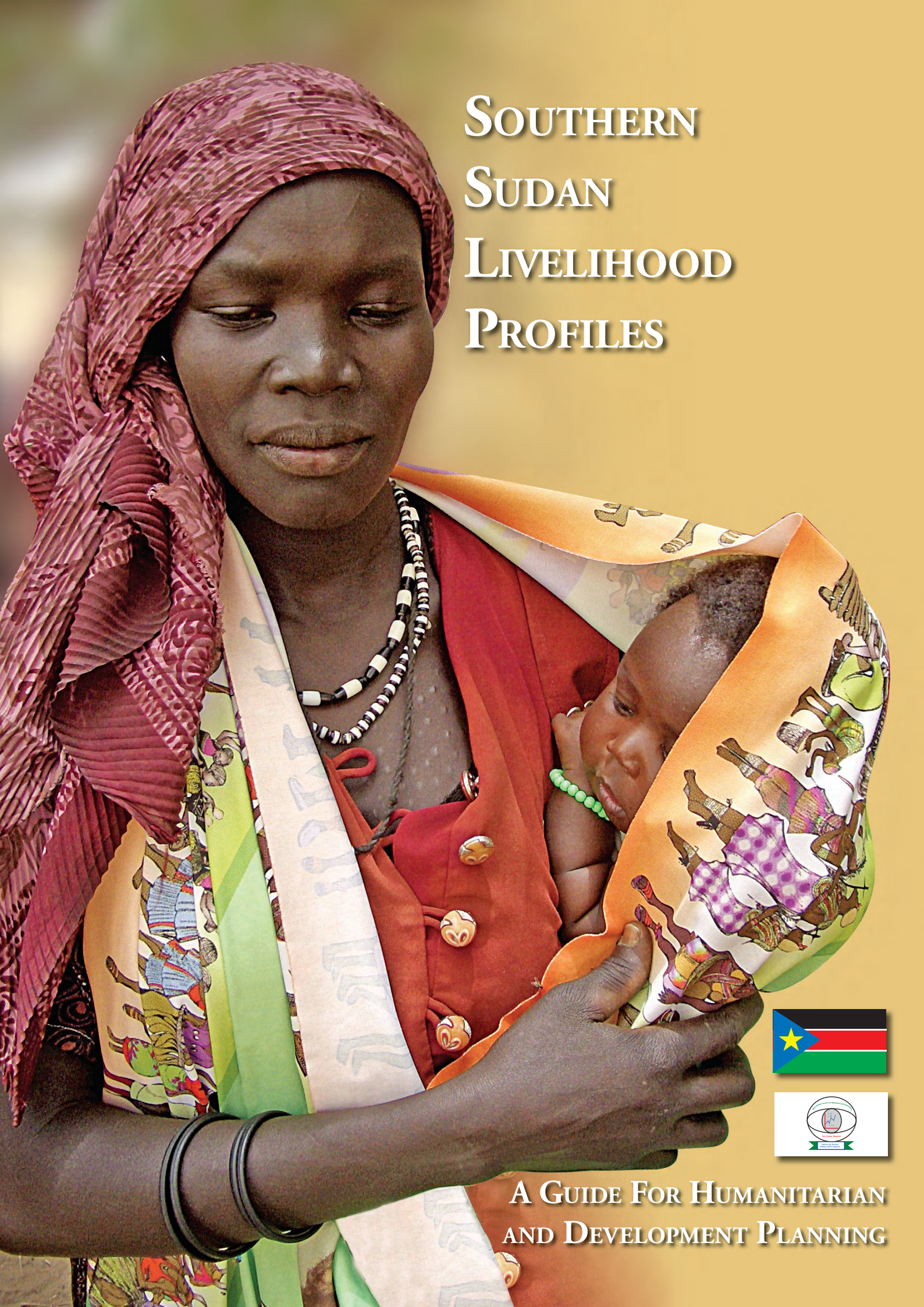

Southern Sudan Livelihood Profiles

A Guide For Humanitarian and Development Planning

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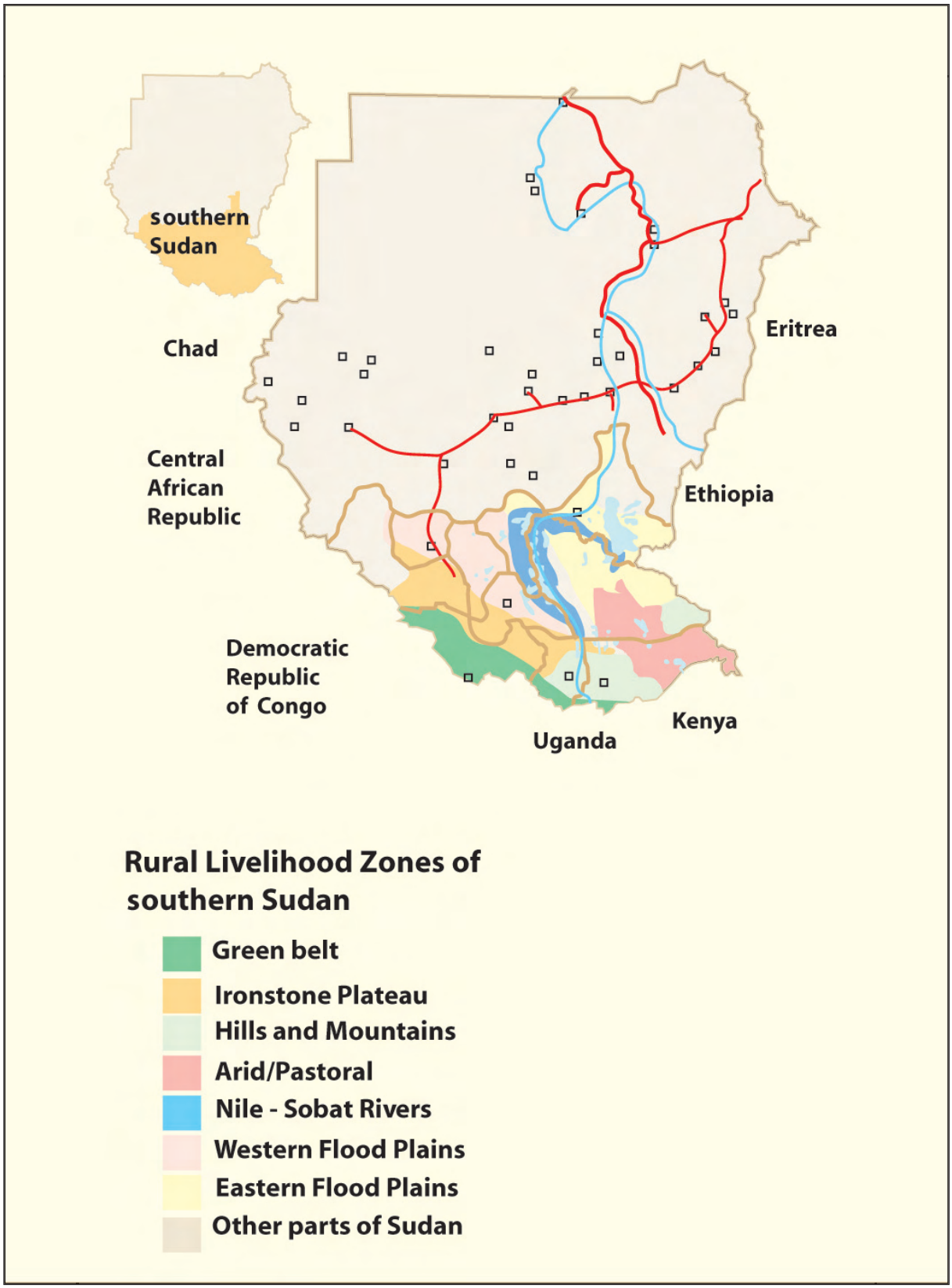
Note: The boundaries used on the maps in this document do not imply official endorsement or acceptance by the authors or publishers.

The Livelihood Profiles in this publication were developed by the Livelihood Analysis Forum

Fieldwork for the profiles was undertaken between 2000 and 2002, which are generally regarded as recent typical years (not good and not bad), and updated with new information collected in 2003/4 to clarify any gaps or inconsistencies. The information presented refers to a 'normal' year judged by local standards. Provided there are no fundamental or rapid shifts in the economy, the information in these profiles is expected to remain valid for approximately five years (i.e. to 2011).

Map of southern Sudan



Preface

This report was designed to consolidate existing livelihood baseline information into a simple user-friendly document that is housed within the SSCCSE and is easily accessible to all levels of government, civil society, NGOs and development partners operating in southern Sudan. The Livelihood Profiles will make a valuable contribution as we move through the transition period and into peace and stability, following more than two decades of protracted conflict. The report portrays livelihood challenges and opportunities faced by people in various livelihood zones. The contextual picture provided helps us appreciate the complexity of southern Sudan's rural economies, particularly during the last decade of the conflict period. A range of factors emerge, including the impact of the changing seasons, the important role of markets and mobility, and the value of our traditional social support systems and natural resources - all of which were so often undermined during the days of conflict, but will now play a vital part of our recovery from the vagaries of war.

