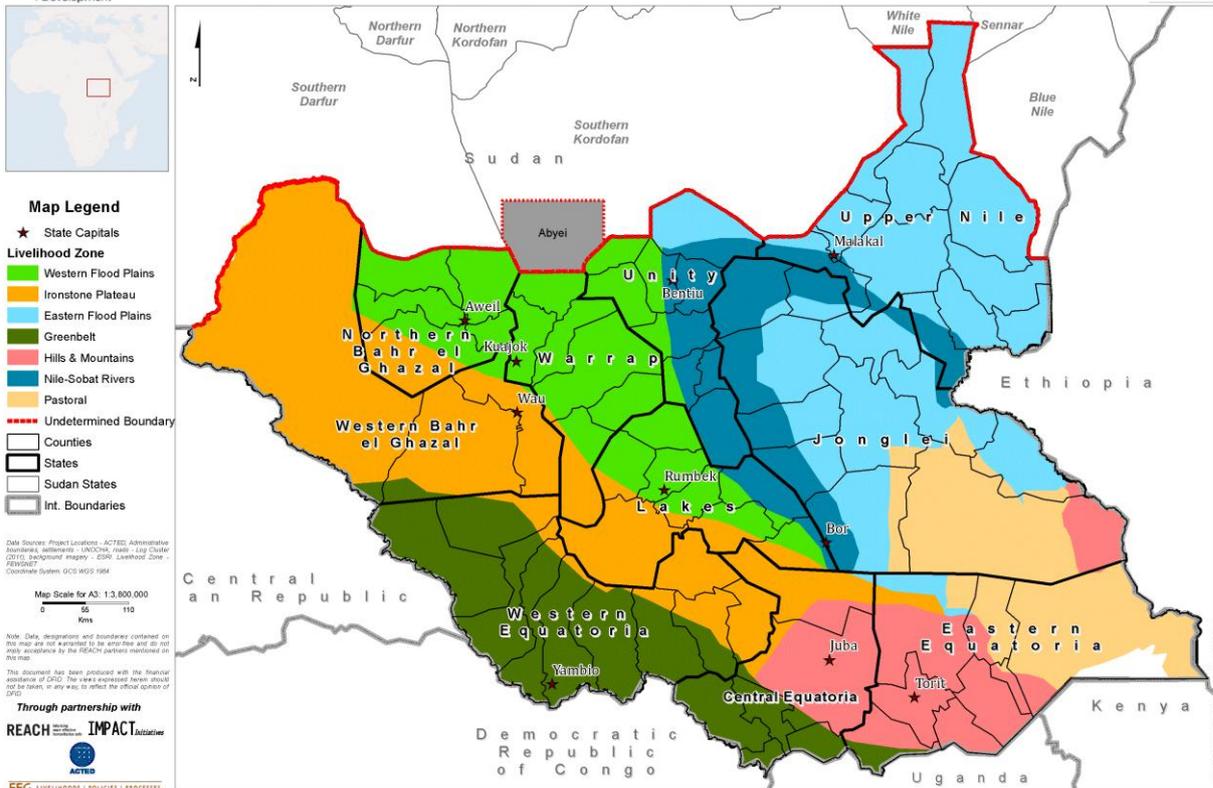




HOUSEHOLD ECONOMIC ANALYSIS (HEA) LIVELIHOOD PROFILES SOUTH SUDAN EASTERN FLOOD PLAINS & NILE AND SOBAT RIVERS REPORT SEPTEMBER 2013



BRACE Phase I Baseline – Livelihood Zones of South Sudan



The livelihood profiles in this report were determined through a Household Economic Analysis (HEA) conducted in the Eastern Flood Plains and Nile and Sobat Rivers livelihood zones by the Food Economic Group (FEG) in April 2013. Data gathered through the HEA will inform a quasi-experimental survey, which will be conducted to determine the impact of World Food Program (WFP) Food for Asset (FFA) programming in four states of South Sudan that are funded through the DFID BRACE Programme.

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THE BRACE PROJECT

The “Building Resilience through Asset Creation and Enhancement” (BRACE) programme provides food and cash transfers to households, while building skills, physical assets and knowledge – with the aim of strengthening household and community resilience. The programme is implemented through the World Food Programme (WFP) and Non-Governmental Organisation (NGO) partners with a range of Food For Asset (FFA) activities across three states in South Sudan – Northern and Western Bahr el Ghazal and Warrap.

An Impact Evaluation will be conducted of BRACE to evaluate the impact of its activities on food security and resilience, by comparing households and communities that participate in FFA with those that do not. The evaluation is employing two parallel methods to first establish a baseline against which impact will be assessed: (1) a quasi-experimental approach, implemented by IMPACT initiatives, where data is predominantly collected through household surveys; and (2) the Household Economy Analysis (HEA) approach, implemented by the Food Economy Group (FEG), where focus group discussions is the main mode of data collection. The HEA establishes baseline parameters for wealth according to livelihood zones that are applied to the household level data gathered during the quasi-experimental component, where these parameters allow for comparison between poorer and wealthier households, while controlling for difference in livelihoods opportunities across the States where BRACE is implemented.

The present study outlines the HEA baseline findings from Eastern Flood Plains & Nile and Sobat Rivers livelihood zones.

For access to BRACE data and mapping go to: www.southsudan-braceproject.org

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LOCAL DICTIONARY

Buaw – a wild tuber

Cuei/Koat – wild fruit (tamarind) that is eaten fresh when ripe or prepared as a juice

Feddan – local unit of land equal to about one acre or 0.42 ha

Gok - slightly elevated areas

Jembe – a local digging tool used to prepare land for planting

Lang – forest fruit from the ziziphus tree, similar to *cum* or *dhiot*

Makamuth - half a feddan

Thou/lalop– desert date, a forest plant that is used for its leaves (like cabbage) and its fruit. The outer part of the fruit is eaten fresh. The seed is then boiled and processed to make oil.

Toic - lowland swampy areas

ACRONYMS LIST

BO – Better Off

BRACE – Building Resilience through Asset Creation and Enhancement

CPA – Comprehensive Peace Agreement

FFA – Food for Asset

LZ – Livelihood Zone

M – Middle Income

PPR – Peste des petits ruminants

P – Poor

VP – Very Poor

WFP – World Food Programme

BACKGROUND TO THE ASSESSMENT

The rationale for a Household Economy Analysis/HEA baseline survey is to provide a quantified picture of household food and income access prior to project interventions. The baseline serves as a yardstick against which to measure change created by the project. This allows project planners to assess whether to maintain or modify inputs to better achieve project goals. Hence the results will show to what extent the project met its goal, namely: **To build household and community resilience to shocks and to improve food and economic security in rural areas. The target group is vulnerable populations including returnees.**

Objectives of the HEA Baselines and Monitoring Tool

The objective of the HEA is three-fold:

- Provide a robust analytical framework to measure impacts (gains or losses) of project interventions on food and livelihood security amongst the target population.
- Develop a database of household food and income sources and expenditure patterns for 3-4 wealth groups in 4 livelihood zones. Identify key variables for monitoring and provide the analytical tool to assess change.
- Identify gender dynamics by disaggregating income and labour data by gender.

To assess the impact of project interventions, the baseline survey will establish the reference point for key project variables. In the case of BRACE, these variables are as follows:

- **Food:** The amount (in kgs and kcals) of staple food produced and purchased by a typical beneficiary household during the reference year including staple grains, protein foods, vegetables, fats and others.
- **Income:** The amount of cash income earned by a typical beneficiary household in the target area during the reference year prior to project intervention.
- **Expenditures:** Types and amounts of goods and services purchased from pre-project levels of income as well as the proportion of expenditure that went to non-food goods and services, and the proportion of expenditure that went to staple and non-staple food.
- **Gender:** Types of work (or work exchange) undertaken by men and women as well as their typical earnings.

Baseline findings for these variables are described in the livelihood profiles for each zone. The gender division of labour is summarised for both zones in Annex 2.

At the end of the project, the HEA assessment will provide an actual measure of whether the project achieved its expected outcome, namely: **the sustained increase in food security during the hunger period (April to September/October) for up to 25,000 households (175,000 beneficiaries).**

The Problem Statement

Food insecurity is a major problem in South Sudan. In 2012, emergency levels of malnutrition were found in 15 counties (mainly border areas including the targeted project states). Target beneficiaries are the moderately food insecure (i.e., those with labour) in rural areas of Warrap, Upper Nile and Northern & Western Bahr el Ghazal States. Several constraints face the target group: (i) Unfavourable rains in 2011 leading to reduced own-crop consumption in 2012; (ii) Reduced access to trade due to the border closure with Sudan leading to higher prices for market goods and lost income; (iii) Closure of oil production in South Sudan leading to lost income; (iv) Continued influx of returnees and refugees leading to increased pressure on local food supplies and local resources; and (v) Other deep causes of poverty including ongoing conflict, weak government capacity, limited services and infrastructure, and poor market integration.

The baseline assessment was divided into two phases. These phases correspond to the implementation schedule of BRACE activities. Phase I activities began in August 2012 in Northern Bahr el Ghazal and Warrap States. Once Phase I activities were established, Phase II activities started in April 2013 in Upper Nile and Western Bahr el Ghazal States. To correspond with the implementation schedule, the Phase I HEA Baseline Assessment was conducted in November and December 2012. This was followed by the Phase II Baseline Assessment in April 2013. Livelihoods impact assessment spreadsheets, designed specifically for monitoring and evaluation, were set up in April and June 2013. These will be used in conjunction with the baseline data to carry out the end-line evaluation.

METHODOLOGY

The profiles were compiled through a combination of field work and a review of secondary data sources. Field work was undertaken by two trained field teams in April 2013. Each team was led by a team leader experienced in HEA. Most of the field data was collected directly at village level from community key informants and household focus groups. Interviews were lengthy (typically three hours) and covered an accounting of household food and income sources as well as expenditures during the pre-project year. Eight villages were selected in each livelihood zone.

Village Selection: The target population in the BRACE project is moderately food insecure households (with labour) in the rural areas of Northern Bahr el Ghazal and Warrap States (Phase I baselines), and Western Bahr-el Ghazal and Upper Nile States (Phase II baselines). In total, 20 counties have been targeted under the first two-year “pilot phase” of the BRACE project. The Phase II baseline exercise covered one state and two livelihood zones. Livelihood zones are geographical areas in which the population roughly shares the same production options as well as similar access to markets. Villages were selected purposively as those villages that best represent the local economy. Villages are selected across the breadth of the zone where possible, while taking security risks and road conditions into consideration.

Table 1: Sampling Framework

Livelihood Zone	State	County	Villages
Phase II (8 villages per zone)			
The Nile & Sobat Rivers Zone	Upper Nile	Ulang	Mabek, Rubout, Gokweng, Village 2
		Panyikang	Nyibodo, Akuathow
		Akoka	Angop, Majak
Eastern Flood Plains	Upper Nile	Maiwut	Fagag
		Longochuk	Planga
		Nasir	Luang-wien, Guenya
		Melut	Wunthan, Agorkom, Nyikun, Hai-Khartoum

Over the three-week field work period, the field teams collected a range of data from different sources. The various data sources and the types of information collected are detailed in the table below. The total number of key informants consulted through village focus groups was 672 interviewees. Additional interviews were held with market sellers and traders as well as administrative and technical heads of county offices.

Table 2: Number of Interviews per Area

	Reference Year Data: Sept 2011-Aug 2012	Nile & Sobat Rivers LZ	Eastern Flood Plains LZ	Total
County level meetings	Agricultural data + local measures Livestock data Market prices Population Rainfall	3	4	7
Market interviews	Market prices Trading volumes and routes Supply chains	2	2	4
Key informant focus group meetings at village level (8-10 participants per interview)	Crop yields and fertilizer use Milk yields and livestock migration Seasonal calendars Wealth group breakdown Timeline (Hazard Events) Types of Hazards Market Prices	8 villages = 8 interviews (x 10 participants = 80 people interviewed)	8 villages = 8 interviews (x 10 participants = 80 people interviewed)	16 interviews (160 people)
Household representative interviews by wealth group (6-8 participants per interview)	Livelihood Assets Herd dynamics (12 months) Sources of food (12 months) Sources of income (12 months) Expenditure (12 months) Bad Year Coping Strategies	8 villages = 4 wealth groups = 32 interviews (x 8 per wealth group = 256 people interviewed)	8 villages = 4 wealth groups = 32 interviews (256 people interviewed)	64 interviews (512 people)

Challenges: A particular feature of HEA is that the data cover a full year period. Key informants and household focus groups are asked to account for production, earning and spending patterns for a specific year – in this case, the pre-project year September 2011 to September 2012. This feature of HEA can be challenging for interviewers and interviewees alike. Interviewers must regularly confirm that key informants are providing data from the particular reference year. The challenge for key informants is to accurately recall economic conditions from a year or more ago. Cross-checking and triangulation are two strategies that help minimise recall bias to a great extent.

