda**

Surface area (sq.km)	241 551
Estimated 2007 population (million)	28.3
Annual population growth rate (%)*	3.4
Life expectancy (years)	51.5
Population under 15 years (%)	49
Population undernourished (%)	19
Per capita gross national income (\$)	280
Share of agric in GDP (%)	31
Population in agriculture (%)	79

Source: EIU Report - Country Profile 2007

\*Several reports indicate a population growth rate ranging from 3.8% to 4.2%.

The population of Uganda is growing rapidly, at an estimated average annual rate of 3.4 percent between 1992 and 2002. Employment opportunities are quite limited, and the rate of unemployment is therefore high. At a per capita income of around US \$280, Uganda is one of the poorest countries in the world. In terms of socio-economic development, it was ranked 145<sup>th</sup> out of 177 countries according to UNDP's 2006 Human Development Index (HDI).

In 2006 the populations of the Eastern Region and the Northern Region (including Karamoja sub-region) were estimated at 25.82 percent and 22.12 percent of the national population respectively.

### 2.2 Agricultural sector and policy

Agriculture contributed to about 32 percent of the total GDP in 2005. Although this contribution has been declining over the years, the sector has continued to dominate production in national economy. About 80 percent Uganda's population depend primarily on agriculture for their livelihoods. The majority of households classified as being 'poor' are engaged in the agricultural sector. In order to move towards eradicating poverty, there is an urgent need to improve agricultural productivity by increasing the effectiveness of service provision in the sector as spelt out in the Plan for the Modernization of Agriculture (PMA). A mid-term evaluation of the PMA carried out in mid-2005, concluded that rural poverty is most effectively addressed through promoting the commercialization of agriculture and, in particular, that the Plan's basic function of serving as a coordinating framework for the provision of support services and public goods in rural areas should be maintained. This conclusion remains

<sup>2</sup> Sources include government reports, reports of UN agencies, World Bank, etc.

valid today. But the review noted that there had been confusion over the function of the PMA, and that insufficient attention had been paid to overcoming some of the identified constraints and weaknesses in implementation, which needed to be addressed.

The mission's field observations clearly indicated that yields of staple food crops remain low. Plausible explanations include declining soil fertility, low or non-use of productivity enhancing technologies and poor land management practices. Furthermore, the planned modernization of Uganda's agriculture has not been widely implemented mainly due to resource constraints. The main programmes for agricultural modernization - the National Agricultural Advisory Services (NAADS) and District Agricultural Extension Services - are said to face important institutional and operational challenges. In addition to these shortcomings of national agricultural policies that impact all regions of Uganda, the flood affected north-eastern regions also suffer from insecurity and lack of access to land and inputs for cultivation, and from the resulting low purchasing power of the households.

### **2.3 Social and Humanitarian Context**

Uganda's Human Development Index has increased steadily since 1995. The country ranks 145 out of 177 countries worldwide. HIV prevalence has been reduced from 18 percent in 1993 to 6.4 percent in 2005. Progress has also been made on reaching the hunger target for Millennium Development Goal 1. The prevalence of undernutrition decreased from 24 to 19 percent between 1990 and 2000<sup>3</sup>.

However, recurrent extended dry spell and ongoing violence in the Karamoja sub-region of Northeastern Uganda have left many people highly food insecure. In Northern Uganda, 21 years of civil war led to more than 1.2 million people being internally displaced. These people are living in squalid camps and transit sites with limited access to their homes.

As a result, conditions in these areas are among the poorest in the country. HIV prevalence in the IDP camps is 12 percent or almost double the national average (6.4 percent). Over 27 percent of women in the camps and in Karamoja have experienced sexual violence<sup>4</sup>. The ratio of health workers to the population ranges from 1:4000 in Acholi and Lango to 1:2500 in Karamoja<sup>5</sup>. The school dropout rate in the North is nearly 21 percent and is compounded by afternoon absenteeism, which is partly due to hunger<sup>6</sup>. Basic infrastructure, such as feeder roads that link the villages to the nearest markets, needs to be rehabilitated. And concentrated populations in IDP camps and resettlement areas have contributed to environmental degradation. National deforestation rates now exceed 500 square-kilometres per year<sup>7</sup>.

In recent years, though, important signs of possible change have emerged. In Northern Uganda, the initiation of peace talks in Juba, Sudan between the Lord's Resistance Army (LRA) and Government of Uganda in 2006 has rekindled hope for a resolution to this longstanding conflict. However, a large part of the country has experienced an increase in natural disasters, reflecting in part the impact of climate change. Uganda had five droughts between 1991 and 2000 as compared to only eight in the previous 80 years. The worst flooding in decades also affected large portions of the North and Northeast in 2007.

In October 2007, the Government launched its *Peace, Recovery and Development Plan (PRDP)* for the Acholi, Teso, Lango and Karamoja sub-regions. The programme aims to mobilise human and financial resources to the conflict-affected districts. It has four strategic objectives: consolidation of state authority, rebuilding and empowering of communities, revitalization of the economy, and peace building and reconciliation. It made specific provisions for humanitarian assistance and community recovery. The PRDP functions within the Poverty Eradication Action Plan (PEAP 2004) developed to meet the Millennium Development Goals (MDGs).

Based on the Flash Appeal Progress Update, as of 30 November 2007, prepared by OCHA, the following table shows the various assistance related to food security that were provided to the flood affected people.

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<sup>3</sup> WFP, *World Hunger Series 2006: Hunger and Learning*, 2006.

<sup>4</sup> Uganda Bureau of Statistics, *Demographic and Health Survey*, 2007.

<sup>5</sup> GoU, *Peace, Recovery, and Development Plan for Northern Uganda*, 2007;

<sup>6</sup> Ministry of Education, *Diagnostic Study on Causes of Primary Education Completion Rates*, 2007.

<sup>7</sup> GoU and UNDP, *Millennium Development Goals: Uganda's Progress Report 2007*, 2007.

**Table 2 - Progress of food security assistance delivered to the flood affected persons**

<b>FLASH APPEAL OUTPUTS AND IMPACTS</b>	<b>RESULTS AS OF 24 NOVEMBER</b>
Food assistance delivered to those in need;	The World Food Programme has been able to complete the first round cycle of distribution in the Teso and Mt. Elgon region reaching a total of 30 826 families with a total population of 184 956 flood-affected persons (FAP) with food assistance totalling to 3 057 metric tons of food at a full ration for one month.
Hunger-related under-nutrition and mortality levels do not rise significantly among affected populations;	<u>As at this date, there have not been any reported cases of malnutrition in the floods affected areas. The results of the rapid nutritional survey</u> determined that 3.1 percent of the children in the Teso region who were found malnourished are at risk of death, while 7.6 percent are at risk of malnutrition.
Planting material available for following agriculture production cycles;	As of 24 <sup>th</sup> November, 3 507 households received 1 bag each of cassava cuttings, 500 received a bag each of sweet potato vines while 20 000 received a kit each of assorted vegetable seeds accompanied with 2 hoes and a knife in Amuria and Katakwi districts.
Restoration of agriculture related livelihoods and self resilience;	An estimated 25 000 (50 percent) cattle have been vaccinated against CBPP, Brucellosis, and lumpy skin disease. 35 000 (23 percent) of poultry have been covered with the vaccine against Newcastle disease, and 3 000 (60 percent) of the dogs covered against rabies. Vaccination activities are still ongoing. Also 666 cattle, 394 goats, 127 sheep, 54 pigs and 57 dogs have received appropriate treatment, de-worming and spraying against ticks in Katakwi district. In Amuria district 1226, 494,165, 27 cattle, goats, sheep and pigs respectively have received appropriate de-worming, spraying and treatment. In Soroti district 655 cattle, 137 goats and sheep have also received this appropriate management.

Source: Uganda Floods 2007 Flash Appeal Progress Update: 30 November 2007

### **3. THE 2007 AGRICULTURAL PRODUCTION IN FLOOD-AFFECTED AREAS**

#### **3.1 Rainfall conditions**

The first growing season was characterized by a late onset of rains (mid-late April); an early onset of dry spell (June) and an unusual onset of heavy and persistent rains. Unusually heavy rainfall during July – September 2007 led to severe flooding and water-logging across many parts of eastern, central and northern Uganda. Most regions have been experiencing peak rains characterised by outbreaks of showers and thunderstorms reaching flood levels in several locations. The peak rains continued to late October. There was above normal rains over most parts of these regions.

The outlook for the period October to January 2008 is based on the current evolution the La Nina episode, which occurs when sea surface temperatures over eastern and central equatorial Pacific Ocean are significantly cooler than normal. The rains are expected to continue, punctuated with dry spells, over Lake Victoria Basin, Central and Western Uganda up to mid December 2007.

The Eastern Central region which includes Soroti has been receiving above-normal rains since July with floods seriously affecting localized areas. Most northern and eastern districts, particularly Katakwi and Amuria, recorded high rainfall amounts that sustained flooding conditions. Rainfall amounts were also above normal over many parts of central Uganda resulting in floods and water logging. Due to these conditions, soil moisture considerably increased in 2007 compared to the 2006 situation. However, pockets of below normal rains were observed in Rakai and Jinja districts.