This report will help all levels of government in southern Sudan, civil society, NGOs and other development partners to appreciate the current status of different livelihoods, and the factors that undermined them, as we plan to alleviate the poverty and deprivation that have resulted from the years of conflict. The report should be seen as complementing the other work of the SSCCSE, especially with regard to the monitoring of progress towards the Millennium Development Goals (MDGs), the eradication of extreme poverty and food insecurity, as well as the broader objectives outlined in the Poverty Eradication Strategy Paper (PESP).

The SSCCSE will continue to pave the way for strong collaboration between ministries and this is recognised as vital to the development process. Equally important will be the opportunity for increasing dialogue between senior government planners and local government authorities. The Livelihoods Analysis Forum (LAF), which functions within the SSCCSE, will play an increasing role in making Community Driven Recovery and Development (CDR/D) a reality as national monitoring capacities are strengthened at the local level on the foundation of this initial reference document.

The report's analytical focus encompasses a broad range of livelihood issues. This illustrates the need for a multi-disciplinary approach in combating poverty while providing a vital baseline reference on which to monitor progress. Again, this will help us to reflect and act to ensure more appropriate and effective utility of our available resources while enabling timely advocacy and policy dialogue. We hope that our partners will view this as another important step as we enter this new era in our history.

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Acknowledgements

This report has been prepared by the Southern Sudan Centre for Census, Statistics and Evaluation (SSCCSE) and facilitated by the European Commission Humanitarian Organisation (ECHO) and USAID and Save the Children (UK). The report has strived to consolidate information collected since 1994 and is seen as a truly collaborative effort drawing on records retrieved from the former SRRA database team, the WFP/TSU archives, and current SSCCSE and Livelihoods Analysis Forum (LAF) members. Some data has been drawn from the recent SSCCSE publications, *Towards a Baseline* and the *Millennium Development Goals Interim Report for South Sudan 2004*. Additional material from NPA and CRS is also gratefully acknowledged.