Some of the other challenges encountered in the field relate to the specific context of South Sudan. For instance, estimating the proportional size of the various wealth groups in each village was sometimes difficult where households are still quite transient and there is a flow of people between town and village or across the South Sudan / Sudan border. Calculating assets is also a sensitive process of trying to estimate typical herd sizes without asking households to divulge private details of their own herds. Decisions also had to be made about whether to collect data based on the “small house” (the mother, her children and dependents) or the large household (the husband, his wives, their children and other dependents). In terms of calculating food energy from different sources, attention had to be paid to items bartered for grain as well as those goods sold for cash to purchase food. Many barter items are not mentioned voluntarily; hence they remain a hidden food source unless there is careful probing. (One example is the exchange of manure for milk.) Wild food (tubers, fruits, seeds and leaves) as well as fish are a significant challenge to estimate in terms of kilos gathered or caught. It is also a challenge to estimate their food energy value. Fortunately, previous research by Caroline Gullick and others on this subject helped the HEA study tremendously. Other food or income sources that are illegal (e.g., the production and sale of local brew) remained hidden until the interviewers inquired about them in a direct but sensitive way. Finally, security issues affected the range of the survey area. There were also security problems that delayed travel. However, these problems did not reduce the number of interviews that were conducted.

SUMMARY OF THE LIVELIHOOD ZONES

Eastern Flood Plains		
Livestock	cattle goats / sheep poultry	<p>The Eastern Flood Plains is home to several ethnic groups including the Nuer, Dinka, Shilluk, Maban and Burun. The livelihood zone is situated in Upper Nile and Jonglei States, and covers Nasir, Maiwut, Melut, Longochuk, Maban and Baliet Counties. The zone is an agro-pastoral-fishing economy. Sorghum, maize, cowpeas and pumpkin seeds are the principal crops grown for food and cash. Wild foods and fish comprised an estimated 20-25% of poor and very poor household annual food needs. Desert dates (<i>thou</i>) are a particularly important wild food. Cattle, goats and sheep are all reared in the zone. Better-off and middle-income households secured 20-30% of their annual food needs from milk and meat. The Eastern Flood Plains receives between 1000–1500 mm of rain on average during a single rainy season. The area is mainly flat plain covered with savannah grassland and bushes with scattered trees. Oil is a key natural resource of national economic importance. Cattle raids, livestock diseases, crop pests and drought are the major factors affecting production.</p>
Income Sources	firewood and fish sales; agricultural labour (VP, P) sales of crops, milk and livestock (B/O, M)	
Food Crops	sorghum, maize cowpeas pumpkin, okra	
Cash Crops	maize, sorghum okra	
Other	fish wild foods	

Nile and Sobat Rivers		
Livestock	cattle goats / sheep poultry	<p>The Nile and Sobat Rivers zone is home to three main ethnic groups: the Dinka, Nuer and Shilluk. The zone follows the route of the rivers with field work for this assessment concentrated on a small area in Upper Nile State covering Panyikang, Makal, Ulang and Akoka counties. The economy of the area is primarily settled agriculture supplemented with fishing, gathering and livestock production. For the very poor and the poor, food purchases are funded through a range of income sources including the sale of charcoal, firewood, fish, livestock, milk, sorghum and honey as well as local labour. Crops and livestock are the economic mainstay of middle-income and better-off households. Although the rivers are a crucial resource, severe flooding is also a livelihood hazard. Other hazards include livestock diseases, crop pests and cattle raids.</p>
Income Sources	firewood, charcoal, fish, crops, livestock, milk, honey, agricultural labour (VP, P) crops, milk, livestock (B/O, M)	
Food Crops	sorghum, maize cowpeas, sesame okra, pumpkin	
Cash Crops	same crops as above	
Other	fish wild foods	

BASELINE STATUS AGAINST THE KEY VARIABLES

The HEA baseline provides a proportional and actual measure of the following impact evaluation variables:

- Typical amount of vegetables in the diet and quality of the diet (by wealth group)
- Typical income of direct beneficiaries (by wealth group)
- Total household crop production (by wealth group)
- Level of food and livelihood security risk in the event of flooding, drought or other common shocks (conflict, disease outbreaks, market closure or price changes) by wealth group.

A summary of the data organised by impact evaluation variable is provided in the table below.

Table 3: Baseline status of households in the BRACE project area against key project indicators¹

Project Indicator	Baseline Status Nile & Sobat Rivers		Baseline Status Eastern Flood Plains	
Output Indicators				
Nutrition: dietary diversity & vegetables in diet - % of staple grains, oil, protein foods, vegetables and fruit in beneficiary diets from own crops, wild foods and fish, and purchase. See also Annex 1 on dietary diversity.				
Grains (produced, purchased, paid-in-kind, relief), % of annual food energy from all grains; and Total sorghum and maize produced/purchased in kg				
	V. Poor	73% (800 kg sorghum and maize)	63%	(535 kg sorghum and maize)
	Poor	76% (1100 kg sorghum and maize)	63%	(740 kg sorghum and maize)
	Middle	72% (1580 kg sorghum and maize)	60%	(1160 kg sorghum and maize)
	Better-off	76% (2350 kg sorghum and maize)	63%	(1830 kg sorghum and maize)
Oil (produced, purchased, relief), including <i>thou</i> (desert date) and sesame				
	V. Poor	8%	10%	
	Poor	8%	10%	
	Middle	8%	7%	
	Better-off	7%	5%	
Protein (produced, purchased, caught, relief, gifts), including cowpeas, fish, milk, meat, groundnuts, pumpkin seeds ²				
	V. Poor	10%	18%	
	Poor	13%	24%	
	Middle	18%	33%	
	Better-off	25%	45%	
Vegetables + Wild Food/Fruit (gathered, produced, purchased), including okra, pumpkin, <i>cuei/koat</i> , <i>lew</i> , <i>buaw</i>				
	V. Poor	5%	7%	
	Poor	5%	4%	
	Middle	3%	3%	
	Better-off	2%	2%	

¹ In the NSR Zone, 2011-2012 was an average production year. In the EFP Zone it was a relatively poor production year.

² Groundnuts and sesame are a protein food that are also pressed and used in the form of oil. Hence, they could be placed in either protein or oil categories.

Project Indicator	Baseline Status Nile & Sobat Rivers		Baseline Status Eastern Flood Plains
Output Indicators			
Sugar			
Very Poor	1%		0%
Poor	1%		0%
Middle	3%		0%
Better-off	3%		1%
Income – Typical annual household income in SSP by wealth group by income range and by mid-point ³			
V. Poor	1,400 – 2,000 (1,750)		1,200 – 2,300 (1,800)
Poor	2,001 – 3,700 (2,700)		2,301 – 3,800 (2,750)
Middle	3,701 – 5,300 (4,500)		3,801 – 7,000 (4,950)
Better-off	5,301 + (6,350)		7,001 + (7,770)
Food – Total annual household crop production by wealth group, % of household annual food needs			
V. Poor	40%		39%
Poor	53%		47%
Middle	62%		50%
Better-off	80%		64%
Survival and Livelihood Protection Thresholds – These thresholds and their use are showcased in the HEA livelihood impact assessment spreadsheet. The thresholds are used to measure food and livelihood security in the event of an economic shock (drought, flood, market price hikes) and/or project interventions.			

³ SSP (South Sudanese Pound) ; 1 USD = 2.95 SSP as of XXX

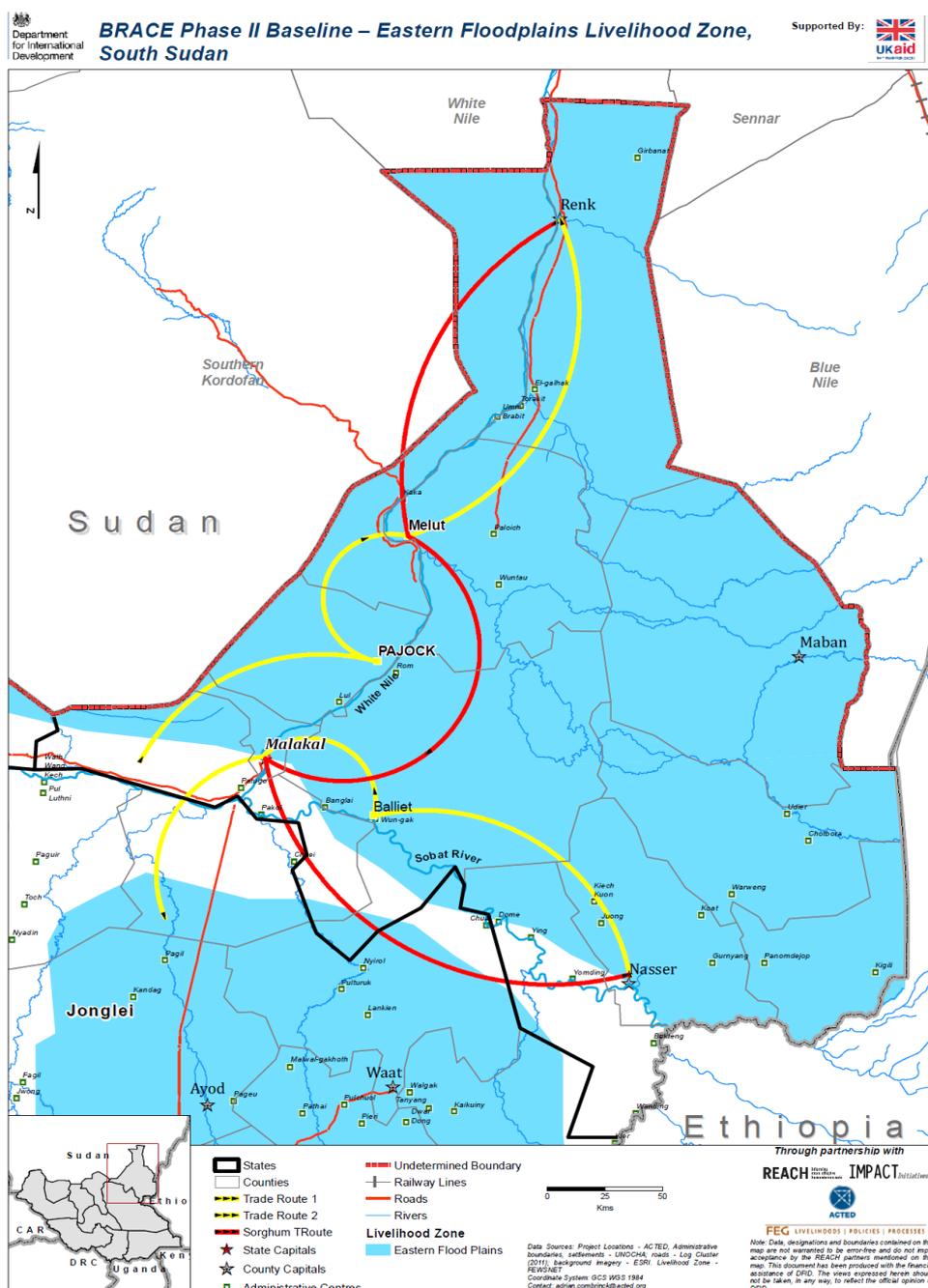
EASTERN FLOOD PLAINS LIVELIHOOD PROFILE

By Kahsay Woldeselassie

ZONE DESCRIPTION

The Eastern Flood Plains Livelihood Zone (LZ) is located in the northeast corner of South Sudan. It covers two states: Upper Nile and Jonglei. These states share an international border with Sudan as well as with Ethiopia. Several counties fall in the zone, including Nasir Maiwut, Melut, Longochuk, Maban and Baiet. For this study, the assessment was concentrated in Upper Nile State where the BRACE activities are being undertaken. The zone is home to several different agro-pastoralist groups. The Nuer are the most dominant but the Dinka, Shilluk, Maban and Burun people also live in the zone.