The direct consequences of floods and water logging in terms of increased soil moisture have been the destruction of crops in the affected areas, huge post-harvest crop losses from the first season, and difficulties in opening land for the second season planting in those locations.

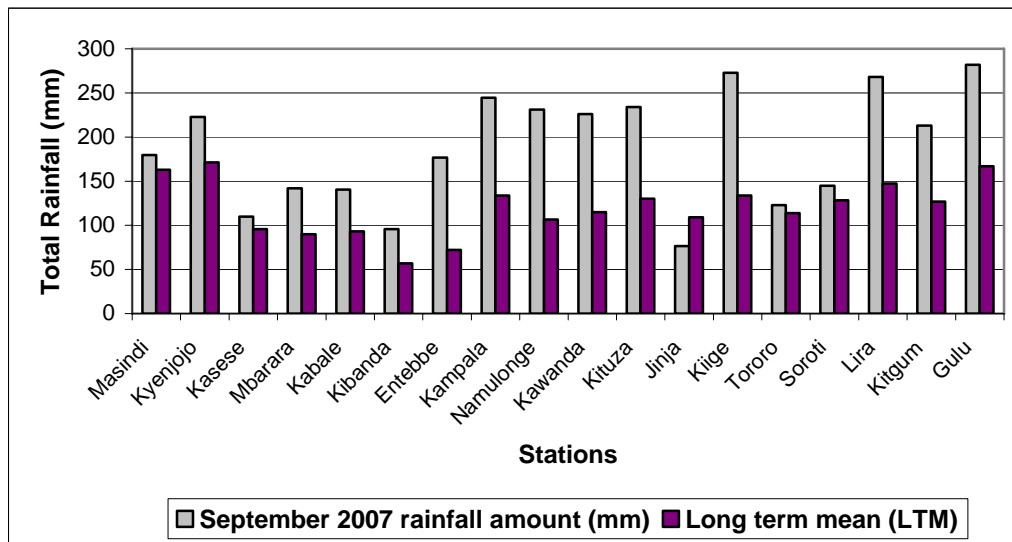


### 3.2 Crop production

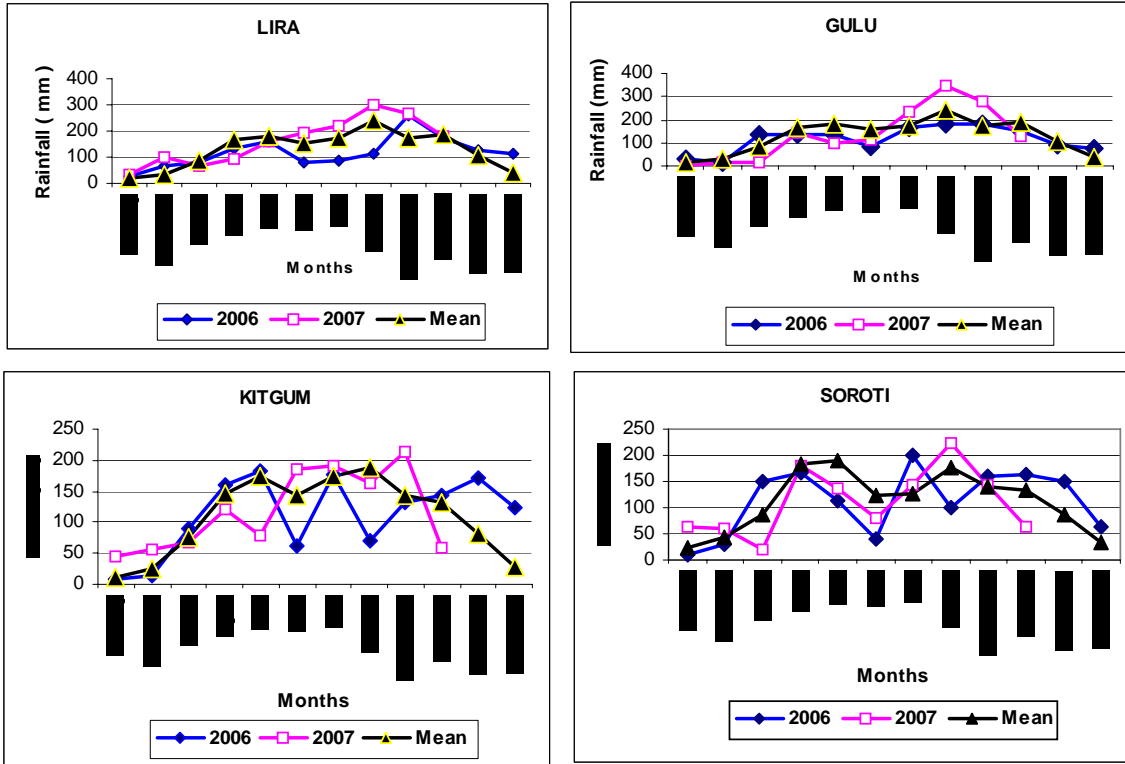
Except for Karamoja, crops in Uganda are generally produced in two seasons: the "long rainy season" with crops planted in March-April and harvested in July-August; and the "short rainy season" with crops usually planted in August-September and harvested in December/February. The main crops are cereals (sorghum, millet, maize, and rice), root crops (cassava, sweet potato, Irish potato), groundnuts, pulses (beans, peas, green grams), oilseeds (sesame, sunflower), plantain (matooke) and others (coffee, cotton, tea, vegetables).

A major difficulty faced by the mission was a lack of reliable agricultural statistics nationwide and at the district/sub-county levels, which seriously constrain agricultural planning and programming activities. When available, data are of poor quality, and some can be misleading. There is an urgent need for a systematic agricultural data generating mechanism, including the carrying out of the agricultural census, the assessment of seasonal production of field crops and livestock, and periodic field surveys to build a time series data base. This problem was underlined in the 1997 CFSAM with important recommendations; the present mission feels that the problem should be highlighted again.

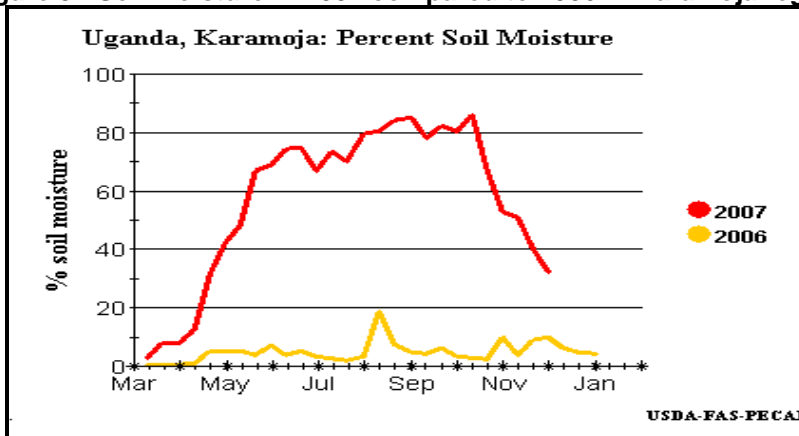
**Figure 1 - Uganda: September 2007 rainfall compared to long term mean (LTM)**



**Figure 2 - Uganda: Monthly rainfall (mm) in selected areas in 2007 compared with 2006 and long term mean**



**Figure 3 - Soil moisture in 2007 compared to 2006 in Karamoja region**



For the reasons given in the Overview and in Section 5, the rest of this report largely focuses on Amuria and Katakwi, the two districts worst affected by floods. Field observations confirmed that in most districts visited, except Amuria and Katakwi, extensive second season planting was observed. Also, long-cycle sorghum and pigeon peas planted earlier in May/June were still growing well. This is a good agronomic indicator of minimal flood damage elsewhere than in Amuria and Katakwi.

### 3.2.1 Estimation of 2007 first season production in Amuria and Katakwi

The 2007 production forecast is based on available data from government sources in Kampala and at the district level, and on field observations about areas planted, areas lost to floods and crop yields. Crosschecking this information, the mission worked out the first harvest production figures shown in Table 3 for Amuria District and Table 4 for Katakwi.

**Table 3 - Amuria District: Estimated production first season 2007**

Crop	Planted area (ha)	Area lost (ha)	Productive area (ha)	Average yield (t/ha)	Production (tonnes)
Finger millet	5 256	1 472	3 784	0.6	2 270
Sorghum	8 516	3 406	5 110	0.6	3 066
Maize	2 061	453	1 608	0.8	1 286
Ground nuts	13 725	5 902	7 823	0.7	5 476
Sim sim	1 616	953	663	0.3	199
Sunflower	642	263	379	0.3	114
Cowpeas	5 708	2 569	3 139	0.3	942
Green grams	5 968	3 163	2 805	0.2	561
Beans	2 371	1 138	1 233	0.5	616
Soya beans	209	100	109	0.5	54
Cassava	9 110	5 193	3 917	7.5	29 377
Sweet potato	3 281	1 542	1 739	7.5	1 304
Rice	1 113	223	890	0.7	623
<b>Total</b>	<b>59 576</b>	<b>26 377</b>	<b>33 199</b>	-	<b>45 888</b>

Source: Planted area and area lost from *Amuria District Local Government: Report on the effects of water logging and floods in Amuria District*; Yield data derived from *Department of Agriculture – Katakwi District Crop Production Trends 1998-2006*.