The SSCCSE wishes to especially acknowledge the work of Buzz Sharp (SC-UK) and Evelyn Muchomba (FEWSNET) who spent many hard hours compiling the technical content and editing the document. The work was reviewed by both SC-UK and FEWSNET. Drafts have been technically edited and validated by Maker Ayuel and Eliaba Damundu of the SSCCSE. The SSCCSE is also grateful for contributions, comments and feedback from the Ministry of Agriculture and Forestry (MAF), the FAO, UNICEF and OCHA/EP&R. Primary material was gathered by WFP field assessment teams, SSCCSE (formerly known as Sudan Relief and Rehabilitation Association (SRRA) Database and Monitoring Unit) officers and partner organisations working with the WFP HEAU (1994-1998) later known as TSU (1998-2002) and currently known as Vulnerability and Mapping (VAM) unit. The final draft was edited by Ralph Johnstone of The WordWorks, and designed by Cege Mwangi of Arcadia Associates. Special recognition is extended to Jan Eijkenaar of ECHO, who supported this work from its inception and facilitated the final publication.

Acronyms

CDR/D	Community Driven Recovery/Development
CRS	Catholic Relief Services
EC	European Commission
ECHO	European Commission Humanitarian Organisation
EP&R	Emergency Preparedness and Response
FAO	Food and Agriculture Organisation of the United Nations
FEWS NET	USAID Famine Early Warning Systems Network
HEAU	Household Economy Analysis Unit
LAF	Livelihoods Analysis Forum
MAF	Ministry of Agriculture and Forestry
MDG	Millennium Development Goals
MOH	Ministry of Health
NGO	Non Governmental Organisation
NOUF	Naturally Occurring Uncultivated Foods
OCHA	Office for the Coordination of Humanitarian Affairs
SAAR	Secretariat for Agriculture and Animal Resources
SC-UK	Save the Children - UK
SPLM	Sudan People's Liberation Movement
SRRA	Sudan Relief and Rehabilitation Association
SSCCSE	Southern Sudan Centre for Census, Statistics and Evaluation
TSU	Technical Support Unit
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VAM	Vulnerability Assessment and Mapping
WFP	World Food Programme

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Introduction

The livelihood profiles that follow document how rural populations in southern Sudan live. A livelihood may be defined broadly as the sum of ways in which households obtain the things necessary for life, how they make ends meet from year to year, and how they typically survive through difficult times. There is increasing interest in using livelihoods analysis as the 'lens' through which to view a number of problems, ranging from emergency response and disaster mitigation to longer term development. This interest rests upon two basic observations:

1) Information about a given area or community can only be properly interpreted if it is put into context with how people live;

2) Interventions can only be designed in ways appropriate to local circumstances if the planner knows about local livelihoods and whether or not a proposed intervention will build upon or undermine existing livelihood strategies.

Two main products are offered in these profiles:

National Livelihood Zone Map - The map shows the division of southern Sudan into relatively homogeneous zones, defined according to a livelihoods framework.

Livelihood Zone Profiles - The profiles describe the major characteristics of each zone, including a brief differentiation of different wealth groups. The major hazards and the relative capacity of different types of households in different places to withstand these hazards are also identified.

The preparation of these profiles was undertaken by the United States Agency for International Development (USAID), the Famine Early Warning Systems Network (FEWS NET) and Save the Children UK (SC-UK), with assistance from the South Sudan Centre for Census, Statistics and Evaluation (SSCCSE). The World Food Programme (WFP) archives were used to retrieve information collected since 1994 and this was supported with information from other food security agencies.

In compiling the profiles, the aim has been to present sufficient information to allow a rounded and balanced view of livelihoods within southern Sudan. The profiles provide a rapid introduction to livelihoods in seven main zones. They offer a platform or contextual picture for broader livelihoods analysis by agencies from various sectors.

This document is divided into three main sections:

1. ***Introduction*** – This has four sub-sections:
   a. The Uses of the Profiles, describing four main ways in which the profiles can be used;
   b. Key Concepts, defining the key concepts used in livelihoods-based analysis and outlining the analytical framework that has helped define the key information to be included in the profiles;
   c. What is in a Livelihood Profile, describing the layout and content of each profile;
   d. Methodology, describing the methods used to develop the map and profiles.

2. ***Sub-National Overview*** – The livelihood zone map, together with a brief overview of livelihoods in the rural areas of southern Sudan.

3. ***The Livelihood Zone Summaries*** – A brief description of each of the seven livelihood zones, as well as detailed individual livelihood zone profiles.

Uses of Livelihood Profiles

The livelihood zone map and livelihood profiles presented here offer an analysis of rural livelihoods and food security on a geographical basis, whereby areas of southern Sudan are divided into relatively homogeneous zones defined according to a livelihoods framework. A brief description of each zone is provided, including an analysis of the position of different wealth groups within the zone. It is envisaged that this product will be useful on four levels, as follows:

An introductory guide to livelihoods and food security in southern Sudan

The profiles pack considerable information and analysis into a few short pages, providing a useful synopsis for newcomers who need to get a quick grasp of livelihoods and underlying food security conditions around southern Sudan. The geographical divisions are relatively broad - as far as this is consistent with realities on the ground - so that the reader can take in the general pattern and the basic differences between areas and populations without being overwhelmed by too much detail.

Early warning and response planning

Disaster prevention and mitigation has been the main impetus for the development of early warning systems. In addition to predicting the occurrence of natural hazards, and monitoring the occurrence of man-made shocks such as war or market failure, early warning aims to predict how these hazards may or may not result in a humanitarian crisis. These livelihood profiles help provide the crucial link between the 'hazard' on the one hand, and proper interpretation of the potential household food security outcome on the other.