Map 1 – Eastern Flood Plains Livelihood Zone



A major road crosses the zone from Malakal (the state capital) to Renk, an area of large-scale commercial farming on the northern border with Sudan. There is another major road that goes from Malakal (in Upper Nile State) through Baliet to Jonglei State. The only other major physical assets in the zone are oil fields. Only one town, Melut, has 24-hour electricity. Overall, services and infrastructure are still very limited in the zone.

The agro-ecology of the zone is lowland plains covered in savannah grassland, bush and scattered trees. Soils are a mix of loam, sand and clay-loam. The most significant natural asset in the zone is the Nile and Sobat Rivers. The rivers are a key resource for transportation and fishing as well as for livestock production. River fishing itself takes place during the dry season by men, women and children from all wealth groups. During the rains, when the rivers overflow their banks, families fish in the swamps and ponds. Not all households have sufficient tools for fishing. Nonetheless, those without fishing equipment can usually rent the tools they need through village networks. Payment for use of the tools is in-kind (i.e., a portion of the catch). Small wooden boats are also used for fishing and transportation. The other natural assets in the area are the wide variety of wild seeds, tubers and fruits that are gathered by all households year in year out. This natural harvest is typically expanded during years of low crop or milk production.

There is a single rainy season in the Eastern Flood Plains that lasts from May to October. Annual rainfall is usually 1,000 -1,500 mm. Agriculture is rain-fed; hence there is typically a single cropping season. Sorghum, maize, cowpeas, pumpkin and okra are the principal crops grown for food and sale by all households. Better-off households also grow tobacco for their own use as well as for cash income. Production is relatively low as cultivation is by hand. Draught power by oxen or donkey is not used.

Livestock production complements farming, fishing and gathering. Cattle, goats and sheep are kept by most households, mainly for milking and also for sale when cash needs arise. Livestock are not herded great distances but in the dry season, young men and women are assigned by the elders to travel with the herd to the *toic* (swampy riverine areas). Livestock have important social as well as economic functions in the lives of the villagers, and play an especially important role as bride wealth in marriages. The constraints to livestock production are mainly disease related. Trypanosomiasis, black leg, foot-and-mouth disease, PPR, and pneumonia are the most common health problems affecting livestock in the zone.

MARKETS

Food purchases from the market are affected by both market access and food availability. Access is typically poor in Upper Nile State as there are few all-season roads. During the rainy season, roads are often washed out and villages are usually inaccessible by vehicle for about seven months of the year. This affects trader flow as well as raises the cost of goods. With regards to food availability, sorghum, the staple grain, is supplied to local markets from local farms. Sorghum is also imported from neighbouring Sudan. Maize and cowpeas are also supplied locally although these items are not usually available from March to August. Prices for the staple foods fluctuate greatly during the year due to the poor condition of road infrastructure combined with limited access to cross-border trading with Sudan. During the baseline assessment, some households paid SSP 7-12 / kg of sorghum between June-August 2012 when prices hit their peak. By contrast, post-harvest, at the end of 2011, sorghum sold for SSP 3 / kg. Wheat flour and other non-staple foods are imported from neighbouring Ethiopia. Other goods, such as household items, are typically imported from Ethiopia, Sudan and Kenya. A few commodities are sourced from Uganda through intermediate markets such as Juba.

Fish is an important commodity in the zone that is sold locally and is also exported. Fresh fish is available throughout the year in all local markets. Dry fish, by contrast, is sold only during the dry season. The main intermediate market for exporting dry fish north to Sudan is Nasir town. Nasir town is a major hub for fish traders coming from neighbouring livelihood zones or across the border where dried fish is packed and transported by river to Sudan.

Cattle, goat and sheep are traded in the local market. There are two main trade routes for livestock (see Map 1, page 7). The first route is north along the White Nile passing through Melut to Renk (Fagag → Pajok → Melut → Renk). The second route is along the Sobat River through Nasir → Baliet → Malakal → Jonglei. The trade route for sorghum is

Renk → Melut → Malakal → Nasir. This route follows both the White Nile and the Sobat Rivers. Both the South Sudanese Pound (SSP) and the Ethiopian Birr (ETB) are functional currencies particularly in counties bordering Ethiopia.

SEASONAL CALENDAR

There are three main seasons in the Eastern Flood Plains livelihood zone. The main rainy season is between May and October. This is followed by a wet-dry season from November to January and then the dry season from February to April. The crop cycle begins with land preparation in April and May, followed by planting of sorghum and maize at the end of May and into June. By August, maize is typically ready to be eaten fresh (or green) from the fields. The harvest starts in October and carries on into November. If there is a late onset of rain, the sorghum harvest may extend into January (see Table 4, next page).

Milk production is highest during the rainy season when grass is plentiful. The main heat period for livestock starts after the germination of grasses during the rainy season. Livestock sales are common throughout the year but sales increase during the rainy season from July to August as more households need cash to purchase food. Livestock migration occurs during the dry season within the livelihood zone from *gok* (elevated areas) to the *toic* (swampy areas). Livestock return to their *yom* (settlement area) during the first rains.

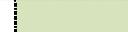
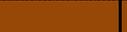
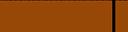
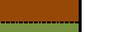
Other productive activities also have defined seasons. The sale of firewood and grass for cash income occurs mainly during the dry season. Wild foods like *thou* (desert date), *lang* (*ziziphus* fruit) and *koat* or *cuei* (tamarind seed) are typically collected by the very poor and poor households for consumption and cash income between November to April (the wet/dry season). Fishing from the rivers is also most frequent from November to April. During the wet season, fishing activities switch to swamps and ponds instead of directly from the river.

Diseases such as malaria typically peak during the wet season from May to October. By contrast, water-borne diseases are highest in the dry season when water is scarce.

Table 4: Eastern Flood Plains Seasonal Calendar

Legend

Rainfall:  Cons. Green:  Harvest:  Weeding:  Planting:  Shoats:  Cattle and Shoats:  Cattle: 

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Rainfall												
Maize												
Sorghum												
Cowpea												
Tobacco												
Okra												
Pumpkin Seeds/Leaves												
Labour Employment												
Charcoal and Firewood												
Grass Sale												
Livestock Sale												
Bartering												
Milk Production												
In heat Period												
Livestock Births												
Wild Foods (<i>thou</i> /desert date)												
Wild Foods – <i>lang</i> (ziziphus)												
Wild Foods – <i>koat</i> (tamarind)												
Fishing	RIVER					FLOOD	AND	POND				
Malaria												
Hunger Season												
Food Purchase												

WEALTH BREAKDOWN

Wealth is primarily defined by the ownership of livestock as well as access to labour for land cultivation. A wealthy household is also a large household as only a wealthy man can afford to pay a bride wealth in cattle to his wife's family. Better-off and middle-income men usually marry two or more wives whereas very poor and poor households are typically comprised of one husband and one wife. Although livestock ownership is correlated with wealth, actual herd sizes fluctuate from year to year depending on weather outcomes, disease incidence and the incidence of raiding. Communities indicated that better-off households in the zone may own herds of 50-100 head of cattle. However, during the reference year, average household herd sizes were lower, typically in the range of 10-30 head for better-off and middle-income households. The lower numbers are due to a dry year in 2011 as well as a high incidence of raiding. With access to more family labour to cultivate bigger fields, better-off and middle-income households cultivated on average 1 – 2.5 ha (2-6 *feddan*) of land in the reference year. This generally produced sufficient food to sustain the household for 6-8 months in 2011-2012. Their assets also include sufficient fishing nets (3-7), hooks and spears to enable fishing from rivers and ponds during most of the year.

Poverty is associated with few assets and consequently with lower production and income. In the Eastern Flood Plains, communities defined the poor and very poor as those who cultivate about 0.5 – 1 ha (1.5 – 2 *feddan*) of land. Crop diversity on poor household farms is similar to the crop mix on better-off households' land. However, production by the poor is on a lower scale. In the reference year, the poor produced food sufficient to sustain the household for 5-6 months of the year. In terms of assets such as fishing nets and other gear, the poor own very little. As a result, the poor collect fish mainly from swamps where they fish using basic spears. Moreover, cattle holdings are very low even though cattle are the backbone of Dinka social relations. The very poor typically do not own any cattle at all. Poor households have small herds of about 3-5 head of cattle as well as 2-10 goats and 1-5 sheep.

Table 5: Eastern Flood Plains Wealth Breakdown

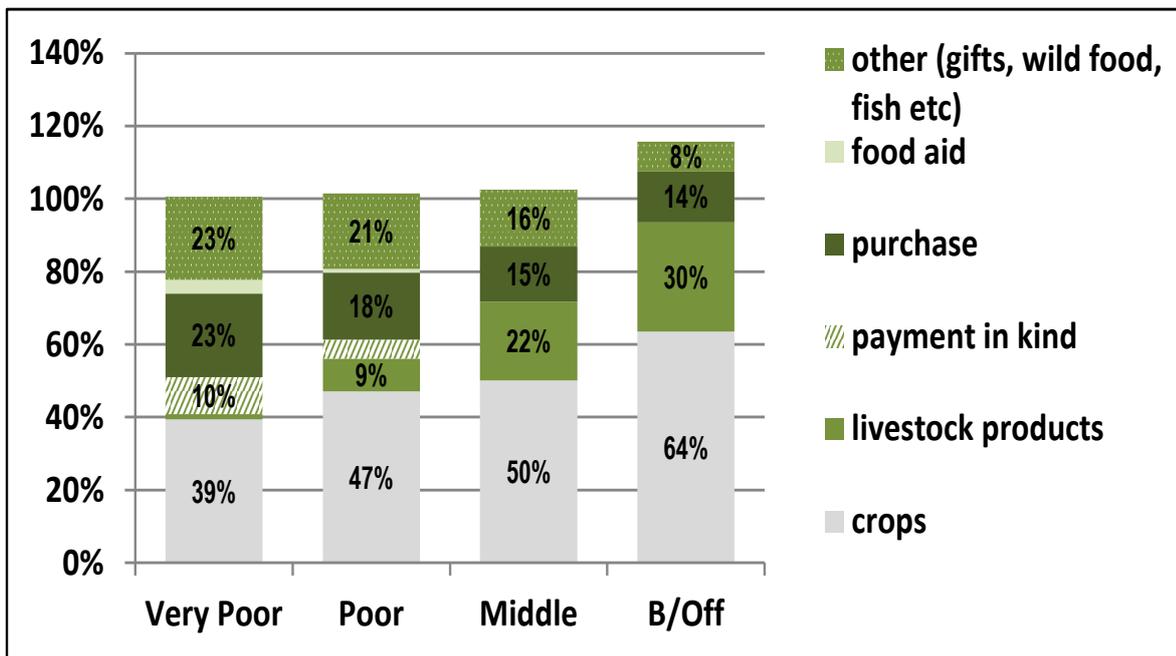
Wealth Group Characteristics					
Wealth Group	Proportion of population belonging to Wealth Group	HH Size	Land Area Cultivated	Crops Cultivated	Livestock/Asset Holding
Very Poor	30%	3-5	1-2 feddan	Sorghum, maize, cowpea, pumpkin, okra	0-1 cattle, 4-6 goats, 1-2 sheep, 4-6 hens, 0-1 fishing nets, 1 hook
Poor	28%	4-6	2 feddan	Sorghum, maize, cowpea, pumpkin, okra	2-6 cattle, 6-10 goats, 2-5 sheep, 6-8 hens, 1-2 fishing nets, 1-3 hooks
Middle	25%	6-8	3-4 feddan	Sorghum, maize, cowpea, pumpkin, okra	6-20 cattle, 10-20 goats, 5-15 sheep, 8-15 hens, 2-4 fishing nets, 2-4 hooks
Better-off	17%	8-14	4-6 feddan	Sorghum, maize, cowpeas, pumpkin, okra, groundnuts, tobacco	20-30 cattle, 20-35 goats, 15-25 sheep, 15+ hens, 4-6 fishing nets, 4-6 hooks

1 *feddan* = 0.42 hectare

SOURCES OF FOOD – 2011-2012 (BELOW AVERAGE YEAR)

Graph 1: Eastern Flood Plains Food Sources

Food access is expressed as a percentage of minimum food requirements (2100 kcals per person per day).