Note: Amuria and Katakwi were one district until 2005.

**Table 4 - Katakwi District: Estimated production first season 2007**

Crop	Planted area (ha)	Area lost (ha)	Productive area (ha)	Average yield (t/ha)	Production (tonnes)
Finger millet	5 750	1 610	4 140	0.6	2 484
Sorghum	12 167	4 867	7 300	0.6	4 380
Maize	345	76	269	0.8	215
Ground nuts	16 409	7 056	9 353	0.7	6 547
Sim sim	1 047	618	429	0.3	129
Cowpeas	3 273	1 473	1 800	0.3	540
Green grams	5 515	2 923	2 592	0.2	518
Beans	244	117	127	0.5	64
Cassava	821	468	353	7.5	2 647
Sweet potato	6 378	2 998	3 380	7.5	25 350
<b>Total</b>	<b>51 949</b>	<b>22 206</b>	<b>29 743</b>	-	<b>42 874</b>

Source: Area lost from *Katakwi District Local Government: Report on the effects of water logging and floods in Katakwi District*; Planted area calculated using the percentage loss by crop as in *Amuria District*; Yield data derived from *Department of Agriculture – Katakwi District Crop Production Trends 1998-2006*.

### 3.2.2 Estimation of 2007-second season production

Following widespread destruction of first season production by floods, shortages of seed for 2007 second planting and for 2008 growing season were widely reported during farmer interviews. The second season crops which were planted mainly consist of millet, cowpea, green gram, groundnuts, and sweet potato. Most farmers still have first season cassava growing in the field but with no tubers. In all situations, crops planted are growing well. It is assumed that in Amuria and Katakwi Districts, farmers have compensated the acreages lost during the first planting season by planting those important food crops during the second season, except cassava, which was not widely planted because cuttings were scarce despite some distribution by FAO during early November. Using this assumption, which was corroborated by field observations, the expected second season production was estimated as indicated in Table 5 for Amuria and Table 6 for Katakwi.

**Table 5 - Amuria District: Expected production second season planting 2007**

Crop	Area planted (ha)	Average yield (t/ha)	Production (tonnes)
Finger millet	1 472	0.6	883
Ground nuts	5 902	0.7	4 131
Cowpeas	2 569	0.3	770
Green grams	3 163	0.2	632
Cassava	1 038	7.5	7 785
Sweet potato	1 542	7.5	11 565

**Table 6 - Katakwi District: Estimated production second season planting 2007**

Crop	Area planted (ha)	Average yield (t/ha)	Production (tonnes)
Finger millet	1 676	0.6	1 006
Sorghum	4 867	0.6	2 920
Ground nuts	7 056	0.7	4 939
Cowpeas	1 473	0.3	442
Green grams	2 923	0.2	584
Cassava	3 340	7.5	25 051
Sweet potato	2 998	0.7	2 248

### 3.2.3 Estimation of total production 2007

The estimated total production for Amuria is given in Table 7 and for Katakwi in Table 8.

**Table 7 - Amuria: Total production from first and second planting 2007**

Crop type	1st season production (tonnes)	2nd season Production (tonnes)	Total (tonnes)
Cereals	7 245	883	8 128
Roots & tubers	30 681	19 350	50 031
Pulses	7 794	5 533	13 327

**Table 8 - Katakwi: Total production from first and second planting 2007**

Crop type	1 <sup>st</sup> season production (tonnes)	2 <sup>nd</sup> season production (tonnes)	Total (tonnes)
Cereals	7 079	3 926	11 005
Roots & tubers	27 997	27 299	55 296
Pulses	7 798	5 965	13 763

## 4. LIVESTOCK AND ANIMAL HEALTH

### 4.1 General

Again, very little reliable baseline information exists for livestock and pastures. This poses enormous difficulties when planning any types of interventions and knowing what intervention is the most appropriate and to whom.

The heavy rains and floods also affected livestock, although the number of deaths reported was insignificant. The effects ranged from increases in disease incidences and vector infestation (including from ticks, worms, mites and black flies) to destruction of animal structures and shelters. Diseases mentioned included coccidiosis, lumpy skin disease, mange, foot rot, 'Peste des Petits Ruminants' (PPR) and Contagious Bovine Pleuropneumonia (CBPP). Other effects were cold stress, physical injury of animals and washing away of young birds. Some cases of deaths, especially of goats were also reported. However, unlike crops where losses could be assessed, the number of livestock lost as a direct result of floods could not be verified. However, during field visits the mission observed that livestock were in good body condition due to an abundance of water and pastures.

#### 4.2 Impact of conflicts on farming and livestock in northern regions

A key issue in Karamoja region is general insecurity, which limits access to field crops gardens and restricts the keeping of livestock in neighbouring districts. Because of negative impact on farming, food security of most households has been affected and their vulnerability increased. In fact, the household vulnerability is caused by a wide range of complex and interacting factors such as cattle related conflicts, in particular commercialised intra-community cattle resulting in conflict over control and access of scarce grazing and water resources. Further, since the introduction of use of protected kraals, it was reported that access to oxen and cows for milking has been a problem leading to loss in time for cultivation and grazing and to reduced productivity. A recent survey conducted by FAO Emergency Coordination Unit (Kampala) in all 54 sub-counties of Amuru, Gulu, Kitgum and Pader districts, within the conflict-affected areas of Acholi sub-region, confirmed that insecurity is among the most important constraints to production in the neighbouring areas to Karamoja region.

#### 5. FOOD SUPPLY AND DEMAND SITUATION

Teso sub-region was more affected by the floods than the northern region and Karamoja sub-region. However, within Teso sub-region which consists of six districts, only two districts, namely Amuria and Katakwi, were the hardest hit. This was mainly due to their very flat terrain and vast wetlands which render them vulnerable to flooding. Crop losses in these two districts were therefore quite high. The rest of the districts were marginally affected, except in localized low-lying parts. In particular, some parishes in Malera and Koril sub-counties of Bukedea District experienced serious flooding. In the northern region, Lira District was the most affected by flooding, but only in the low-lying sub-counties bordering Amuria District in Teso sub-region. Elsewhere in the north and northeast, the situation could be better described as water logging due to excessive rains rather than flooding, except along river courses, depressions and swamps where flooding occurred. Direct crop losses were thus limited, but yields are likely to have been reduced by water logging.

At the time of field visits by the mission, most roads were dry and passable and the mission was able to reach virtually all the locations on its itinerary. Markets were rebounding, and market surveys were undertaken in several of them in order to ascertain the impact of the floods, if any, on market conditions.

#### 5.1 Market prices

##### 5.1.1 Teso sub-region

A system of market days is maintained in rural areas of Teso whereby an open market is held at a designated location on a specific day of the week. Efforts were made to visit such markets where possible and collect price data. In a few cases where this was not possible, a group of local people, including local councillors (many of them women), was interviewed. The focus was on information about current prices of major food staples compared to prices a year ago – i.e. November 2007 compared to November 2006. Amuria, Katakwi and Bukedea were targeted for the surveys, since they suffered most from the floods.

#### Amuria district

Tables 9 (a) and (b) show price changes in two rural markets in Amuria District.

**Table 9 - Amuria - Price changes for basic staples: Nov. 2007 over Nov. 2006**

##### (a) Abarilela Market

Major staple	2006-07 price change (%)
Millet	79
Sorghum	257
Groundnuts	29
Cassava	40

(b) Obalanga Market

Major staple	2006-07 price change (%)
Millet	33
Sorghum	50
Groundnuts	43
Cassava	50

Source: Mission market survey

Abarilela market is located in the south-eastern corner of Amuria while Obalanga is located in the north-west, near Amuria-Lira border. Obalanga is actually a regional market with commodities coming in from the northern region (Lira, Pader, etc), as well as from Soroti and Karamoja. At the time of the visit the market was booming. On the other hand, Abarilela is quite isolated and was rather subdued with a limited range of food commodities on offer at the time of the visit. These spatial characteristics largely explain the differentials in price changes. Nevertheless, food prices have risen sharply in both markets compared to their levels a year ago. The increase mainly reflects the impact of the floods on the food supply situation in Amuria District. Price increases of such magnitude as indicated for food staples have very serious implications for food security at the household level. Basically, they translate into reduced real incomes of families as consumers and, in the absence of alternative sources of income, reduced food intake and malnutrition.

**Katakwi district**

Tables 10 (a) and (b) show price changes in Katakwi District.