For instance, one of the aims of the early warning community in southern Sudan following the signing of the Comprehensive Peace Agreement (CPA) in January 2005 has been to determine the impacts of the return of previously displaced and abducted populations (including refugees and child soldiers) on their families and communities of origin. Understanding host communities' capacities to absorb returnees and assessing the additional strain they may place on local livelihoods are crucial for appropriate planning and response. Both the potential opportunities (such as new cash and asset infusions, or extra labour availability) and potential burdens (such as extra competition for scarce resources) can be better understood with reference to a contextual livelihood picture. This can help in planning appropriate timing for repatriation exercises and in facilitating more appropriate recovery programming.

In addition to the above, local food security is often incorrectly equated with the balance between local agricultural production and local consumption requirements. In other words, a local production shortfall (when calculated against local consumption requirements) is frequently misinterpreted as chronic or temporary food insecurity. Consequently most early warning and food security monitoring systems draw heavily from two information sources:

(i) crop and/or livestock production data
(ii) market price data.

However, in southern Sudan, crop production is almost never the whole story. A full account of the 'household food economy' takes into account all the ways in which people meet their annual consumption requirements, including what they produce on their own and what they are able to purchase or exchange for. To this end, an understanding of casual employment, wild foods, charity from relatives or the sale of handicrafts may be equally important to the livelihood story as data on crop and livestock production. The livelihood profiles provide clues to households' capacity to cope with hazards and stress factors in different areas of southern Sudan, including production hazards and market-level factors, taking into account the contribution of a range of household activities at different periods in the yearly cycle. All of this information directly helps to answer key questions such as:

i) which areas and what types of households are likely to cope should a hazard occur, and who will need assistance?
ii) What types of intervention will be most appropriate, and when and for how long should they be implemented?
iii) What are the expected indicators of recovery?

Policy development and development planning

One rationale for early warning is to minimise errors in the scale and timing of emergency food aid. However, planners increasingly are looking for alternatives to food-based programming for emergency-affected populations - a trend in humanitarian policy and practice fuelled by demand for interventions with longer-term recovery and development impacts. The livelihood profiles highlight the implications of different policy decisions on household access to basic goods and services. For example, if government taxes on kerosene were reduced, or charges made for government veterinary drugs, the profiles can help to show the likely impact on households' ability to offset their expenditure on other basic needs. In this context, planners are provided with a more secure footing for designing poverty alleviation measures - shifting from responding to the symptoms of food insecurity to addressing its causes. It allows one to look at the story that lies behind national statistics.

Development planners can also benefit from using the livelihood profiles. One objective of development is to reduce people's vulnerability to hazards and to increase their capacity to cope. An important first step is to understand who is vulnerable to what hazards and why. Likewise, efforts to reduce poverty require an understanding of how the poorest households survive and the reasons for their poverty. In the case of southern Sudan, these profiles can help the newly formed government and development agencies to better understand the challenges and opportunities faced by households in various zones as a result of more than two decades of conflict. This understanding can help in the design of appropriate policies and post-conflict recovery strategies. In the recovery and development setting, the information captured in these profiles is helpful in seeing where support can be most effectively focused.

Managing change: Moving from emergency response to recovery and development planning

The profiles provide a context for interpreting the difference between a major crisis and a short-lived seasonal gap, and provide important reference points for determining

the line between normal 'coping' and unusual stress. Appropriate responses in the post-conflict period, as southern Sudan moves from an emergency response context to a longer term development context, will depend upon this determination. Planners will need to recognise when problems are a result of underlying chronic poverty that requires longer term approaches, as opposed to transitory events that require a more immediate short-term response.

Much can be learned from past experience. For example, the crisis in Bahr el Ghazal (Western Flood Plains Livelihood Zone) in 1997-8 resulted from an unusual combination of events, including:

- Several years of heavy conflict and asset depletion that disrupted normal production and trade systems;
- Continual disruption of seasonal activities that severely upset normal coping mechanisms, particularly access to dry season food sources;
- Cattle-owning households either losing or moving their livestock away;
- A dysfunctional economy in which the poor lacked labour opportunities and faced difficulties in accessing external labour markets, as well as in receiving remittances;
- A breakdown of the traditional social support system; and
- Sudden political/military events that resulted in unusually large population movements.

The key lesson learned was that an economy becomes dysfunctional when the poor wealth group becomes dominant (i.e. assets are significantly absent or inaccessible to most of the households in the community) and trade is impeded. The restriction to and manipulation of access to relief was another important factor. Seasonal periods of hardship have been more common; however, times of 'belt tightening' were common before the period of conflict and are likely to continue even after peace is well established.

The southern Sudanese experience has also made clear the need for institutional memory and an integrated approach to analysing and responding to ongoing problems. High staff turnover has meant that the quality of information, analysis and its utility have been highly variable over the years. With the CPA, an opportunity now exists to ensure that the new emerging government in southern Sudan is adequately supported and equipped to carry out this very important work in the future.

The need for a sustainable national analytical unit has been recognised, not just for timely emergency responses, but also for urgent policy development and strategic planning. The SSCCSE, in conjunction with the members of the Livelihoods Analysis Forum (LAF), has reached agreement that the essential components of any analytical unit must include:

- An institutional memory (in the form of both human capacity and electronic storage);
- A standard analytical framework (provided by the household economy analysis, or HEA);
- A well trained and motivated team;
- A forum for analysis (provided by the LAF);
- An 'in-house' training capacity; and
- Adequate funding.