Sorghum, maize and cowpeas are the major crops cultivated and consumed by all wealth groups in the Eastern Flood Plains. During the pre-project reference year (September 2011 to August 2012), crop production was reportedly below-average. Nonetheless, middle-income and better-off households produced sufficient crops to meet about 50-65 percent of their annual food needs. Very poor and poor households produced about 40-50 percent of their food needs from own crops. Of this, 75-80 percent of own-crop production was from sorghum and maize production alone.

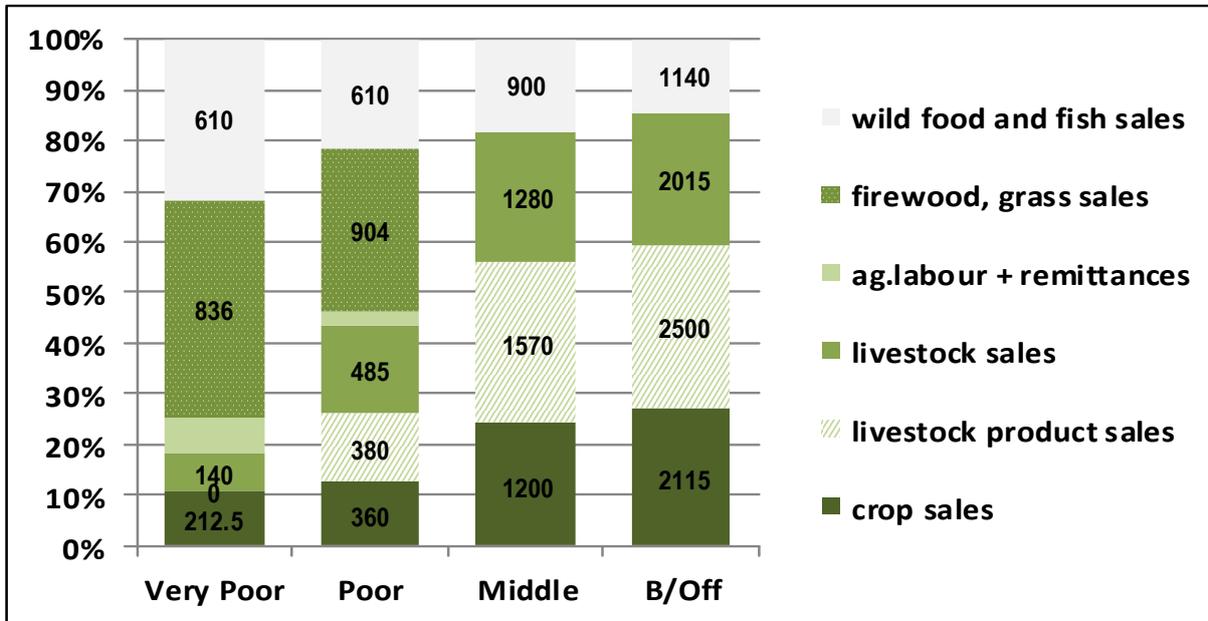
To supplement crop production, the very poor and poor secure food from agricultural labour (paid in kind), market purchase, wild food, and fish. The work of fishing is mainly carried out by very poor and poor households. They use nets and hooks owned by the better-off and in return, pay the owners a portion of the catch. Wild food consumption expands and contracts depending partly on crop outcomes. In the pre-project baseline year, wild food consumption was relatively high, comprising 12-16 percent of the very poor and poor households' annual food needs. There are many different types of foods gathered from the bush. The most prominent are *thou* or *lalop* (desert date), *lang* (dried fruit from the ziziphus tree) and *koat* (tamarind seed). All wealth groups eat fish and wild foods but the proportional importance varies. For the better-off and middle-income groups, wild foods comprised five to ten percent of their annual food needs; fish added another five percent. For these households, milk is the main supplement to own crops. In the pre-project year, milk provided 20-30 percent of their annual food needs. By contrast, for the very poor, milk contributed just 1 percent. Meat consumption is minimal for all wealth groups. Better-off households slaughter livestock during social celebrations at which time the meat is consumed communally. Overall, meat consumption was 1 percent of the annual food needs of better-off households (0-0.4% for all other households).

SOURCES OF INCOME – 2011-2012 (BELOW AVERAGE YEAR)

Milk and livestock sales were the primary sources of income for the better-off and middle-income households. In the baseline year, 25-33 percent of the milk produced was sold. Four to seven cows were typically milked during the year as well as approximately 6-10 goats. To raise additional cash for basic goods, the better-off wealth groups sold one to two cattle and about two each of sheep and goats during the year. Supplemented with crop sales and some fish sales, income earned during the year amounted to an estimated SSP 700 per capita for better-off and middle-income households.

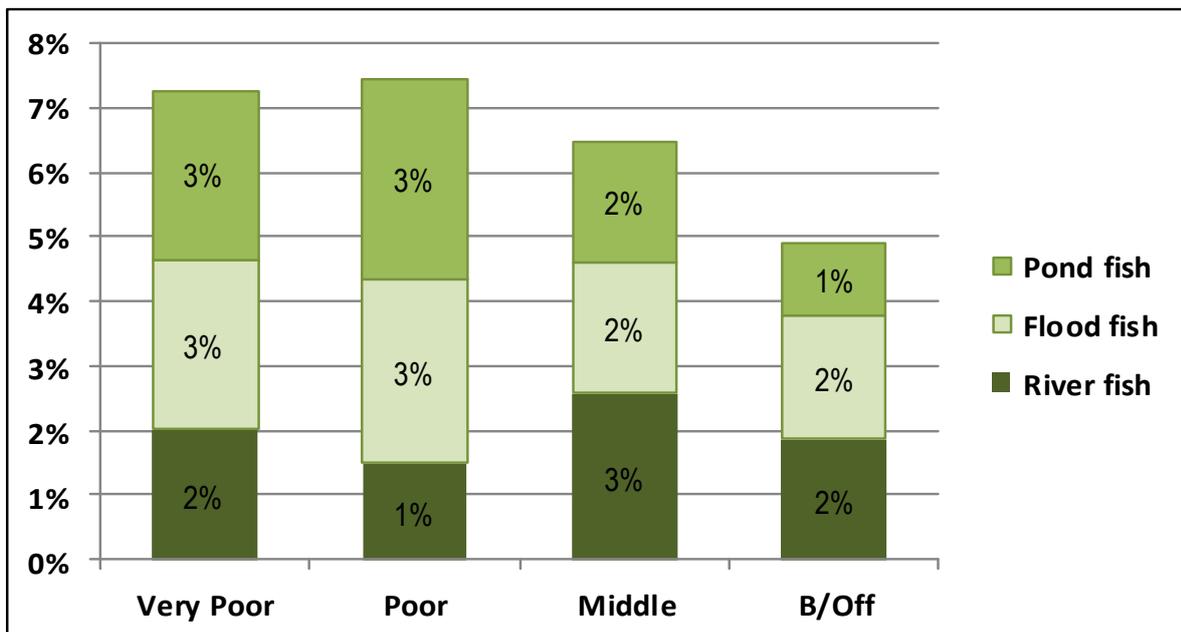
During the baseline year, very poor and poor households earned about SSP 450-500 per capita. Their primary sources of income were fish sales and grass sales. Income was typically earned from different income sources during the year including: fish sales, agricultural labour, firewood and grass sales, crop sales and sales of wild food. The very poor earned no income from milk sales and typically sold just one goat or sheep in the baseline year.

Graph 2: Eastern Flood Plains Income Sources
A proportional breakdown of total cash income (in SSP) according to income source



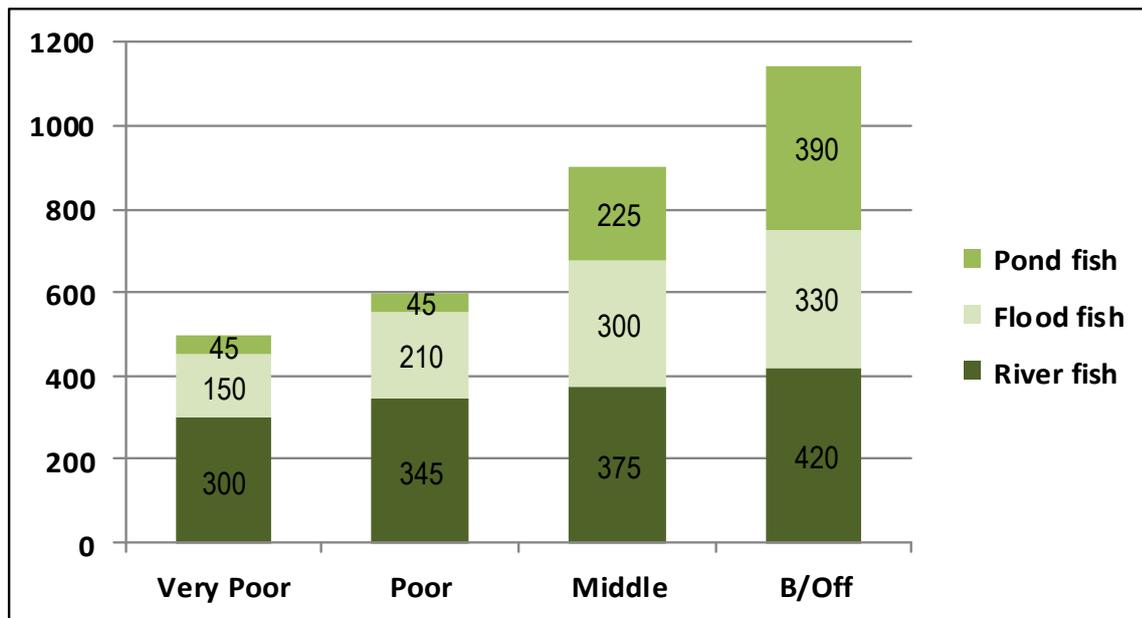
In the 2003 baselines, the pattern of income generation was similar to the 2011-2012 reference year. Poorer wealth groups earned most of their income from “petty trade” (in the graph above, this trade is noted as firewood and grass sales). Better-off households earned more from crop sales in 2011-2012 than in 2003 but in both baseline assessments, their greatest income was derived from livestock and milk sales.

Graph 3: Eastern Flood Plains Fish Access - % Fish to Annual Household Food Needs, 2011-2012



In general, the contribution of fish to annual household food needs decreases with wealth, although difference between wealth groups is relatively small. For all wealth groups, fish provided about five to eight percent of household annual food needs. The proportional importance of river fishing is highest for the middle and better-off groups. Typically, they have nets suitable for river fishing. By contrast, pond and swamp fishing is proportionally a more important food source for the poorer as most families own a spear or two to catch fish in swamps.

Graph 4: Eastern Flood Plains Fish Income - Cash Income earned from Fish Sales in SSP, 2011-2012

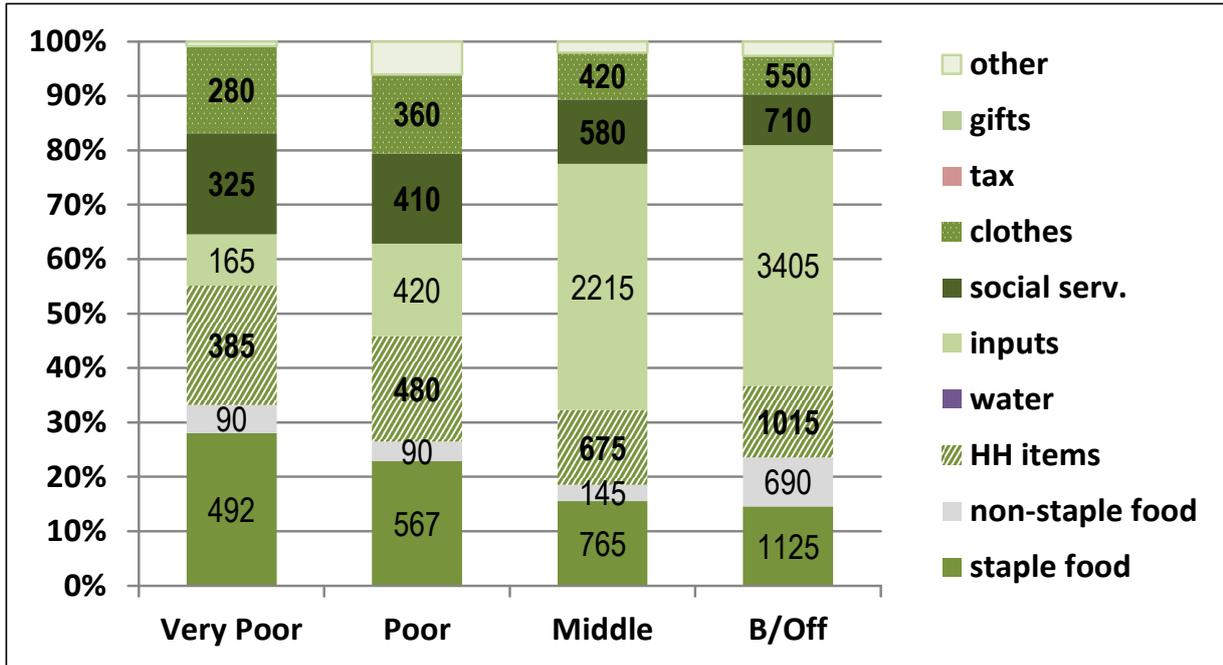


Graph 4 shows that income from fish sales increases in real terms by wealth group. At first glance, this suggests that poorer families eat more of their catch whereas better-off and middle-income households can afford to sell more of their catch. However, when analysed on a per capita basis, the very poor, poor and middle-income households earned approximately SSP 125-130 per person per year from fish sales whereas the better-off earned a lower amount, SSP 105 per person per year. The reason why per capita earnings are lower for better-off households is due to their larger household size. Typically better-off households have 10-12 family members compared to 7-8 members in middle-income households; 4-5 in poor households; and 3-4 in very poor households. Thus, in per capita terms, fish earnings are actually quite similar for all wealth groups indicating that in the reference year, patterns of fish consumption and sale (per capita) were similar across wealth groups.