**Table 10 - Katakwi - Price Changes for Basic Staples: Nov.2007 over Nov. 2006**

(a) Magoro Market

Major staple	2006-07 price change (%)
Millet	40
Sorghum	100
Groundnuts	57
Cassava	12

(b) Usuk Parish

Major staple	2006-07 price change (%)
Millet	50
Sorghum	100
Groundnuts	100
Cassava	67

Source: Mission market survey

Magoro market is located in the extreme south-eastern part of Katakwi District, while Usuk parish is in central Katakwi, about 10 kilometres north of Katakwi Town Council Headquarters. As mentioned earlier, Katakwi was as severely affected by floods as Amuria. Prices in both markets are much higher than a year ago, reflecting diminished supplies. Cassava prices have risen more sharply in Usuk (67 percent) than in Magoro (12 percent) perhaps reflecting higher demand in Usuk which is close to the semi-urban Town Council Headquarters. In both places, however, prices of sorghum and groundnuts, two important complementary staples, must be beyond the reach of most families.

### **Bukedea district**

Tables 11 (a) and (b) show price changes in two areas of Bukedea District.

**Table 11 - Bukedea – Price changes for basic staples: Nov.2007 over Nov. 2006**

(a) Koril Trading Centre

Major staple	2006-07 price change (%)
Millet	0
Maize flour	-12
Cassava	20
beans	-17

(b) Minit Parish

Major staple	2006-07 price change (%)
Millet	30
Maize flour	-40
Groundnuts	0
Cassava	20

Source: Mission market survey

Both survey areas are located in Koril sub-county, an area affected by floods in its low-lying parts. It is evident that the impact was not significant, as current prices are generally lower than or unchanged from a year ago. However, there are families whose crop fields in low-lying areas or near swamps were destroyed and who will face seed shortages for the next planting season. Second-season planting in Bukedea was normal and crops were observed to be doing well.

### 5.1.2 Northern Region

The districts, which had been recommended for flood damage assessment in the northern region, were Lira, Pader, Kitgum and Gulu. Accordingly, the mission extensively travelled them. Among other types of information gathered, price data was obtained from local markets in the same way as in Teso sub-region. The findings are presented below.

### **Lira district**

**Table 12 - Lira – Price changes for basic staples: Nov. 2007 over Nov. 2006  
Apur Market (Adwari Sub-county)**

Major staple	2006-07 price change (%)
Millet	-25
Sorghum	0
Groundnuts	-50
Cassava	0
Beans	-33

This market is located in one of the sub-counties reported to have been much affected by floods. However, it is evident that current food prices are significantly lower than a year ago. The main reason is that large numbers of IDPs have returned to their original home areas since the beginning of 2007, and was able to plant crops leading to increased supplies on the market. In addition, flood damage was limited to fields in low-lying and swampy areas, while crops on the upland were minimally affected. Furthermore, unlike in Amuria and Katakwi in Teso, extensive second season planting was observed throughout Lira District, while long-cycle sorghum and pigeon peas planted last May/June to be harvested in December/January were observed to be doing well. This means

that the food outlook for 2008 is generally favourable. However, a number of households with fields in low-lying areas lost crops and may need assistance with seeds/planting material for the next planting season in March/April.

**Pader district**

**Table 13 – Pader: Price changes for basic staples: Nov. 2007 over Nov. 2006 (Awere Parish)**

Major staple	2006-07 price change (%)
Millet	-50
Sorghum	-60
Groundnuts	-50
Pigeon peas	-33
Simsim	0

Awere sub-county, of which this parish is a part, is located in the south-western corner of the district and lies astride Aswa River. It was reported to have been much affected by flooding. However, the flooding was very localized and had minimal damage to agriculture. The price changes shown above can be explained by the same factors as for Lira District. Second season planting was normal, while long-cycle sorghum and pigeon peas were growing well. The food outlook for 2008 is generally favourable.

**Kitgum district**

**Table 14 – Kitgum: Price changes for basic staples: Nov. 2007 over Nov. 2006**

(a) Kitgum Town market

Major staple	2006-07 price change (%)
Millet	0
Sorghum	50
Groundnuts	-20
Cassava	-10
Beans	0

(b) Multika market (Lokung sub-county)

Major staple	2006-07 price change (%)
Millet	0
Groundnuts	-17
Cassava	-33
Simsim	-50

Multika market lies some 50 km west of Kitgum Town. Both markets indicate favourable market conditions.

**Gulu district**

There is a general consensus in the district that Gulu did not experience significant flooding. Only excessive rains were experienced leading to water logging in many areas which may have reduced crop yields significantly. Palero Sub-county in the north was particularly affected by water logging, causing some crop loss. Second season planting has been normal.



The table below shows food price changes in Gulu Town market.

**Table 15 – Gulu: Price changes for basic staples: Nov. 2007 over Nov. 2008 (Gulu Town Market)**

Major staple	2006-07 price change (%)
Millet	100
Sorghum	100
Maize grain	20
Groundnuts	0
Beans	0
Cassava	0
Pigeon peas	0
Simsim	33

Except for millet and sorghum whose prices were double their levels a year ago, the food supply/demand situation looks stable. Gulu Town is situated on the road to Juba (South Sudan), which does brisk trade with Uganda. Given that millet and sorghum are also major staples in South Sudan, the price changes for these crops most likely reflect growing exports to Juba. Generally, agricultural activities in Gulu District at the time of the mission's visit were normal.

### 5.1.3 Karamoja sub-region

While low-lying and swampy areas of Karamoja districts, especially in Moroto, Kotido and Kabong, experienced flooding and loss of crops, the main problems for the sub-region as a whole were a late start to the 2007 planting season rains (May instead of March), a poor harvest in 2006 due to drought, general and prolonged insecurity which limits access to fields and livestock, and falling livestock prices due to physical access problems. Karamoja sub-region has a unimodal rainfall regime and therefore depends on a single season for crop production, the main food staples being long-cycle sorghum, bulrush millet, maize, groundnuts and beans. The harvest period is September/October for most crops (compared to July/August elsewhere), but because of the late onset of rains this year some crops were still in the field at the time of the mission's visit in early November. Where flooding or water logging occurred, most crops were at an early stage of growth and suffered retarded development. A severe attack on sorghum by honeydew exacerbated the situation. These problems have combined to produce a precarious food security situation in the sub-region. Floods only contributed to an already bad situation. A price survey similar to those undertaken elsewhere was not possible, although a cattle market was visited in Moroto District. However, Oxfam GB had carried out a market survey in Kotido Town at the end of September 2007, the results of which are summarized below.

**Table 16 – Kotido: Price changes for basic staples: Oct. 2007 over 'normal' average**

Major staple	Oct. 2007 over normal (%)
Maize	25
Sorghum	55
Sweet potato	66
Beans	33
Groundnuts	50

Source: Oxfam GB

Prices in Kotido were considered by the authors to be quite similar to those ruling in neighbouring Kabong District. It is notable that prices have increased significantly in Kotido, just as was observed in Amuria and Katakwi in Teso sub-region. However, the underlying factors at play are quite different, being more complex in Kotido as mentioned above.

## 5.2 Food supply and demand situation in Amuria and Katakwi districts

Price analysis in the foregoing sections leads to the main conclusion that from an agricultural and food security standpoint and as far as the impact of 2007 floods is concerned, Amuria and Katakwi Districts in Teso sub-

region were the worst affected and urgently need assistance. Karamoja is next, but for different reasons. The northern region was the least affected except in localized areas.

Given the severe flood damage to the food and agricultural sector of both Amuria and Katakwi Districts, and despite the poor state of agricultural statistics in Uganda, an effort has been made to develop a food balance sheet for each district in order to indicate the food gap that needs to be covered until the next harvest in July 2008. It would have been better to develop a food balance sheet for each affected sub-county, but this was precluded by lack of data. Assumptions and parameters underpinning the district balance sheets are listed below:

- **Population:** based on the 2006 population projections by the Uganda Bureau of Statistics (UBoS) and projected further to June 2008 using the same annual growth rates, the populations of Amuria and Katakwi are estimated at 275 057 and 145 331 respectively.
- **Production:** estimates of production are based on figures provided by the district department of agriculture, adjusted by the mission as necessary. Cropped areas lost to floods are based on estimates by the same authority. So are estimates of crop yields. Planted areas for the 2007 second season are projections by the mission.
- **Per capita annual consumption rates:** norms are not available in the country. However, based on FAO food balance sheets, apparent consumption rates have been adopted as follows<sup>8</sup>: cereals: 75kg; pulses: 26kg; roots and tubers: 210kg. These foods are assumed to provide more than 80 percent of a person's daily calorie intake, the balance coming from fish, meat, milk, vegetables, fruits, etc.
- **Post harvest losses:** these losses were heavy in the two districts this year. Poor storage conditions, damp floors, inadequate sunshine and high humidity caused high losses. They are estimated as follows<sup>9</sup>: cereals: 20 percent; pulses and oilseeds: 30 percent; roots and tubers: 40 percent. However, these figures are considered conservative for the two districts.
- **Seeding rates**<sup>10</sup>: finger millet: 8kg/ha; sorghum: 10kg/ha; maize: 25kg/ha; rice: 100kg/ha; beans: 60kg/ha; cowpeas: 28kg/ha; groundnuts: 110kg/ha; green gram: 10kg/ha.
- **Household food stocks:** assumed to be close to zero at the beginning of July 2007. At the time of the mission, families were eating whatever harvest they had managed to salvage during July and August.