In such a setting, the livelihood profiles present the baseline information critical to this standard analytical framework. The quantitative data associated with the profiles are stored on the accompanying F.E.G.

spreadsheets. Together they provide the foundation for analysis that a new national team (SSCCSE/LAF and partners) will require in order to implement a livelihoods-based food security early warning system.

Key Concepts

The terms ***risk, hazard, vulnerability*** and ***need*** are frequently used in ways that can be confusing in the context of food security. Their established meaning for the purposes of food security early warning - and the sense in which they are used here - is perhaps best explained with examples:

Defining risk, hazard, vulnerability and need

- Drought is a major ***hazard*** that affects crop and livestock production in many African countries;
- In general, poor households are more ***vulnerable*** to (i.e. less able to cope with) drought than better-off households[1]; they have fewer reserves of food or cash to fall back on, and fewer options for generating additional income;
- Poor households with few assets and limited income options living in drought-prone areas of the country are more ***at risk*** of a food shortage than other households, because they are more exposed and vulnerable to the drought hazard and less able to cope with its effects;
- Once a drought strikes, the poor are the most ***in need*** of assistance.

To be at risk of food insecurity, you must be both exposed to a hazard, and be vulnerable to that hazard, as in the case of poor households in the drought-prone areas of the country in the above example. Because vulnerability is so closely linked to a hazard, it follows that there is no general state of vulnerability; people can only be vulnerable to something. For example, farmers cultivating along a riverbank may be vulnerable to flooding (which is likely to wash away their crops), but may not be so vulnerable to drought (as they can irrigate their crops using water from the river). Likewise, pastoralists may not be very vulnerable to drought, provided they can move freely in search of water and grazing. They may, on the other hand, be highly vulnerable to conflict if that inhibits their movement to key water points and grazing areas.

Once a hazard has struck, it no longer makes sense to talk about vulnerable groups. Put simply, people are ***intrinsically vulnerable before the event*** (as this refers to their ability to cope should a hazard strike). They are ***in need after the event*** (i.e. once they have been affected by and have been unable to cope with a hazard). Going back to the drought example, the poor are vulnerable to drought before the rains fail, but once they have lost their crops or livestock they are in need of assistance. One of the most widely used livelihoods-based approaches for analysing food security is the food economy or household economy approach, first developed by SC-UK in the 1990s[2]. The basic principle underlying the approach states that:

> *An analysis of local livelihoods is essential for a proper understanding of the impact - at household level - of hazards such as drought or conflict or market dislocation.*

[1]This is used as an example just to explain the terminology. Sometimes, better-off groups may be more at risk of food shortages due to the specific make up of their food and income.

[2]See *The Household Economy Approach,* Seaman J., Clarke P., Boudreau T., Holt J., Save the Children UK 2000.

The principal objective of household economy analysis is to investigate the effects of a hazard on future access to food and income, so that decisions can be taken about the most appropriate types of intervention to implement. The rationale behind the approach is that a good understanding of how people have survived in the past provides a sound basis for projecting into the future. Three types of information are combined: (i) information on baseline access to food/ cash income; (ii) information on hazards (i.e. events affecting access to food/cash income, such as drought or conflict or market dislocation); and (iii) information on household-level response strategies (i.e. the sources of food and income that people turn to or expand their reliance upon when exposed to a hazard). The approach can be summarised as follows:

Outcome = Baseline + Hazard + Response

Baseline

The baseline analysis has three components:

The Livelihood Zone Map:

Patterns of livelihood clearly vary from one area to another, which is why the preparation of a ***livelihood zone map*** can be a useful first step for many types of livelihoods-based analysis. Local factors such as climate, soil, access to markets etc. all influence livelihood patterns. For example, people living in a fertile highland area generally have very different options from those living in a semi-arid lowland area. In highland areas people can generally pursue an agricultural pattern of livelihood, while in the lowlands they can grow few crops and will be either pastoralists or agro-pastoralists. Those living in river or lake zones may follow a livelihood based upon fishing or combine fishing with agricultural activities, and so on.

Agro-ecology is only one aspect of geography that determines patterns of livelihoods, however. Another is market access, which affects the ability of people to sell their production (crops or livestock or other items) and the price they obtain for it. As patterns of livelihood depend so much upon geography, it makes sense to divide a country or a region into a number of ***livelihood zones***. These we can define as areas within which people share broadly the same pattern of livelihood, i.e. the same production system - agriculture or pastoralism, for example - and the same patterns of trade and exchange.

Livelihood zone boundaries do not always follow administrative boundaries. It is, for example, quite common to find different patterns of livelihood within a single administrative unit (e.g. pastoralists living alongside agriculturalists, or agro-pastoralists alongside fishing communities). However, because resource allocation and service provision decisions are made on the basis of administrative areas, not livelihood zones, it is important that livelihood zone boundaries should wherever possible follow lower-level administrative boundaries.

The Wealth Breakdown:

Geography is clearly not the only thing that determines patterns of livelihood. While geography tends to define different livelihood options, the extent to which people exploit these options depends upon a number of factors, of which wealth is generally the most important. It is obvious, for example, that better-off households owning larger farms will in general produce more crops and be more food secure than their poorer neighbours. Land is just one aspect of wealth, however, and wealth groups are typically defined in terms of their land holdings, livestock holdings, capital, education, skills, labour availability

and/or social capital. Defining the different wealth groups in each zone is the second step in a food economy analysis, the output from which is a ***wealth breakdown.***

The Food Economy Baseline:

After grouping households according to where they live and their position in a ranking of wealth distribution, the next step is to generate ***food economy baseline*** information for typical households in each group for a defined reference or baseline year. This involves investigating the different sources of food and cash income and their relative contribution to the household budget over the year as a whole. It also involves developing a ***seasonal calendar*** of activities to see how access to food and cash income varies within the year. These types of information are critical in terms of understanding how households living at different levels of wealth and in different zones will be affected by a particular hazard. It follows, for example, that households that depend wholly upon local livestock production will be affected more heavily by drought than those that have relatives living and working in the capital city from whom they receive regular assistance or remittances.