EXPENDITURE PATTERNS – 2011-2012 (BELOW AVERAGE YEAR)

During the 2011-2012 baseline year, food purchases made up approximately 33 percent of the annual expenditures of very poor households of which 29 percent was on staple grains. By contrast, only 14 percent of the annual expenditures of better-off households was on staple grain; total staple and non-staple food purchases constituted 24 percent of their annual expenditures in the baseline year. Hence, one important difference between wealth groups is the proportion of cash spent on staple and non-staple foods. In better-off households 10 percent of annual expenditures went on non-staple food. By contrast, in very poor households, the proportion was only 5 percent. Non-staple food purchase includes items such as oil, sugar, beans and wheat flour. Typically, oil and sugar were not purchased during the year by the poor and very poor households.

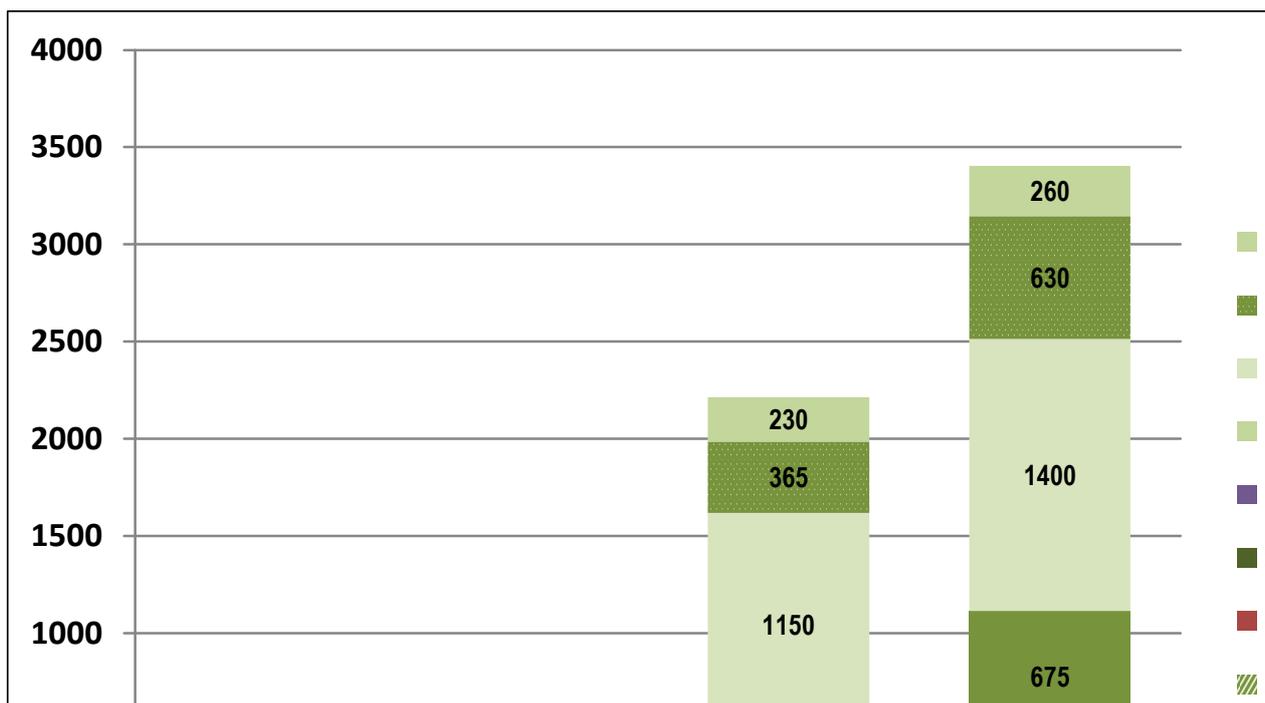
Graph 5: Eastern Flood Plains Expenditure Patterns
Proportional breakdown of total cash expenditure in SSP by wealth group



There was a significant difference in spending on livelihood inputs by the different wealth groups during the year. Middle-income and better-off households spent about SSP 275-320 per capita per year on livelihood inputs. This compares to SSP 40 spent per capita by the very poor. Fishing nets, hooks and spears are major input expenses for the middle-income and better-off households. In addition, wealthier households spent more money on agricultural labour. Typically, they paid labourers for land preparation, weeding and harvesting.

Spending on social services was relatively low for all wealth groups and ranged from 10-20 percent of annual expenditures. Proportionately, social service spending was lowest for the better-off. Per capita spending was approximately SSP 65-80 over the year for all wealth groups. This may reflect the limited education and medical services available in the livelihood zone. Other expenditures during the year include household items, social celebrations, local beer and tobacco.

Graph 6: Eastern Flood Plains Livelihood Input Expenditures
Breakdown of livelihood input expenditure in SSP by wealth group



The table of expenditures below highlights the patterns shown in the Graphs 5 and 6. In addition to staple and non-staple food spending by the poor and very poor, soap is another key expense, as is clothing. Notably, during the baseline year, very poor, poor, middle-income and better-off households spent similar amounts on tea as they did on school (including fees, uniforms and books).

Table 6: Eastern Flood Plains Annual Expenditures in SSP by Wealth Group, 2011-2012

<i>Expenditures in SSP</i>	<i>Very Poor</i>	<i>Poor</i>	<i>Middle</i>	<i>Better-off</i>
Staple Foods	492	567	765	1125
Non-staple Foods	90	90	145	690
Tea	105	115	170	240
Salt	90	120	130	200
Soap	100	105	125	235
Utensils	65	90	140	220
Animal Drugs	30	65	140	300
Seeds	55	75	100	140
Fertilizer	0	0	0	0
Labour	0	0	230	675
Livestock purchase	0	75	1150	1400
Agricultural tools (hoes etc)	10	120	365	630
Fishing equipment	70	85	230	260
School (fees, uniforms, books)	110	160	180	240
Medicine (treatments, doctor`s fees)	215	250	400	470
Clothing	280	360	420	550
Transport	0	0	0	0
Other Items	15	150	100	200

One interesting observation about expenditures is that in the Eastern Flood Plains zone, households from all wealth groups did not incur transport expenses. The zone is relatively isolated from good road networks. Hence, households travel mainly on foot or by boat. By contrast, in the Nile & Sobat Rivers Zone, households are closer to Malakal, the capital for Upper Nile State. Hence, the local population has better access to the transport network associated with the capital hub leading to more transport expenses (see table on page 23).

HAZARDS

Drought, livestock disease, and pests are the major hazards affecting crop and livestock production. Stock borer aphids, crickets and birds are the major pests affecting food crops. Trypanosomiasis, pneumonia and foot-and-mouth disease (FMD) are the major diseases that affect livestock in the livelihood zone. Erratic rainfall such as late onset, or uneven rainfall distribution as well as excessive rainfall and flooding are the principal climatic hazards that affect both livestock and crop production and that leads to food insecurity for households at risk.

COPING STRATEGIES

In response to shocks, households employed different response strategies based on their wealth status. Better-off and middle-income households typically increased the sale of livestock or bartered cattle for grain. They also reserved any crops harvested or fish caught (including dried fish) for own-consumption rather than for sale. Another strategy was to minimise expenditure on clothes and some household items.

Poor and very poor households cope with a shock in different ways than wealthier households. Typically, poorer households increased fishing and wild food collection to help make up food gaps from poor crop production. Another strategy was to increase sales of firewood and grass to raise income for food purchases. Finally, young men may migrate to urban areas in neighbouring Ethiopia in search of work. The poor also tried to secure gifts or loans from better-off clan members and relatives.

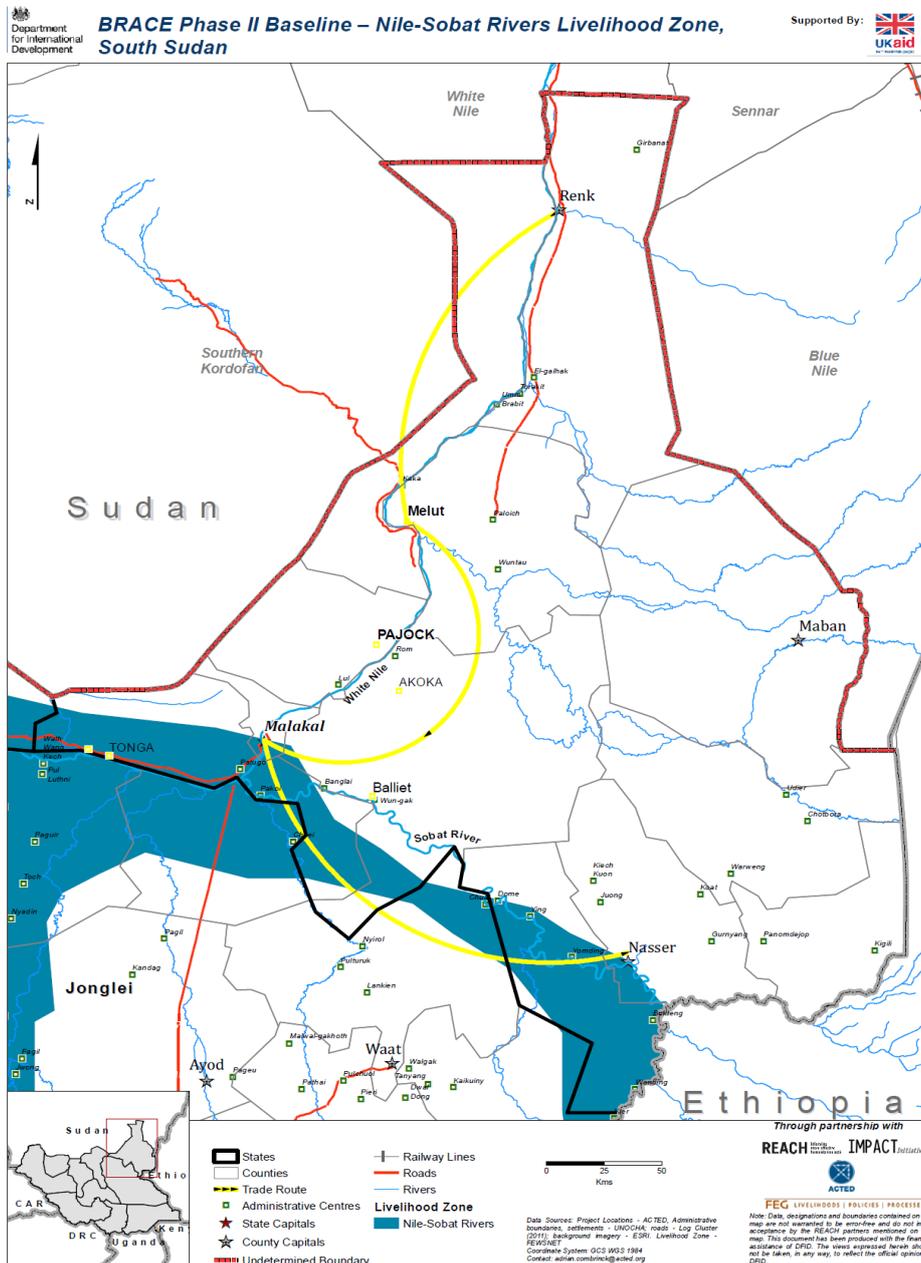
NILE AND SOBAT RIVERS LIVELIHOOD PROFILE

By Kinfe Terefe

ZONE DESCRIPTION

The Nile and Sobat Rivers Livelihood zone (LZ) is a horse-shoe shaped zone in north-central South Sudan that follows the course of the Nile, Sobat and Pibor Rivers. The zone itself covers several states: Upper Nile, Unity, Lakes, and Jonglei. This study has a more narrow geographical focus. It concentrates on the small part of the zone that falls in Upper Nile State where BRACE project activities are located. The HEA baseline study covered four counties in Upper Nile State: Panyikang, Makal, Ulang, and Akoka. There is a major road connecting the state capital Malakal with the South Sudan-Ethiopia border town of Nasir. Otherwise, physical infrastructure (including roads, market infrastructure, health facilities, schools and clean drinking water) is limited notwithstanding the oil wells that are found throughout the livelihood zone.