The table below presents the two balance sheets.

**Table 17 - Amuria and Katakwi: Food balance sheets for July 2007 to June 2008 (tonnes)**

Amuria

Food staple	Production	Food use	Total use*	Balance
Cereals	8 128	20 629	24 547	-16 419
Roots & tubers	50 031	57 762	77 774	-27 743
Pulses	13 327	7 151	7 157	-6 170

\* includes post-harvest losses and seed use

Katakwi

Food staple	Production	Food use	Total use*	Balance
Cereals	10 995	10 900	14 310	-3 315
Roots & tubers	55 296	30 520	52 638	2 658
Pulses	13 763	3 779	9 000	4 763

\* includes post-harvest losses and seed use

<sup>8</sup> These were also used in the last CFSAM Report of 2006.

<sup>9</sup> Normally, and drawing from other eastern and southern African countries, post-harvest losses for cereals, pulses and roots and tubers are estimated at 5-15 percent, 16 percent and 25 percent respectively.

<sup>10</sup> Source: National Agricultural Research Organization (NARO): *Agriculture in Uganda Vol II Crops (2001)*.

It needs to be pointed out that the period July 2007-June 2008 is not an official marketing year, as Uganda uses a calendar year (January-December). The reasoning behind the choice of the period for the balance sheets above was that since the floods struck during harvest of the 2007 first season crops and significantly curtailed planting of second season crops, the next major harvest would be in July 2008 (if all goes well). Thus, the period July 2007-June 2008 would be a period of great food insecurity and therefore needs to be underscored.

The two balance sheets show that Amuria will be much worse off than Katakwi, mainly because of its larger population. Its food production will fall short of its requirements by 16 419 tonnes of cereals, 27 743 tonnes of roots and tubers. On the other hand, Katakwi falls short by 3 315 tonnes in cereals but has small surpluses in roots and tubers and pulses of 2 660 tonnes and 4 760 tonnes respectively. The shortfalls are relatively small and can be imported from other districts by businesspeople, but the crucial limiting factor will be the purchasing power of the local population. It must be strongly emphasized that many households in both districts suffered total losses in some crops, especially in cassava, sweet potatoes and groundnuts, and need to be immediately identified and targeted for assistance.

## 6. HOUSEHOLD FOOD SECURITY

### 6.1 Pre-flood food security situation

In March-April 2007, WFP conducted an Emergency Food Security Assessment of IDP camps and settled areas in the conflict affected regions of northern and northeastern Uganda. The assessment canvassed 1 517 households residing either in Mother Camps (Gulu, Kitgum, Pader, Apac, Oyam, Amuria, Katakwi) or in Transit Camps (Gulu, Kitgum, Pader) or in resettled areas of Lira. Based on the convergence of food access, actual food consumption, food sources and expenditure on food and per capita total expenditure, the households were categorized into four groups, viz. Food Insecure, Moderately Food Insecure, Moderately Food Secure and Food Secure. The following table shows the distribution of households into these food security categories:

**Table 18 - Pre flood: IDP households in food security categories (%)**

IDP Locations	Food Insecure	Moderately Food Insecure	Moderately Food Secure	Food Secure
Gulu Mother Camps	8	56	22	14
Gulu Transit Camps	8	68	17	8
Kitgum Mother Camps	10	53	12	25
Kitgum Transit Camps	8	54	18	21
Pader Mother Camps	11	52	12	25
Pader Transit Camps	14	70	9	7
Apac & Oyam Mother Camps	24	52	19	5
Amuria, Katakwi Mother Camps	24	27	19	30
Lira Resettlements	15	59	8	18
<b>Total</b>	<b>13</b>	<b>55</b>	<b>14</b>	<b>18</b>

Own production and the market were contributing to between 20 percent and 40 percent of the household food basket. The remainder is predominately acquired from food aid.

According to the study, 68 percent of the sample was classified as food insecure or moderately food insecure. Food aid contributed to over 40 percent of the household's food basket in the previous 7-days and over a third throughout the year.

The small contribution of own production to the household's food basket over the previous seven days and seasonal variations in the household sources of food throughout the year suggests that more work needs to be done to improve household access to land for agricultural production. The recent FAO Land Access Survey indicated that only 10 percent of households have access to 5 acres or more of land and 70 percent of the households had 3 acres or less of land. Households with less than 3 acres were classified as food insecure as they did not have a sufficient quantity of land to support their food needs. According to the households in this study, insecurity and lack of resources (money and inputs) were factors contributing to not having enough land. As noted earlier in this report, there is a strong relationship between household food security status and average contribution of own production to the household's food basket. This would suggest that activities to increase the

amount of land available to households for farming or programmes to provide credit or inputs would have a positive impact on the food security status of the households.

The assessment also revealed that a significantly high percentage of households have difficulty feeding themselves during the months of May, June, July and August. As the seasonal sources of food indicate, during this period, households compensate with borrowing and gathering foods.

The ongoing peace talks in Juba between the LRA and UPDF continue to create optimism for the potential return of IDPs to their areas of origin. However, due to insecurity and the lack of official guidance on the IDP return process, only 35 percent of the IDPs indicated that they would return to their area of origin in 2007. A second cohort of 30 percent of the population indicated that they would return in 2008. The report also finds that one-third of the households in camps are undecided on their return date. Improved information on returnee policy and non-food assistance such as shelter, water and education and health facilities are identified by IDPs as constraints for returning to their place of origin. Improvement in the social infrastructure and directives on returning could increase the percentage of households leaving the camps and returning to their communities of origin.

### ***Assessment methodology for the household food access and livelihood assessment as a part of CFSAM***

For the sake of the assessment, the affected sub-counties were divided into 3 categories - worst, moderately and least affected - during the stakeholders' consultations. The worst affected are defined as those who lost more than 80 percent of their harvest in the floods, and could not produce the second crop either due to the persistent water logging or because of a hard topsoil layer which is difficult to till. These households have very limited food stocks at home that would last until December at the latest (many households do not have any stock at all even in November) and all the members of the household are eating only one meal per day. The moderately affected households are those who lost 40-80 percent of their crops, have some food stock at home from the previous harvest. The least affected are the households who lost less than 40 percent of their harvests, have enough food stock to sustain them until the next harvest in July, and may expect some yields from the second cropping season. Due to time constraint, the CFSAM team visited Teso, Lango, Acholi and Lango regions. Elgon region also got affected by floods, although the impacts were very localized and overall agricultural situation in Elgon is good. This region consistently has surplus production. However, WFP is conducting an Emergency Food Security Assessment in all 5 regions and based on the analysis, we might be able to conclude on food assistance requirements for Elgon, if any.

After the categorization, the team randomly selected 2-3 worst affected sub counties and a similar number of moderately affected sub counties for visits in each district. WFP carried out the household food security part of the assessment through (a) focus group discussions with the dominant livelihood group (mostly agriculture) and (b) household observations for physical verification of food stock. The health and nutrition status have been derived from a WFP-UNICEF-Ministry of Health Rapid Nutrition Assessment, which measured Mid Upper Arm Circumference (MUAC) of children in flood-affected areas. WFP, in collaboration with various partners, is undertaking a detailed Food Security Assessment in the flood-affected areas, covering a total of 1 250 households. Details on food consumption, coping strategies etc. will emerge from that study, once the analysis is completed by mid January 2007.

## **6.2 Livelihoods of the people in surveyed areas**

Agriculture forms the main basis for livelihoods in the study area; the LC-5 Chairman of Amuria District estimates that 80 to 90 percent of the population depends on sale of agricultural produce, an estimate which may safely be extrapolated across the study area. Income opportunities beyond this – or in times of crop failure as experienced during and after the 2007 floods – are very limited indeed.

Though local coping strategies have been working for the past several months, these are coming to an end with the beginning of the dry season, which has clearly already begun in the eastern part of the study area.

### **6.2.1 Household food security in the flood-affected areas**

In the flood-affected areas, farmers not only lost their standing crops due to floods and/or water logging, they also lost a significant proportion of their harvested crops due to lack of drying place and improper storing. While post-harvest losses during drying and storage are high enough on a regular basis, according to district officials,

conditions this year were nothing short of disastrous in many areas, particularly as regards groundnut, pulses, millet and cassava. Insect infestation and fungal contamination of stored foodstuffs was readily apparent. There are reports of various diseases affecting the livestock in the area covered by the assessment, including CBPP, PPR, foot rot and other conditions. Respondents reported increased livestock deaths, particularly of small ruminants, significantly reducing household assets in the flood-affected areas.

Of all the districts assessed, Katakwi and Amuria of the Teso sub-region were found to be the two worst affected, followed by parts of Lira, Bukedea, Soroti, Pader, Kitgum and Gulu. The people in Karamoja not only experienced floods and water logging, significant portion their crops were also destroyed by honeydew and crop diseases.