Hazard

Food economy baseline data provide a starting point for investigating the effect that a hazard will have on livelihoods and household food security. Hazards may either be natural (e.g. drought or flood) or man-made (e.g. conflict or market dislocation). The consequences of a hazard will vary according to the hazard itself and according to the local pattern of livelihood. A drought may result in a loss of crop or livestock production, loss of crop and livestock sales income, loss of farm-based employment, etc., posing a threat to households that are heavily dependent upon crop or livestock production or upon local agricultural labour. Insecurity, on the other hand, may be associated with the theft of crops or livestock, reduced access to markets, wells, grazing areas or fields, and disruptions to trade and transportation - all of which will pose a threat to groups living in, moving through or trading with the insecure area.

Response

When exposed to a hazard, most households will do their utmost to respond to its effects. If the hazard reduces their access to certain sources of food and/or cash income, they may try to expand other sources, or they may turn to new or little used sources. Common response strategies[3] might include an increase in the collection of wild foods, an increase in the sale of livestock, or temporary migration in search of employment. Where these strategies are effective, they can significantly reduce vulnerability to a range of hazards. It has to be borne in mind, however, that response strategies each have their own set of effects, some of which may ultimately undermine local livelihoods, e.g. the sale of productive assets, the unsustainable sale of livestock, increased firewood sales where this has negative environmental effects, and so on.

[3]The term 'response strategy' is preferred to 'coping strategy' for two reasons. Firstly, 'coping strategy' is often used to refer to regular components of everyday livelihood (e.g. firewood sales), which strictly speaking are only coping strategies when intensified in response to a hazard. Secondly, 'coping' can be taken to imply that the strategy in question is cost-free, which is not always the case.

Composition of Livelihood Profiles

The profiles are divided into a number of sections:

Main conclusions and implications

These summarise the main findings from each zone. This section also provides insights that can inform the planning of various types of interventions, including emergency response, disaster mitigation and development programming.

Zone description

Offers a general description of local livelihood patterns (crop production, livestock rearing, off-farm income generation, etc.) within the framework of the five types of capital (natural, human, social, physical and economic/ financial).

Seasonal calendar

Sets out the timing of key activities during the year. This is useful in a variety of ways, e.g. to judge the likely impact of a hazard according to its timing during the year, or to assess whether a particular activity is being undertaken at the normal time in the current year.

This is followed by seven sections that provide the core information on the 'food economy' of the zone:

- The ***Wealth Breakdown*** section describes three main wealth groups ('poor', 'middle' and 'better-off'), explaining the differences between these groups and how these affect their potential access to food and cash income[4];
- The ***Sources of Food***, ***Sources of Income*** and ***Expenditure Patterns*** sections examine patterns of food and cash income, as well as household expenditure patterns of each identified wealth group, relating these to group characteristics;
- ***Markets*** contain basic information on the marketing of local production and on the importation of staple foods into the zone;
- The sections on ***Hazards and Threats*** provide information on the different types of hazard that can affect the zone, while the ***Recovery Priorities*** section highlights recovery priorities based on how various types of households in the zone typically respond to food security threats.

Early warning involves identifying and interpreting key events that indicate that a severe food shortage or famine may be developing. The final section includes a ***Seasonal Monitoring Calendar*** and key points to check or monitor that could help to indicate stress levels. This section provides information on the key aspects and their timing based upon an understanding of local livelihoods and local patterns of response to food shortage[5].

[4] It is important to bear in mind for this analysis that we are thinking of wealth in relative (and local) terms. Statistical data may indicate that 80% or even 90% of the population in a particular area lives below the national poverty line, but this is measuring poverty on a national, absolute scale. In a livelihoods analysis, we are interested in understanding the differences between groups within the community and the reasons for these - in which case it is not particularly useful to lump 80% or 90% of the population together into one group.

[5] Fred Cuny identified two types of early warning indicators: those that provide advance warning of a famine (indicators of imminent crisis) and those that confirm the existence of famine (indicators of famine). The latter group includes indicators such as distress sales of productive assets (e.g. plough oxen), consumption of seeds, increased malnutrition, and increased mortality. Indicators of famine are not generally context specific (i.e. a single list could be prepared that would apply to all livelihood zones). They are also of little use in predicting or preventing severe food shortages or famine. For these reasons they have not been included in the livelihood profiles.

Methodology

The livelihood zone map and profiles presented here have been compiled largely on the basis of existing secondary data held by various agencies, including WFP, SC-UK, Norwegian People's Aid (NPA) and SSCCSE. Most of the primary data were collected between 1994 and 2000, from community key informants and focus groups and through interviews, assessments and workshops. This work is being undertaken with the SSCCSE, which is the new custodian of the information on southern Sudan. The SSCCSE also holds quantitative data (in the form of spreadsheets) for each wealth group within each livelihood zone.

After the signing of the CPA for Sudan in early 2005, the SSCCSE requested the LAF to conduct quarterly reviews at its Rumbek headquarters. The analytical approach is based on the household economy framework. In addition to the baseline information collected through HEA exercises between 1994-2000, all other relevant information (e.g. survey-derived and surveillance data) is welcomed at these fora. Added value is achieved in having a standard analytical framework that allows the contextual picture to be developed and then augmented with additional sector-specific or temporal information as it becomes available.