Map 2: Nile and Sobat Rivers Livelihood Zone



The Dinka, Nuer and Shilluk people of the Nile and Sobat Rivers have an economy based on four key elements. During years of relatively good rainfall, agriculture is the principal economic activity but cropping is supplemented by livestock production, fishing and gathering. The rivers are the zone's major natural asset. Fishing takes place towards the end of the rainy season in the swamps. As the river waters subside, people fish from the rivers directly. The riverine area also provides essential pasture, browse and water for livestock. This grazing area is communal.

The Nile and Sobat Rivers Zone is a lowland area, susceptible to flooding, with mainly clay soils. Agriculture is rain-fed (rather than irrigated from the river) and depends on the outcome of the single rainy season that lasts from May to October. Rainfall amounts typically range from 1,000-1,500 mm per year. Sorghum and maize, supplemented with pumpkin, cowpeas and some sesame, as well as garden vegetables such as okra, tomatoes and cabbage, are the principal crops grown by all households. Cultivation practices are simple: the land is cleared of bush or crop residues and seeds are scattered. Very little weeding is done and key informants had great difficulty in estimating the size of land that they cultivate. The common measurement for land in the area is *feddan* which is almost equal to half a hectare.¹ Farming is carried out with hand tools so the amount of land cultivated by a household is determined by how much labour – either family or hired – the household can access and/or can afford. There are no specific crops grown for cash per se but households do sell their crops at markets when these are accessible.

Better-off households keep relatively large herds comprised of cattle, goats and sheep. All types of livestock are milked and the milk is consumed at home as well as sold and/or given to the poor. Villagers do not migrate far distances with their livestock as both water and pasture are relatively plentiful along the rivers. Livestock are sold when cash is required and bartering also occurs occasionally.² Livestock are mainly used for dairy and for sale, as well as to pay the bride wealth in marriage. Rearing livestock for transportation is not common in the zone. Items that need to be transported either to or from markets are simply carried manually, even across long distances.

MARKETS

In the Nile and Sobat Rivers zone, main roads are seasonal and market access is often difficult. Most villages are inaccessible by vehicle during the rainy season. Moreover, the local population does not use pack animals to transport goods. The absence of pack animals places a particular burden on women as they are responsible for transporting water, food and other items purchased in urban areas. Women usually carry these items on their backs and heads, sometimes walking for several days. During the rainy season, the main means of transport of marketable commodities are boats or small ships that travel up and down the Nile and Sobat Rivers. Only villagers along the main road that crosses the county from Malakal to Nasir (on the Ethiopian border) benefit from access to main town markets throughout the year.

The major markets in the livelihood zone are the county towns of Malakal, Akoka, Ulang and Panyikang (Tonga). The major trade routes are Renk → Malakal, and Malakal → Nasir (see Map 2, page 17).

Every day is a market day in the livelihood zone. Local markets see a seasonal supply of locally produced sorghum, maize and cowpeas from September to January as well as milk from July to January. Local fish and livestock are also sold in village markets. During bad years as well as during the months preceding the local harvest, sorghum is brought in by traders from neighbouring agricultural areas, such as Renk in Upper Nile State or from Gambella across the border in Ethiopia. Traders also collect sorghum from local markets as well as fish at river-side collection points from where they transport the goods to larger markets in Nasir or Malakal. The main food and non-food commodities available in local markets include sorghum, wheat flour, tea leaves, okra, meat, milk, sugar, salt, oil, clothes, imported soft drinks,

¹ The amount of land that is a *feddan* should always be closely checked in the field. It is recommended to pace out the area as locals debate the size with a range from 'half' to 'one and a half' *feddans*. The term *feddan* originates from Sudan where it is applied more for "piece work" and the area to be worked in a day for a given sum/reward.

² Bartering was more common prior to the Comprehensive Peace Agreement when the cash economy was extremely limited.

and small quantities of soap, utensils and tools. Charcoal and grass are also commonly sold in local markets by poorer households.

Bartering used to be widespread but cash transactions are now the most common form of exchange. Nonetheless, the bartering system is still practised in the livelihood zone. Typically, livestock are exchanged for sorghum. Additionally, livestock are exchanged for other types of livestock (e.g. males for productive females).

Labour opportunities outside of local agricultural work are very few in the livelihood zone. Despite this, labourers do not typically migrate away in search of work but instead stay within the zone.

SEASONAL CALENDAR

The seasonal calendar in the Nile and Sobat Rivers Zone unfolds in a similar way as in neighbouring Eastern Flood Plains (EFP). The rainy season typically starts in May and continues until October. These rainfall patterns determine the cropping calendar. Land preparation is carried out in April generally just before the onset of rain or when the first signs of the approaching rainfall season are seen. This is followed by planting as the rains begin. Green consumption of maize normally begins in August and lasts for about one month. Vegetables such as okra, cabbage and pumpkin, as well as early maturing maize, are ready in September for harvest. Other early maturing crops, such as cowpeas and sesame as well as some varieties of sorghum, are harvested in October. Late maturing sorghum is not harvested until December or January although some may be eaten fresh (or green) in November. A second crop of okra is often harvested in April.

Livestock production also follows the rainy season. The best time for births is once pasture is established around July. The milking season peaks for several months (July to December) but from January milk production becomes very low or negligible. Livestock sales are highest when cash needs are highest, typically between March and July, when farmers need to pay for agricultural inputs (including labour) and purchase food from the market.

During the wet/dry season and into the dry season, households supplement their own crops with fish as well as with seeds, tubers and fruit gathered from the bush. Swamp and pond fishing is carried out in August and September (during the rains) but households switch to river fishing once water levels subside around January. Fishing typically continues until April. This period – January to April/May – is also when households supplement their diet with wild foods. A wide variety of bush foods are available for harvest. The most common of these – *thou* (desert date), *buaw* (wild tuber), *nur*, *koat* (tamarind fruit), and *lew* – are typically gathered and consumed from January to May.

Food purchases are highest between March and July. Cash income to buy food is earned in part through sales of grass, charcoal and firewood. Cash or food is also earned from agricultural labour during this period. The harvest period (September-January) is when demand for local labour peaks.

Table 7: Nile and Sobat Rivers Zone Seasonal Calendar

Legend

Rainfall: ■ Cons. Green: ■ Harvest: ■ Weeding: ■ Planting: ■ Shoats: ■ Cattle and Shoats: ■ Cattle: ■

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Rainfall												
Land Preparation												
Maize												
Sorghum												
Sesame												
Cowpea												
Cabbage												
Okra												
Pumpkin Seeds/Leaves												
Labour Employment												
Charcoal and Firewood												
Grass Sale												
Livestock Sale												
Milk Production												
In heat Period												
Livestock Births												
Wild food - <i>Thou</i> /desert date												
Wild food - <i>buaw</i> (tuber)												
Wild food - <i>koat</i> (tamarind)												
Wild food - <i>Lew</i>												
Fishing	PONDS			RIVER				FLOODS				
Livestock Disease												
Hunger Season												
Food Purchase												

WEALTH BREAKDOWN

In the Nile and Sobat Rivers Zone, about 50 percent of households are considered either very poor (23 percent) or poor (27 percent). Those categorized as very poor or poor are low income earners with few assets. In the pre-project year, crop production provided staple food for about five months of the year. Communities described the very poor and poor as households who typically cultivate about half a hectare (or 0.75 – 1.25 *feddans*) of land. Most own a few (one to five) cattle for dairy, and some of the poor may also own an ox. In addition, the majority of the poor own some small livestock (one to five goats and one to five sheep). Most poor do not own fishing nets but do have a few fishing hooks or a fishing spear. By contrast, those who are considered middle-income and better-off in the community typically cultivate about 1-1.5 hectares (2 - 3.5 *feddans*) of land from which they produce sufficient food to sustain the household for 8-10 months of the year in an average production year. The majority of middle-income and better-off households own a pair of oxen or two as well as approximately 5-15 cows (middle-income) or 15-25 cows (better-off). Annual household income is about two to three times greater than the income of the poor. However, the better-off support larger households (eight to ten members compared to five to six household members in poor households). Middle-income and better-off households comprise about 50 percent of **households** in the zone. This proportion rises when household size is taken into consideration. Given bigger household sizes, the wealthier groups are an estimated 61 percent of the **population** (19 percent are from better-off households and 42 percent are from middle-income households).

Table 8: Nile and Sobat Rivers Zone Wealth Breakdown

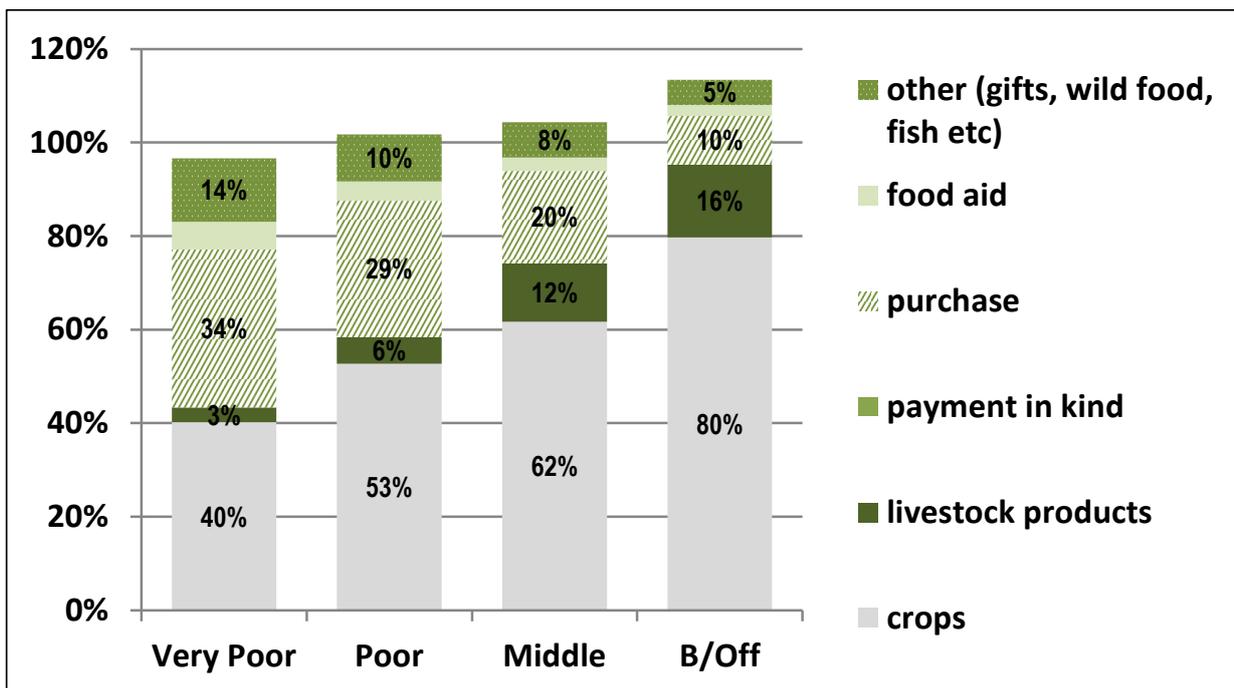
Wealth Group Characteristics					
Wealth Group	Proportion of population belonging to Wealth Group	HH Size	Land Area Cultivated	Crops Cultivated	Livestock/Asset Holding
Very Poor	23%	4-6	0.5-1 feddan	Maize, sorghum, cowpeas, sesame, pumpkin, okra	1-3 cattle, 1-3 goats, 0-3 sheep, 2-4 hens, 0-1 fishing spear
Poor	27%	5-7	1.01-1.5 feddan	Maize, sorghum, cowpeas, sesame, pumpkin, okra	3-5 cattle, 3-6 goats, 3-5 sheep, 4-6 hens, 1 fishing spear
Middle	37%	7-9	1.51-2.5 feddan	Maize, sorghum, cowpeas sesame, pumpkin, okra, tomatoes	5-15 cattle, 6-12 goats, 5-10 sheep, 6-10 hens, 0.5-1 fishing net, 1-2 fishing spears
Better-off	13%	8-12	2.51-4.5 feddan	Maize, sorghum, cowpeas, sesame, pumpkin, okra, tomatoes	15-25 cattle, 12-20 goats, 10-15 sheep, 10-18 hens, 1 fishing net, 1-2 fishing spears