In worst affected villages, respondents reported eating one meal in a day, particularly in Amuria, Karakwi, Lira and Karamoja. The meal portion is somewhat heavier than their one normal meal. In normal times, people here eat at least two full meals and a breakfast. With food stock fast depleting, we can expect that the food portion could further reduce in absence of any assistance.

In Teso region, food assistance to 120 000 IDPs was discontinued since 2004, as they became self-reliant. A significant proportion of them is now seriously affected because of the heavy crop damage and would be in need of immediate food assistance. Similarly, in Lira WFP stopped food assistance to IDPs in 2006 after their return. A smaller proportion (compared to Amuria and Katakwi) of those IDP's in Lira also got seriously affected by the flood, particularly in sub counties on the eastern part of the district bordering Teso.

Consumption of wild greens and other wild plants is widespread. This is a normal coping strategy that people adopt every year, particularly during the annual 'lean season', but following the floods, people have been consuming these greens even immediately after the harvest period, and are resorting to unpalatable tree-leaves out of season as a means of obtaining protein, vitamins and minerals in a greatly reduced diet.

Though they suffered in some case from flooded fields, communities living in close proximity to the rivers, lakes and swamps were reportedly benefiting from a surplus supply of fish, consumed by the household but also sold for cash. With the dry season around the corner, these swamps will dry up very soon.

Some households reported to be selling their livestock, mainly the small ruminants and poultry, at a much lower price than would normally be the case, although animal stocks were significantly reduced by disease during the floods and their aftermath, and are thus more valuable within the household if not on local markets. This 'distress selling' effectively reduces household assets – sometimes dangerously so - in order to meet short-term cash requirements for buying essential food and non-food items.

Charcoal burning is another activity that people generally adopt during dry season as a coping strategy to earn money. This time, many households reportedly selling charcoal even during September-November. This clearly indicates that people are running out of options for earning cash, and it is certain that this trend will deepen as the dry season progresses.

In general, livelihood opportunities are very limited throughout the study area. The most significant labour opportunities is hired cultivation, either by the day or by piecework, sometimes paid in food - anything from 2 kg of dried cassava chips (Kitgum in Acholi region) to 10-12 fresh tubers (Bukedea in Teso region), but mostly pay in cash amounting to about US\$1.000/=, or about US\$0.60 cents, per day.

Given recent market trends of reduced access and food scarcity resulting from the floods, returns from this labour in terms of food have become much reduced. Last year, for instance, a day's labour could buy a kilogramme of beans, plus a cup of simsim (sesame seed) and a cup of dry fish. Following the floods, on the same day's labour currently only the beans would be affordable.

From a livelihoods perspective, the local labour opportunities that have allowed some to buy increasingly expensive food will also become much scarcer as cultivation comes to a seasonal halt. Many reported agricultural labour opportunities, but as the dry season is setting in, this opportunity is rapidly diminishing until the next rains arrive around April 2008.

At the same time, prices of these essential food and non-food commodities are significantly higher (50 to 100 percent) than the normal market prices for this time of the year (see Annex 1 for information on prices of food

commodities). This indicates lower supply from within the districts and also from the neighbouring districts due to accessibility problems. Despite the considerable variation in vulnerability by sub-region at the county or even sub-county level within the study area, we can say with certainty that in general the majority of communities affected by the flood are currently caught in a situation we would call the 'scissor' effect, whereby they are obliged to sell off scarce and valuable assets of the household – which now have greatly reduced market value - in order to purchase scarce and expensive foodstuffs on local markets which have been largely underserved due to reduced access and infrastructural damage to the roads network in particular by the floods.

Environmental stresses resulting from years of insurgency and massive displacement having already seriously impacted the natural environment and the agro-silvo-pastoral or livelihoods system of the study area, and has greatly reduced the long-term productivity of the 'parkland' livelihood system across northern Uganda, in terms of both household income and nutrition.

Under traditional livelihood systems within the areas assessed, trees provide fruit and fodder, as well as specialty products like honey, fibre, building materials, shade, and the ancient food oil shea butter, the primary source of dietary fat for communities across the northern and eastern regions. shea nut and shea butter provide rural women with income, and price differentials across the study area demonstrated a thriving trade for rural producers in some areas. Other natural products found on local markets include honey, wild 'yam,' boiled *Borassus* palm shoots, and tamarind pods.

Food stock at the household level greatly varies across districts. As Amuria and Karakwi were the worst affected by the floods, in the worst affected sub counties that the team visited, we found that almost 80 percent of the households would be left with no food stock by the end of December 2007. The following table shows the percentage of households with almost no food stock by December.

**Table 19 - Percentage of households having no food stock beyond December 2007**

Region	Worst Affected Sub-counties within the Districts	% of households reported to have no food stock beyond December 2007, except Karamoja
Teso	Amuria	80
	Katakwi	80
	Bukedea	30
	Soroti	10
Lango	Lira	60
Acholi	Pader	40
	Kitgum	40
	Gulu	40
Karamoja (March/April till next harvest)	Moroto	60
	Nakapiripirit	40
	Kotido	60
	Abim	40
	Kaabong	40

In the moderately affected villages, people in general will be able to cope with the harvest failure through various coping strategies they have been adopting. In these sub counties, the farmers will be harvesting their second crop (except in Karamoja) in December-January, which would help the people in securing their food till the next harvest in July 2008.

#### 6.2.2 Health and nutritional status in affected area

Parallel to CFSAM, WFP in collaboration with UNICEF and respective district health departments carried out a rapid nutrition assessment in Teso, Elgon, Lango and in purposively selected areas of Kumi and Kitgum, by measuring Mid Upper Arm Circumference (MUAC) of children 6-59 months and collection of information on morbidity and household characteristics.

The assessment found that between 1.8 to 3.1 percent children are moderate to severe malnourished and at risk of dying, and another 4.7 to 10 percent are at risk of malnutrition. The study further reveals that Katakwi, Lira

and Soroti districts have the highest number of malnourished children. The situation is expected to get worse as more than 70 percent of the children surveyed were reported to be ill during last 2 weeks preceding the date of the survey. Teso sub-region reported more than 90 percent children being ill.

Moreover, as the household food stock is going to get exhausted very soon, there is a high likelihood that nutritional status, particularly that of women and children will become worse. Those who are eating one meal a day for an extended period would become undernourished if no food assistance were provided.

### **6.3 Food aid requirements**

The assessment team obtained any available documentation at the district and sub-county levels, including production data and data on the effects of the floods on local agriculture, and (where possible) estimates of current total population, affected population and affected households,

In general, this data was hard to obtain, if available at all. We were thus obliged to develop population estimates using available figures published by the Uganda Bureau of Statistics (UBOS) of the 2002 census, run in progression at a mean estimated growth rate.

According to the 2002 Census Report (UBOS 2002), 'during the 1991 – 2002 period, the Northern region had the highest observed population growth rate of 4.5 percent per annum followed by the Eastern region with 3.6 percent'. While we are now half-way between that census and the next in 2011, we have used these UBOS figures as a basis for progression of the 2004 population figures at a mean of 4 percent to obtain a working estimate of current populations.

Where the assessment team found actual numbers at the district or sub-county level (either for total population, affected population, or affected households), these figures were taken into consideration.

Based on the physical verification of household food stock and indications from the focus group discussions, it was estimated that a total of 320 924 flood-affected people living in Teso, Lango, and Karamoja would be in need of food assistance for the coming months (see Annex 2 for the detail). The period of assistance should be from December 2007-July 2008 for all areas except Karamoja, where the need starts from April 2008 till September 2008. Those affected in Acholi (66 217) are already receiving food aid under existing PRRO of WFP and hence no additional food aid should be provided to them. As mentioned earlier, the Elgon region is agriculturally in an advantageous situation and due to surplus production, through inter-district trade and market mechanisms, all food needs could be met without any food assistance.

It must be mentioned here that the total number of affected people is much larger than the number of people needing food assistance. Based on observations, discussions, interviews and market visits, it is very clear that the people having no food stock beyond a certain month in the worst affected sub counties should be best served through food assistance instead of a cash or market based intervention. Due to large-scale harvest failure in these areas, the food prices are expected rise further as the scarcity increases over the next few months and any injection of cash might make the prices even more volatile.

**Table 20 - Flood affected population needing food assistance**

Region	Districts	Population needing food assistance	% of district population needing food assistance	Period of Assistance
Teso	Amuria	73 231	34	Until July 2008
	Katakwi	36 278	25	
	Bukedea	15 691	11	
	Soroti	10 787	2	
	Lira	83 938	14	
Karamoja (March/April till next harvest)	Moroto	27 590	12	Until July 2008 From March/April till September 2008
	Nakapiripirit	24 309	13	
	Kotido	10 380	7	
	Abim	9 764	16	
	Kaabong	28 956	12	
<b>Total</b>		<b>320 924</b>		

As can be seen from the above table, the need for food assistance is for a smaller proportion of the district populations. As mentioned earlier, the proposed beneficiaries in Teso, these people are largely the IDPs who stopped receiving food assistance in 2004. The flood once again made them extremely food insecure and food assistance till next harvest will facilitate them to move out of this shock without any negative impact on their livelihoods. In Lira, IDPs returned to their villages in 2006, when WFP stopped provision of food aid. The harvest of 2007 was their first major one that could have supported them in their recovery efforts. But in the worst affected sub counties, the damage of crops once again made them vulnerable.