These livelihood profiles and accompanying spreadsheets allow predictive analysis by modelling of food security scenarios with LAF members. All members bring current monitoring information to the table, which enables debate in order to reach consensus on the changing food security and livelihoods situation. This process can contribute both to post-conflict planning by the SSCCSE working with government departments, as well as emergency preparedness and response coordination when necessary. The work of the LAF is overseen by a steering committee currently headed by the Ministry of Agriculture (MOA), formerly known as the Secretariat of Agriculture and Animal Resources (SAAR).

Overview

Introduction

Livelihoods in southern Sudan are inextricably linked to both a relatively rich and abundant resource base and the terrible consequences of more than two decades of civil conflict. In part, this conflict arose precisely because of southern Sudan's comparative agricultural wealth in relation to the harsher, drier land of northern Sudan.[6] But it is also this advantage that has contributed to the people's exceptional resilience in the face of consistent threats.

Traditional livelihood systems rely on cattle rearing, crop production, fishing, wild food collection, and trade, with various combinations of these elements making up specific household economies depending upon their geographic location. In the far south-eastern corner of southern Sudan, a nearly pure form of pastoralism prevails, while a more exclusive reliance on surplus agricultural production is the norm in the southwest. Fish and wild foods gain increasing prominence along the Nile River and its tributaries, where they supplement cattle products and crops. Cattle thrive on the rich floodplains, and changing seasonal patterns of food availability allow access to a range of food sources, making the livelihood systems more resilient and versatile.

The importance of cattle for the majority of southern Sudanese families (with the notable exception of those in the southwest, where tsetse fly precludes this option) cannot be overstated. Cattle provide the fundamental basis for wealth and status, forming the foundation for social networks, a store of long-term wealth, and a critical source of milk and meat. Kin linkages provide a traditional safety net in difficult years. Marriage is a way of strengthening kinship support, and cattle are an important part of the dowry (bride price).

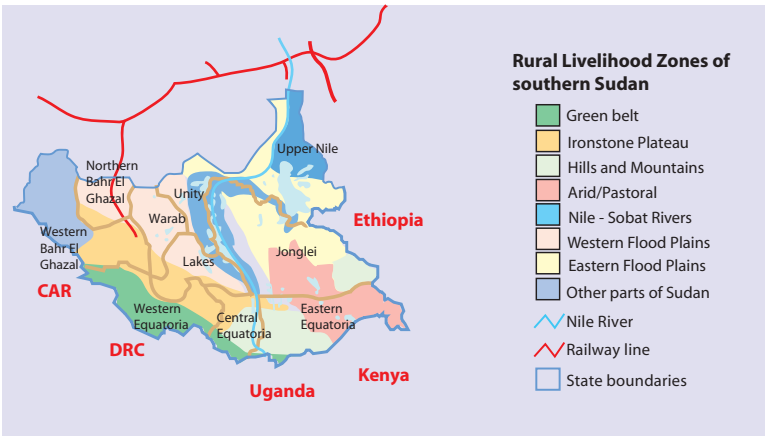
The success or failure of all livelihood systems in southern Sudan rests on the ability of people to move and to trade. Mobility allows people to take advantage of seasonal food opportunities in different areas, such as fish and wild foods; it is also crucial for the survival of livestock, which depend on regular migrations between dry and wet season grazing areas. Trade (in labour, cattle, and various local products) increases wealth and capital for better-off households, and helps to offset localised production failures in years of bad rain.

The most devastating impact of conflict on livelihoods in southern Sudan, aside from the direct lives taken (roughly estimated at two million deaths over 20 years), has been its constriction of these two essential factors. When mobility is restricted, or access to markets or exchange is constrained for long

[6] In 1982, it was estimated that the Nile, if tapped, could yield about 4.4 billion cubic metres of water normally lost through flooding, and drain at least 15% of the Sudd. This was used to justify the construction of the Jonglei Canal in the Nile and Sobat Rivers Zone, which was disrupted when conflict between northern and southern Sudan escalated in 1983.

periods of time, people in southern Sudan face serious food shortages. Most affected has been the state of Northern Bahr el Ghazal, particularly in areas along the railway line, where continuous insecurity from 1994-98 severely weakened the livelihoods of most households, contributing to a devastating famine in 1998. Insecurity in Unity, Jonglei and Upper Nile states has escalated since 1999, putting local communities at increased risk of food insecurity. In the past, the railway line (Map 1) has been associated with high levels of insecurity. With peace, it will become an important tool for facilitating trade and mobility between the north and the south. During the war years the train from the north ran to Bahr el Ghazal. Raiding along this route resulted in some of the greatest hardship of the war; yet due to the northern access, the area also presents considerable potential in the post-CPA recovery phase.

Map 1: Livelihood Zones of southern Sudan



Peace negotiations aimed at ending the conflict began in July 2002 between the Government of Sudan (GoS) and the Sudan People's Liberation Movement/Army (SPLM/A). A final peace agreement was signed in January 2005. With this agreement, new opportunities for strengthening livelihoods in southern Sudan and providing basic services will emerge. At the same time, the signing of the peace agreement is likely to trigger unpredictable population movements into and out of southern Sudan, as internally displaced populations and refugees living in Kenya, Uganda, the Democratic Republic of Congo and Ethiopia attempt to return to their original homes, and as settled residents attempt to seek economic opportunities elsewhere.