1 feddan = 0.42 hectare

SOURCES OF FOOD – 2011 - 2012 (AVERAGE PRODUCTION YEAR)

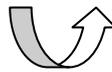
Graph 7: Nile and Sobat Rivers Food Sources

Food access is expressed as a percentage of minimum food requirements (2100 kcals per person per day)



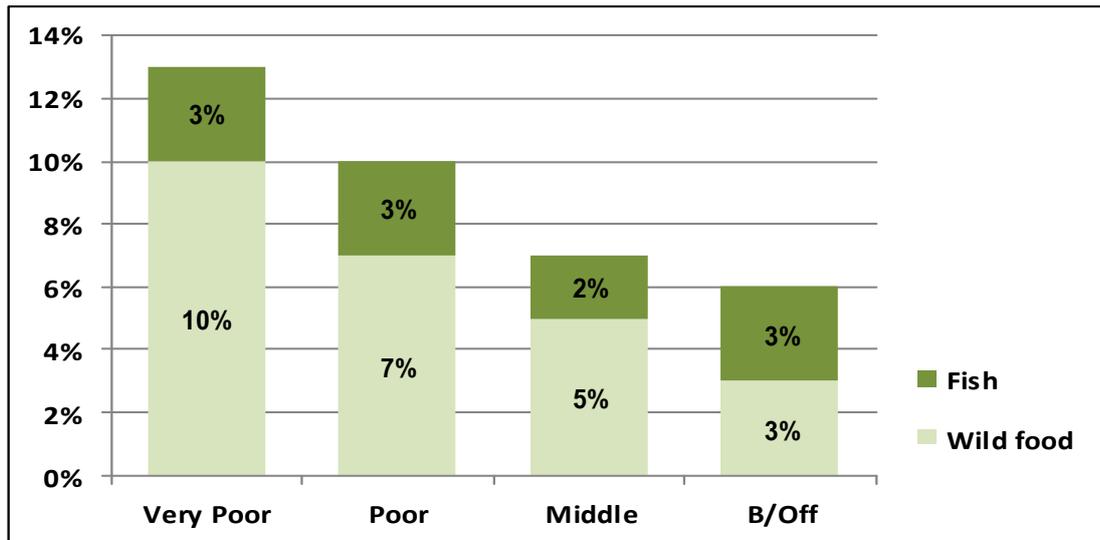
In the assessed areas of the Nile and Sobat Rivers Zone, the September 2011 – August 2012 baseline production year was rated as average. In such a year, crop production was the primary food source for most wealth groups (see Graph 7 above). Crops met 53-80 percent of the annual food needs of poor, middle-income and better-off households in the baseline year. The very poor met 40 percent of their annual food needs from the 2011 harvest. Sorghum and maize were the dominant crops. Secondary crops, such as sesame and cowpeas, met just three to five percent of the annual food needs of all wealth groups.

For the very poor and poor, fish, wild foods and market purchases were the main food sources that supplemented crop production during the baseline year. By contrast, middle-income and better-off households supplemented crop production with market purchases (10-20 percent of annual food needs) and milk (10-15 percent) as well as some fish.

 *In the 2003 baselines, food access from own-crops was much lower than in the current 2011-2012 baseline year. This may reflect the consequences of conflict prior to the CPA. In the post-CPA period, households cultivate more land. Moreover, in the surveyed villages, production in the baseline period was rated as average. Subsequently, in the pre-project year, less food was required from flexible food sources such as wild foods and fish. Food purchases in 2011-2012 also met a higher proportion of households' annual food needs than in 2003. This change likely reflects improved market conditions since the pre-CPA years.*

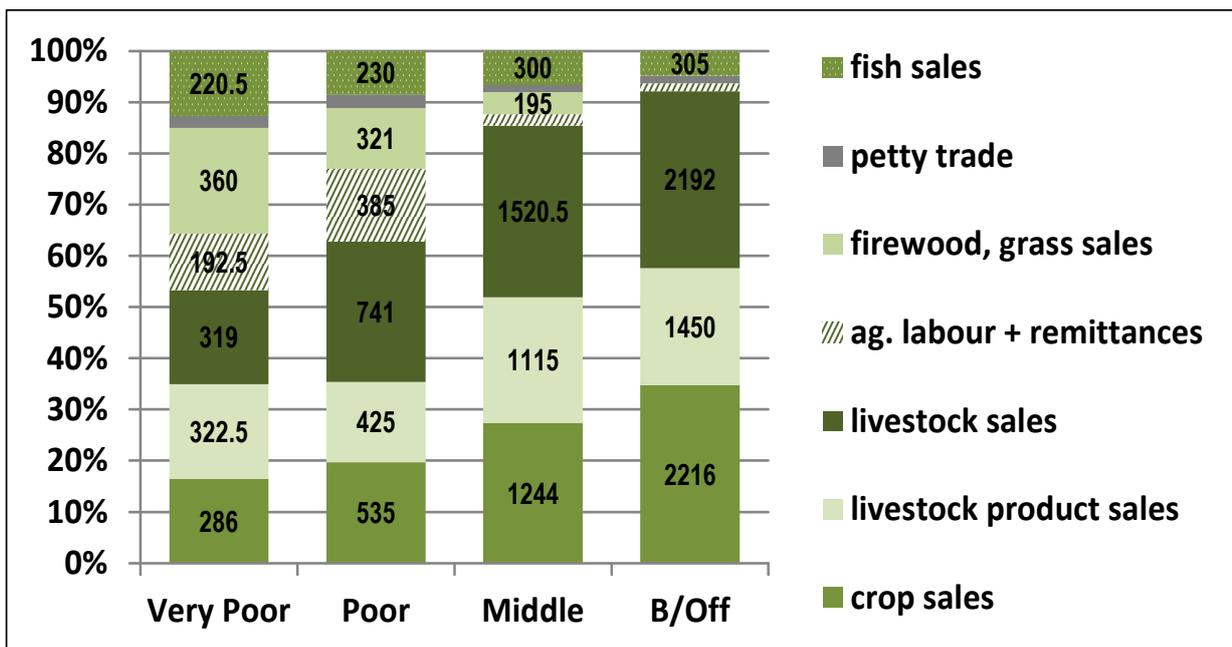
Another important source of food is wild foods like *thou* (desert date), *koat/cuei* (tamarind seed), and *buaw* (wild tuber) as well as fish. For all wealth groups, fish comprised about three percent of total annual food energy. Not surprisingly, wild foods were a more important food source for poor wealth groups than for the better-off. Graph 8 shows the percentage of annual household food needs secured through fish and wild food.

Graph 8: Nile and Sobat Rivers Fish Access
Percentage of Fish and Wild Food to Annual Household Food Needs



SOURCES OF INCOME – 2011 - 2012 (AVERAGE PRODUCTION YEAR)

Graph 9: Nile and Sobat Rivers Income Sources
Proportional breakdown of total cash income according to income source in SSP



During the baseline year from September 2011 to August 2012, middle-income and better-off households earned cash primarily from three key sources of income: (i) crop sales; (ii) livestock sales; and (iii) milk sales. Per capita, these households earned about SSP 480-580 per year from their main income generating activities. By selling some fish, middle-income and better-off households earned an additional SSP 50-80 per capita per year.

For very poor and poor households, income was earned from about seven different sources. Sales of firewood, livestock, milk, fish and crops were all important ways poorer households raised cash in the baseline year. Per capita, these households earned SSP 350-450 during the year.

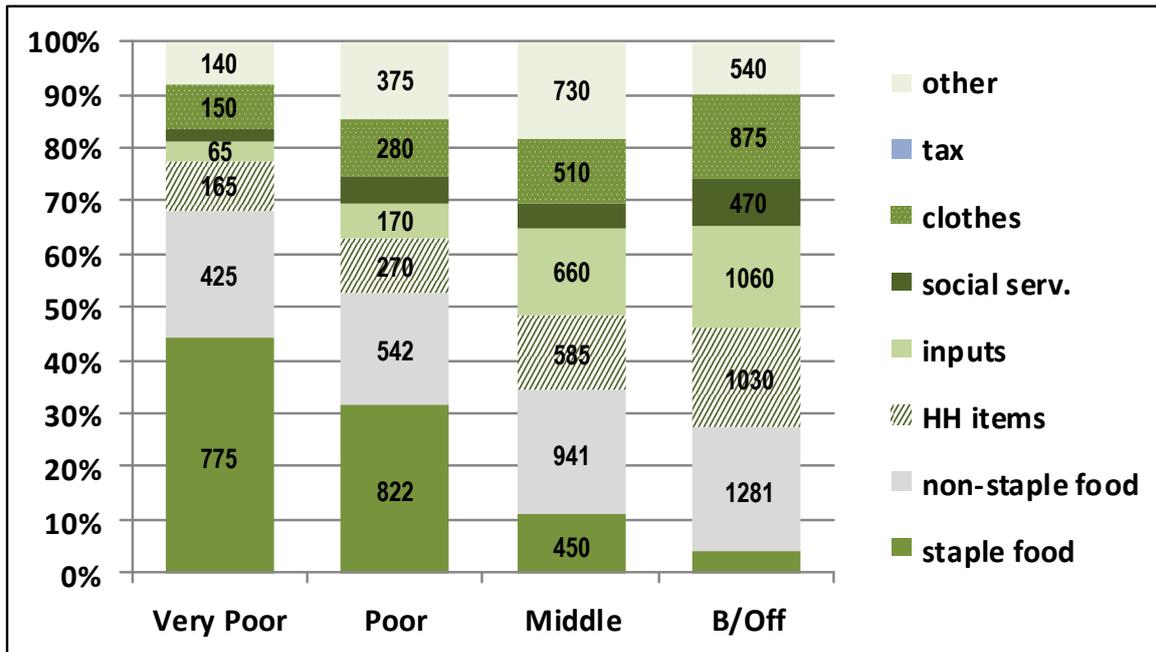


In the 2011-2012 baseline assessment, poor, middle-income and better-off households earned a much higher proportion of their income from crop sales than in 2003. In the recent assessment, the very poor and poor also earned more cash from livestock and milk sales than in 2003. They earned proportionately less from wild food and fish sales. These differences may reflect improved market activity post-CPA and improved demand for local grains and livestock products.