The period of food assistance, in general, is suggested till the next major harvest, i.e., in July 2008. However, on the basis of regular monitoring of the affected households and markets, if clear indications of recovery are observed, a gradual phase down/out of GFD from those areas is recommended even before the next harvest. In Karamoja, the major crisis is expected to start from March-April in the flood-affected sub counties.

In order to ensure market functioning and continuation of adoption of positive coping strategies, the CFSAM team recommends that 60 percent of the daily food requirement is provided through GFD. However, the ration size could be modified in coming months based on monitoring findings related to market recovery and household food availability and livelihood conditions.

#### **6.4 Rebuilding livelihoods in the flood-affected areas**

Beyond immediate food aid requirements, the flooding and its effects on local agriculture and rural livelihoods will have harmful impacts on household food security over the medium- to long-term, particularly for the returning IDP populations.

Food aid requirements were identified as a first priority by all respondents, followed by the means of production including seed inputs and other agricultural requirements. Seeds and tools received secondary emphasis in nearly all the interviews conducted, from the rural farmer/IDP satellite camp resident to the district-level local government and its technical agencies.

Given recent experience in terms of seed quality and viability and appropriateness of cultivar and the timing of its distribution, respondents made it clear that only viable and if possible certified seed of appropriately selected cultivars should be provided, with local purchase considered where appropriate (e.g. disease-resistant cassava stem cuttings from the districts of Apac/Oyam and/or Masindi).

Finally, in assessing the prospects for rehabilitation of livelihoods in many areas we will need to consider the broader and current context of the last five years, in which well over one million people have only just begun to emerge from a total loss of their assets and livelihoods through cattle rustling and, much more significantly, the northern insurgency.



In the northern region in particular, affected returnee communities struggling to rebuild their lives have seen their first crop in five years destroyed, and now have even fewer assets (and prospects) than they brought with them out of the camps – to which some have returned in response to the floods.

Some of the assets could be rehabilitated or rebuilt through Food for Work option. During Focus Group Discussions with the farmers, interests were expressed for repairing the feeder roads, de-silting of the ponds and tree plantations.

It is clear that in proposing solutions for rehabilitation of livelihoods within the flood-affected areas, we will need to look beyond the strictly short-term (*i.e.* food aid - necessary though this will clearly be in many areas over till people get their next harvest) in order to address longer-term aspects of this emergency in context.

## **7. CONCLUSIONS AND RECOMMENDATIONS**

In Northern Uganda, conditions have visibly changed and agriculture production is picking up quickly by observation of the wide cultivation and access distances compared to just a few years back. Food stocks in Gulu, Kitgum and Pader are relatively good and likely to increasingly grow in the periods to come. Impact of the floods was limited to valleys, areas close to rivers and watercourses that were flooded. Even then, this was isolated and manageable. Assistance to these regions is best continued in the current and ongoing food and non-food programmes with no need for fresh assistance due to floods. Development programmes would benefit a lot from the peace process that has positively changed the populations' outlook to the future with a number of people outrightly expressing no need for food assistance beyond 2008 if the next two seasons are good.

Across the flood-affected districts of Amuria and Katakwi and in localised areas of other districts, communities have lost their first season crops, in part or in full. Many households harvested prematurely rather than allow the crops to continue rotting in the fields only to face difficulties with drying because of wet and humid conditions and little sunshine. In the worst affected locations cassava, sweet potato and groundnuts were almost entirely destroyed, whilst other crops suffered severe post-harvest damage. Thus, many households in these areas not only face imminent food shortages but also serious seed shortages for the next season. Assistance is therefore most urgent for these households.

### **7.1 Immediate interventions**

The following interventions are recommended to start immediately to avert the looming food crisis in Amuria, Katakwi, parts of Bukedea, Soroti, Lira and Karamoja.

- Food assistance, mainly in the form of GFD, is the most immediate response that should be provided to the selected households in the worst affected sub counties, as listed in Annex 2.
- **Cash and food for work** activities targeting flood affected returnees and those in transition in the Acholi sub-region could be considered in the worst affected sub counties, as market is functioning normally. Of course, cash and food for work cannot be implemented at the scale of GFD. These activities as an alternative to GFD will require more time to put in place and should only be undertaken when market conditions including food availability and price stability are considered conducive and appropriate.
- As the markets in other parts of the affected sub regions are yet to recover from the shock, cash for work may not be a viable intervention at this moment. As prices stabilize and market supplies become normal in these areas, GFD will be phased out and cash and food for work could be taken up in order to rehabilitate various community assets, e.g, rehabilitation of roads and bridges, rebuilding of damaged school buildings and latrines as well as residential houses, and restoration of water supply sources.
- **Seeds, cassava cuttings and sweet potato vines** to targeted households. This should be done as soon as possible but not later than February 2008, before the beginning of the next planting season in March. Many households have their own supplies of cassava and sweet potato planting material that survived the floods and therefore targeting will be essential.

## 7.2 **Medium to longer-term interventions**

- **Restocking in Teso.** Once well known for its widespread ox cultivation, Teso sub-region has virtually reverted to hand cultivation due to loss of cattle through cattle rustling by neighbouring Karimojong. There are many IDPs in Amuria and Katakwi displaced by this criminal activity. This situation needs to be determinedly addressed, although the challenges are great.
- **On-farm food storage.** The prevailing traditional on-farm food storage methods, which consist of low-quality granaries standing just inches above ground or foodstuffs stored inside dwelling houses, are no longer appropriate given emerging problems caused by climate change. A new programme to improve on-farm food storage in the region and, indeed, in the whole of Uganda, needs to be designed and implemented as a matter of priority.
- **Agricultural statistics.** It is extremely difficult to conduct a sound assessment of agricultural performance in Uganda because of the absence or unreliability of agricultural statistics. The same applies for agricultural planning. A serious programme of agricultural data collection on a regular basis and periodic agricultural censuses should be implemented with a sense of urgency.

Newly returned people from IDP camps lack opportunities for income-generation and sustainable food production in their areas of return. The economic and social infrastructures need rehabilitation. Agricultural production, which is the main source of livelihoods, needs to be diversified and developed. Relevant preparedness programmes for moving from emergency to recovery would also benefit vulnerable populations and the country in food production and security at the long run.

FAO and WFP, in collaboration with the local governments, should initiate regular market monitoring in order to guide future food security strategies.

**Annex 1 - Food prices and changes in selected districts (October - November 2007)**

<u>District</u>	<u>Subcounty</u>	<u>item</u>	<u>2006 price</u>	<u>Unit of measurement</u>	<u>2007 price</u>	<u>Unit of measurement</u>
Lira	Aloi	Beans	200	tumpeco	200	nice
Lira	Aloi	Maize	50	tumpeco	100	tumpeco
Lira	Aloi	Simsim	250	nice	600	nice
Lira	Aloi	P. Pea	150	nice	250	nice
Lira	Aloi	S. Pot.	100	20	200	5
Lira	Aloi	Cassava	100	heap	500	heap
Lira	Aloi	Salt	200	nice	600	nice
Lira	Aloi	Parrafin	350	abapi	500	abapi
Lira	Omoro	Sorghum	80	cup	200	cup
Lira	Omoro	Millet	100	cup	250	cup
Lira	Omoro	Cassava	2 500	basin	4500	basin
Pader	Okwang	G.nuts (u)	100	tumpeco	100	adany
Pader	Okwang	Beans	500	yoweri	400	yoweri
Pader	Okwang	P. Pea	n/a	n/a	600	yoweri
Pader	Patongo	Sorghum	50	mug	100	mug
Pader	Patongo	Beans	200	adany	200	adany
Pader	Patongo	G.nuts (u)	50	minimug	100	minimug
Pader	Patongo	Cooking Oil	600	fanta	1200	fanta
Pader	Patongo	Tomatoes	100	4 pc	200	4 pc
Pader	Patongo	Small Fish	100	adany	400	adany
Pader	Patongo	Cabbage	500	1 pc	800	1 pc
Pader	Patongo	Cowpeas	50	minimug	100	minimug
Pader	Patongo	Rice	500	minimug	700	minimug
Pader	Patongo	Soap	600	bar	1200	bar
Pader	Patongo	S. Pot.	100	5 pc	200	3 pc
Kitgum	Palabek Kal	Greens (cowpea)	50	>7 stems	100	7 stems
Kitgum	Palabek Kal	Tomatoes	100	5-6	100	1
Kitgum	Palabek Kal	Simsim	200	minimug	400	nice
Kitgum	Palabek Kal	Cassava	100	5 pc	200	3 pc
Kitgum	Palabek Kal	Salt	200	nice	400	nice
Kitgum	Palabek Kal	Parrafin	1 000	500 ml	1 500	500 ml
Bukedea	Kolir	Cassava chips	4 000	basin	6 000	basin
Bukedea	Kolir	Maize	150	kg	350	kg
Bukedea	Kolir	Salt	200	500g	500	500g
Bukedea	Kolir	F. Millet	600	2 kg	1 400	2 kg
Bukedea	Kolir	G.nuts (u)	300	2 kg	700	2 kg
Bukedea	Kolir	Beans	1 500	2 kg	2 500	2 kg
Bukedea	Kolir	Cooking Oil	800	fanta	1 300	fanta
Bukedea	Kolir	Parrafin	400	fanta	700	fanta

<b>District</b>	<b>Subcounty</b>	<b>item</b>	<b>2006 price</b>	<b>Unit of measure ment</b>	<b>2007 price</b>	<b>Unit of measure ment</b>
Katakwi	Magoro	Cowpeas	300	cup	500	cup
Katakwi	Magoro	G.nuts (u)	3 000	basin	6 000	basin
Katakwi	Magoro	Cassava chips	4 500	basin	5 500	basin
Katakwi	Magoro	Salt	200	500g	500	500g
Katakwi	Magoro	Cooking Oil	1 000	500 ml	1 500	500 ml
Katakwi	Ngariam	Cassava	3 500	basin	6000	basin
Katakwi	Ngariam	Sorghum	100	cup	200	cup
Katakwi	Ngariam	Millet	200	cup	250	cup
Katakwi	Ngariam	Beans	800	kg	1200	kg
Amuria	Acowa	F. Millet	180	nice	200	nice
Amuria	Acowa	G.nuts (u)	2 500	basin	5 000	basin
Amuria	Acowa	Cassava chips	2 500	basin	4 000	basin
Amuria	Acowa	Beans	600	kg	1 000	kg
Amuria	Acowa	Green Gram	200	nice	400	nice
Amuria	Acowa	Cowpeas	300	cup	500	cup
Amuria	Kapelebeyong	Cassava	3 500	basin	4500	basin
Amuria	Kapelebeyong	Beans	800	kg	1000	kg
Amuria	Kapelebeyong	Sorghum	150	cup	200	cup
Pader	Rogom	G.nuts (u)	4 000	basin	6 000	basin
Pader	Rogom	Cassava chips	3 000	basin	5 000	basin
Pader	Rogom	F. Millet	200	cup	400	cup
Pader	Rogom	Sorghum	150	cup	300	cup
Soroti	Bugondo	Maize	150	kg	220	kg
Soroti	Bugondo	Cassava chips	100	kg	150	kg
Soroti	Bugondo	Cassava chips	2 000	basin	3 000	basin
Soroti	Bugondo	F. Millet	150	tumpeco	200	tumpeco
Soroti	Bugondo	G.nuts (u)	3 000	basin	6 000	basin
Soroti	Bugondo	Beans	800	kg	1 000	kg
Soroti	Bugondo	Green Gram	800	kg	1 000	kg
Soroti	Bugondo	Soap	800	bar	1 100	bar
Soroti	Bugondo	Salt	300	250g	500	250g
Soroti	Bugondo	Parrafin	800	L	1 000	L
Soroti	Bugondo	Parrafin	500	500 ml	700	500 ml
Soroti	Kateka	Cassava chips	2 500	basin	3 000	basin
Soroti	Kateka	F. Millet	120	cup	150	Cup
Soroti	Kateka	Sorghum	40	cup	60	Cup
Moroto	Nadunget	Sorghum	500	3.5 kg	1500	3.5 kg
Moroto	Nadunget	Maize	800	3.5 kg	1350	3.5 kg
Kotido	Kacheri	Sorghum	1 cow	300 kg	1 cow	100 kg
Kotido	Nakapelimoru	Sorghum	6 000	basin	8000	basin
Nakapiripirit	Lorengedwat	Sorghum	1 300	can	1500	can

<u>District</u>	<u>Subcounty</u>	<u>item</u>	<u>2006 price</u>	<u>Unit of measurement</u>	<u>2007 price</u>	<u>Unit of measurement</u>
Nakapiripirit	Lolachat	Sorghum	500	can	600	can
Nakapiripirit	Namalu	Posho	700	kg	1200	kg
Kaabong	Kaabong	Finger Millet	1 000	can	1700	can
Kaabong	Kaabong	Sorghum	1 000	can	1500	can
Kaabong	Kaabong	Beans	200	cup	400	cup
Kaabong	Karenga	Finger Millet	1 000	can	2000	can
Kaabong	Karenga	Sorghum	1 000	can	1400	can
Kaabong	Karenga	Beans	700	kg	600	kg
Abim			Almost no changes in prices			

**Annex 2 - Estimated population needing food assistance in affected sub-counties**

District:	Subcounty (LC-3)	Total Population		Population needing Food Aid	% of Total District Population
		2002 Total	2007 est.*		
Amuria	<b>Teso sub-Region</b>			<b>135 987</b>	
	Abarilela	17 766	21 319	17 055	
	Wera	15 589	18 707	14 965	
	Acowa	31 916	38 299	30 639	
	Kapelebyong	11 011	13 213	10 571	
			<b>91 538</b>	<b>73 231</b>	34
Katakwi	Magoro	11 579	13 895	11 116	
	Ngariam	16 427	19 712	15 770	
	Ongongoja	9 784	11 741	9 393	
			<b>45 348</b>	<b>36 278</b>	25
Soroti	Bugondo	22 551	27 061	2 706	
	Pingire	32 405	38 886	3 889	
	Kateta	34 933	41 920	4 192	
			<b>107 867</b>	<b>10 787</b>	2
Bukedea	Kolir	16 849	20 219	6 066	
	Malera	26 736	32 083	9 625	
			<b>52 302</b>	<b>15 691</b>	11
Lira	<b>Lango sub-Region</b>			<b>83 938</b>	
	Omoro	28 967	34 760	20 856	
	Aloi	45 045	54 054	32 432	
	Okwang	12 353	14 824	8 894	
	Olilim	13 388	16 066	9 639	
	Orum	16 827	20 192	12 115	
			<b>139 896</b>	<b>83 938</b>	14
Abim	<b>Karamoja sub-Region</b>			<b>100 999</b>	
	Lotukei	12 815	15 378	6 151	
	Nyakwae	7 526	9 031	3 612	
			<b>24 409</b>	<b>9 764</b>	16
Kaabong	Kaabong	38 635	46 362	18 545	
	Karenga	21 691	26 029	10 412	
			<b>72 391</b>	<b>28 956</b>	12
Kotido	Kacheri	14 417	<b>17 300</b>	<b>10 380</b>	7
Moroto	Lopei	14 410	17 292	10 375	
	Iriiri	23 910	28 692	17 215	
			<b>63 284</b>	<b>27 590</b>	12
Nakapiripirit	Lolachat	13 230	15 876	6 350	
	Lorengedwat	6 089	7 307	2 923	
	Namalu	31 325	37 590	15 036	
			<b>60 773</b>	<b>24 309</b>	13
		<b>TOTAL</b>	<b>675 109</b>	<b>320 924</b>	
	<b>Karamoja sub-Region</b>			<b>101 000</b>	

- Growth assumed at 4% per annum, estimated mean based on UBOS figures.

### Annex 3 – Sub counties covered by the findings of the CFSAM report

The table below contains a list of all the flood affected sub counties in the Teso, Lango and Karamoja sub-regions. Although the mission visited a range of locations, this report only offers findings related to the sub counties highlighted in green, which were specifically categorized as the ‘worst affected’ during stakeholder consultations (see p. 20 for the criteria used for this classification). A separate EFSA, however, has looked at the needs across all the flood affected sub counties.

Sub-region	District	Sub-counties	Households	Est. Population	
Teso	Soroti	Atiira	3045	18270	
		Kamuda	3224	19344	
		Omodoi	2253	13518	
		Ongongoja	2251	13506	
		Usuk	1489	8934	
		Magoro	4148	24888	
		Ngariam	2483	14898	
		Amuria	Asamuk	6089	36534
		Orungo	5372	32232	
	Wera	3905	23430		
	Acowa	8362	50172		
	Kapelebyong	3579	21474		
	Obalanga	4016	24096		
	Kuju	5061	30366		
	Abarilela	4899	29394		
	Morungatuny	4984	29904		
	Bukedea	Malera	2832	16992	
	Kolir	4042			
	Lango	Lira	Omoro	8330	49980
Okwang			4166	24996	
Ogur			1561	9366	
Abako			8625	51750	
Batta			2205	13230	
Adwari			4737	28422	
Apala			4447	26682	
Aloi			2613	15678	
Adekokwok			1186	7116	
Amugo			6253	37518	
Aromo			479	2874	
Amac			564	3384	
Lira			936	5616	
Karamoja	Kotido/ Kaabong	Kapedo	3724	22344	
		Kacheri	4040	24240	
		Nyakwae	1993	11958	
		Karenga	3946	23676	
		Panyangara	3579	21474	
	Moroto	Moroto	--	--	
		Iriiri	1061	6366	
		Katikekile	20	120	
Nakapiripirit	Namalu	6292	37752		

Annex 4 – Map of flood affected areas