EXPENDITURE PATTERNS – 2011-2012 (AVERAGE PRODUCTION YEAR)

Graph 10: Nile and Sobat Rivers Expenditure Patterns

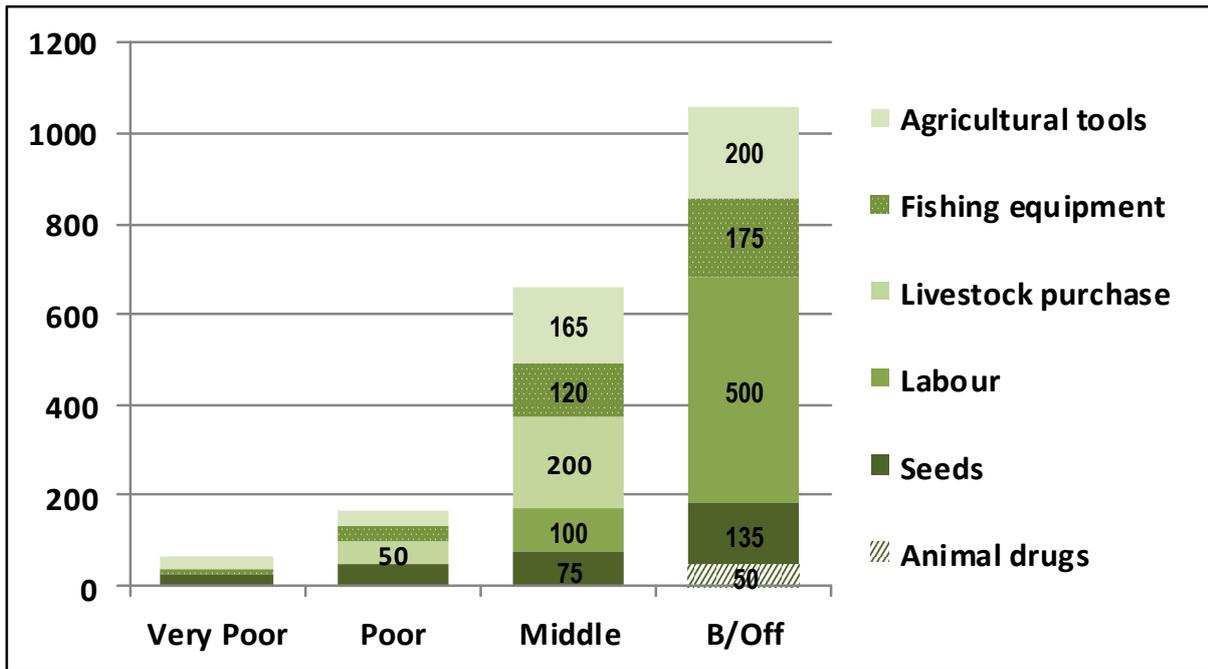
Proportional breakdown of total cash expenditure according to category of expenditure in SSP



For the very poor, the highest proportion of spending during the baseline year was on food. Overall, food purchases account for about 70 percent of their annual expenditures (of which 40 percent was on staple food such as sorghum and maize). By contrast, about 25 percent of the annual expenditures of better-off households were on food of which only 3 percent was on sorghum and maize. The other 22 percent was spent on oil, sugar, beans, fish, meat, okra and wheat flour.

Very small amounts of cash were spent on education and health in this zone. Per capita, the very poor spent just SSP 7 during the year. Per capita spending on health and education increased with wealth group: poor households typically spent SSP 20 per capita; middle-income households spent SSP 22 per capita; and the better-off spent SSP 45 per capita. Interestingly, spending on clothes was higher than spending on social services for all wealth groups. .

Graph 11: Nile and Sobat Rivers Livelihood Input Expenditures in SSP



Amongst better-off and middle-income households, 15-20 percent of annual expenditures were on livelihood inputs in the baseline year. Payment for agricultural labour was the highest livelihood expenditure by better-off households. Another important expenditure was on tools such as fishing nets, hooks and spears, as well as farming tools. Whereas farmers purchased seeds during the baseline year, there was no spending on fertilisers or pesticides by either the poor or the better-off households.

Table 9: Nile and Sobat Rivers Total Annual Expenditures in SSP by Wealth Group, 2011-2012

Expenditures in SSP	Very Poor	Poor	Middle	Better-off
Staple Foods	756	1093	1380	1300
Non-staple Foods	558	776	1436	1664
Tea	35	70	140	185
Salt	45	60	120	135
Soap	60	90	120	260
Firewood	0	0	20	100
Utensils	25	50	155	300
Animal Drugs	0	0	0	50
Seeds	25	50	75	135
Fertilizer	0	0	0	0
Labour	0	0	100	500
Livestock Purchase	0	50	200	0
Fish and farming tools	15	35	120	175
School (fees, uniforms, books)	25	35	165	200
Medicine (treatment, doctors` fees)	20	75	105	320
Clothing	15	50	70	150
Transport	15	25	80	140
Other Items	125	350	650	400

HAZARDS

This livelihood zone is subject to a number of hazards. Some hazards are chronic and undermine food security every year. Crop pests, livestock disease and flooding are the principal chronic hazards in the zone. Livestock diseases are a serious hazard to livestock production every year affecting all livestock owners regardless of their wealth status. One of the most serious livestock diseases in this livelihood zone is pneumonia. Pneumonia mainly affects cattle. It reduces milk production and may lead to death. With respect to crop pests, birds and rodents are typically a problem at harvest time, particularly for sorghum. Flooding and heavy rain is another chronic hazard that affects crop production. Excessive rain causes leaf rust disease. Extremely heavy rainfall during the main harvest period also reduces crop outcomes and affects all wealth groups. Excessive rain is also a human health hazard as the incidence of malaria is highest during periods of flooding in the livelihood zone. Flooding itself is often caused by heavy rainfall in the highlands of Ethiopia which then causes the Sobat River to overflow.

Other hazards threaten food security periodically (i.e., every few years) rather than annually. Delayed onset of rain and/or rainfall shortages are two such periodic hazards. The delayed onset of the rainy season postpones planting and harvesting and thus prolongs the hunger season for poor households. Market price shifts are another significant periodic hazard. In September 2012 for example, the annual increase in the consumer price index was about 43 percent higher than the same period the previous year, according to the National Bureau of Statistics (*South Sudan Food Security Outlook*, October 2012 to March 2013, FEWS NET 2012). This increase was largely driven by high food prices. These price shifts mean that most income must be used to pay for staple grains at the expense of buying other basic goods and services.

COPING STRATEGIES

Households in this livelihood zone have a number of strategies to respond to periodic hazards. Their first priority is the survival of the herd so household members migrate with their animals to grazing land alongside the Nile and Sobat Rivers in pursuit of better water and pasture conditions. The main strategy for obtaining cash to purchase food is increased livestock sales. Wealthier households are in a better position to exploit this strategy since they own more livestock. All households also have the option of reducing non-essential expenditure on items such as tea and clothes in order to spend more money on staple food. However, expenditure on such items is already quite minimal in this livelihood zone so this is a limited strategy. Households consume more wild foods, fish and meat during bad years. The increased consumption of meat occurs when animals become weak and will likely die but instead are slaughtered for their meat. Finally, poor households increase the sale of charcoal and grass; seek additional work either locally or in towns; and beg better-off kin or neighbours for gifts of food and cash.

INDICATORS OF IMMINENT CRISIS

EASTERN FLOOD PLAINS LZ AND NILE & SOBAT RIVERS LZ

A number of indicators can be identified that are warning signs of imminent crisis. A single indicator does not in itself constitute a crisis. In fact, the inherent flexibility in access to various food and income sources makes the local economy fairly robust. Only when there is widespread conflict or a combination of shocks that prevent the typical level of expandability of these resources does a crisis occur. Indicators of crisis include:

- Late on-set rainfall and/or early cessation of rainfall leading to severe water logging and extensive flood
- Increase in the number of people engaged in self-employment as well as an unusual increase in the sale of firewood, charcoal, grass and mats in context of poor terms of trade
- Increase in unusual migration and clan conflict
- Unusual increase in the sale of livestock
- Poor physical condition of livestock and rising livestock mortality
- Major price increases of staple foods and fish
- Unusual involvement of better-off and middle-income households in fishing and wild food collection
- Significant increased proportion of poor households compared to the number of better-off households

KEY PARAMETERS FOR MONITORING

Certain variables are critical to monitor in order to detect changes in food and livelihood security. These variables are summarised in the table below, by livelihood zone.

Table 10: Key Parameters for Monitoring

Item	Key Parameter – Production	Key Parameter - Price
Eastern Flood Plains LZ		
Crop Production	Sorghum production Maize production Cowpea production Groundnut production	Staple grain prices (producer price and consumer price)
Other Food and Cash Income	Milk production Fish harvested Wild food gathered Cattle and goat sales Daily agricultural labour Firewood, charcoal, grass sales	Milk prices Fish prices Cow milk price Cattle and goat prices Labour rates (in cash and in-kind) Firewood, charcoal, grass prices
Nile and Sobat Rivers LZ		
Crop Production	Sorghum production Maize production	Staple grain prices (producer price and consumer price)
Other Food and Cash Income	Milk production Cattle, goat and sheep sales Fish harvest Wild food gathered Daily agricultural labour Firewood, charcoal, grass sales	Milk price Cattle, goat and sheep sale prices Fish prices Labour rates (in cash and in-kind) for agricultural work Firewood, charcoal, grass prices

IMPLICATIONS FOR PROGRAMMING

- **Child nutrition outcomes** cannot be linked solely to dietary diversity and food access. Diets are reasonably diverse in the two livelihood zones. Food is secured from crops, livestock, fish, wild seeds, fruits and wild tubers. To fully address the problem of a high incidence of child malnutrition, a number of factors must also be considered, such as: limited health services, poor infrastructure, high disease incidence and significant work burdens for women¹.
- **Rural infrastructure** is limited in the Eastern Flood Plains and Nile & Sobat Rivers livelihood zones. FFA cannot take the place of large capital investments but some activities – such as rural road maintenance or building schools with local materials – could help develop local service infrastructure. Development of infrastructure to deliver clean drinking water to rural households as well as the construction and staffing of health centres and schools were identified as priority needs in Upper Nile State during inter-agency Community Consultations in May 2012.²
- **Conflict is a major** obstacle to food and livelihood security as well as to other sectoral development goals. Recovery and development interventions in areas of particular security risk should support elders' efforts to lay a foundation of peaceful relations.

¹ A focus on women's development priorities may eventually help produce better child nutrition outcomes. The UNDP 2012 Community Consultations Report from Upper Nile State showed that in some counties, women's priorities were very different from youth, elders and authorities. (See the Community Consultation report, May 2012: Juba, UNDP and SWSPRC.). For instance, in Ulang County, women's priorities were (i) violence against women; (ii) hunger; and (iii) health. However, only the health priority emerged in the top 3 community priorities. In the border counties, there was a closer alignment of priorities across different interest groups, reflecting a general concern with security, poor roads and compensation from oil companies.

² See the Community Consultation report, May 2012: Juba, UNDP and SWSPRC

ANNEX 1: DIETARY DIVERSITY – EASTERN FLOOD PLAINS AND NILE AND SOBAT RIVERS ZONES

12 FOOD TYPES (FNTA technical guide on DD Version II)	Wet season (May- Sept/Oct, 5-6 months)	Dry season (Nov- April/May, 5-6 months)
1. Cereals (sorghum, maize, some purchased wheat flour and various types of naturally occurring 'grass' seeds)	Some stored, some purchased depending on own production and in-kind payments as well as household budgeting for the cropping season	Eaten green pre-harvest; own production post-harvest; and purchased (some grain stocks are kept in reserve for the cropping season)
2. Roots and tubers inc. wild foods	Wild roots & tubers	Wild roots & tubers
3. Vegetables and wild foods	Okra, pumpkin, wild leaves plus other naturally occurring greens (vines, leaves, etc.) Onions and tomatoes purchased by better-off groups.	Dried and stored okra and other vegetables used in sauces. Okra and local greens also cultivated by rivers. Onions and tomatoes purchased by better-off households.
4. Fruits and wild foods	Wild fruits consumed by children	Wild fruits consumed by children
5. Meat and offal including game meat	Mainly consumed during festivals (funeral and wedding feasts)	Mainly consumed during festivals (funeral and wedding feasts etc)
6. Eggs	Occasional	Occasional
7. Fish	Swamp fishing at the end of the wet season; then pond fishing	Dried fish used in cooking. River fishing end of the dry season
8. Pulses & nuts including wild foods	Cowpea, groundnuts, and nuts occurring naturally in the forest	Stored own production plus <i>thou/lalop</i> from the forest (January - March)
9. Milk products	Own milk production for middle and better-off groups. Very poor access some milk from wealthier kin	Less available to households as the cattle are moved to <i>toic</i> (dry season pasture)
10. Oils and fats including <i>simsim</i> (sesame)	Groundnut and/or sesame oil as well as some oil purchased from market	Groundnut and/or sesame oil & oil purchased from market
11. Sugar and honey	Sugar purchased. Honey more accessible in the Nile & Sobat Rivers zone	Sugar purchased. Honey more accessible in the Nile & Sobat Rivers zone
12. Miscellaneous	Termites, shield bugs, etc when in season Beer and other local brews	Termites, shield bugs, etc when in season Beer and other local brews