At the same time, conflict among ethnic groups has been part of southern Sudan's long history, even before the 1983 war. Numerous ethnic groups live in southern Sudan, each with different languages and dialects. Even with peace, the potential for future tensions remains high, with almost certain competition over scarce resources among ethnic groups, and between residents and returnees. This will call for good local governance and peace and reconciliation initiatives that will enhance the consolidation of peace at the grassroots.

The issue of control of oil resources has perpetuated conflict and led to one of the longest chronic complex emergencies in the world. Many of the areas of oil exploration have been subject to disputes between northern and southern forces, triggering significant displacement. For the residents of these areas, the impact of oil thus far has been detrimental. At household level it is not clear how or when any direct benefits of the oil revenues will reach communities in the south. Oil extraction may yield very few direct benefits in terms of employment and increased household income for those who have suffered most during the war years. However, with the signing of the CPA, a return to relative peace should allow

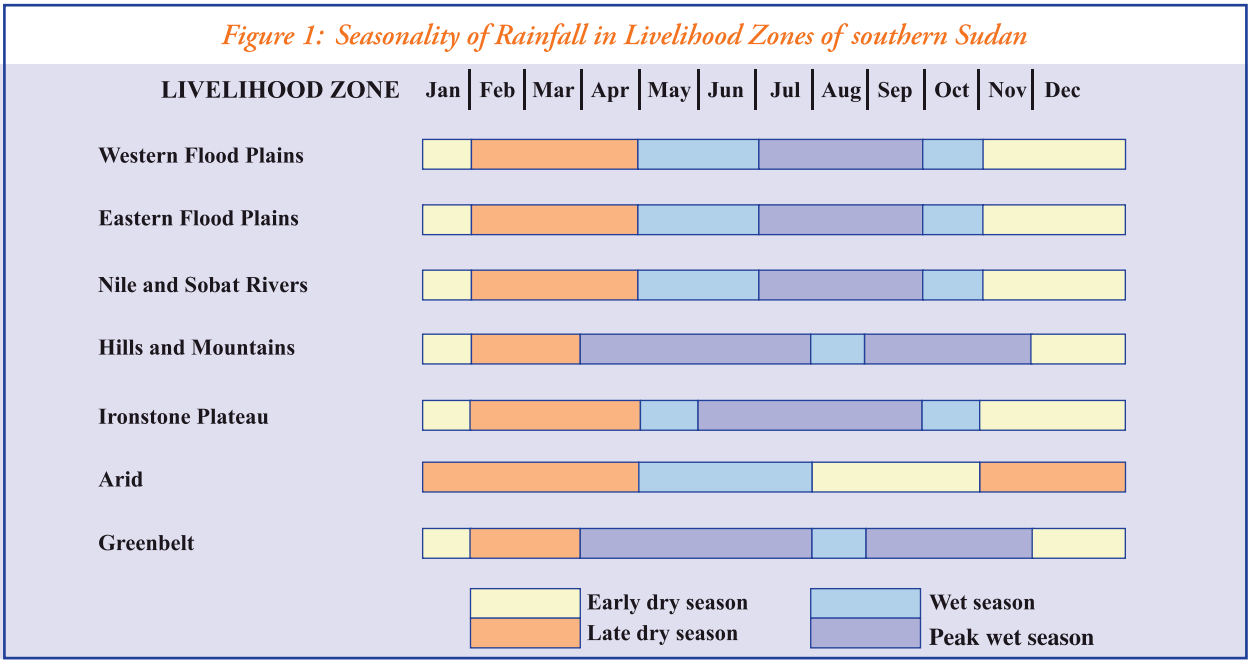
some recovery of damaged traditional social systems and seasonal activities that have sustained livelihoods in the past. In addition, it is hoped that some benefits will be seen as the inhabitants begin to recover their livelihoods and when oil revenues begin to support improved access to basic services and better governance. Oil wealth is expected to gradually boost trade and market activity through the infusion of cash into the local economy. This is then expected to supplant the present high levels of barter exchange and to promote greater availability of food and non-food commodities in local markets.

Geography and Climate

The largest country in Africa, Sudan measures approximately 2.5 million km^2. The waters of the White Nile and its tributaries flow down from the highlands of Ethiopia, Uganda and the Central African Republic into the low clay basin that constitutes much of southern Sudan, forming the world's largest contiguous swamp. Despite the rich off-take possible from the Nile ecosystem, there are several disadvantages as well, including the widespread prevalence of diseases such as malaria and bilharzia. In the southwestern agricultural belt, the humid environment is conducive to tsetse fly which causes sleeping sickness, while the expansive acacia and savannah grasslands of the Eastern Flood Plains are home to infestations of the sand fly, which causes leishmaniasis (known locally as kala azar).

Sudan has a highly diversified climate, ranging from hyper-arid (deserts in the north) to sub-humid (most of the south). Rainfall is favourable in southern Sudan, with Western Equatoria and highland parts of Eastern Equatoria receiving 1,200-2,200 mm of rainfall annually. The lowland areas of Eastern Equatoria, Jonglei, Upper Nile and Bahr el Ghazal receive between 700 and 1,300 mm of rainfall per year. The southeastern tip of Eastern Equatoria receives the least annual rainfall at about 200 mm. Temperatures are typically above 25°C and can rise above 35°C, particularly during the dry season, which lasts from January to April. These hot, dry conditions trigger human and livestock migrations to more permanent water sources, which serve as dry season grazing and fishing

Figure 1: Seasonality of Rainfall in Livelihood Zones of southern Sudan



areas. At the onset of the main rains (April-June), people and cattle return to upland wet season cultivation areas to begin the agricultural season. Seasonal movements are less pronounced in the more agricultural zones, such as the Hills and Mountains Zone, and almost non-existent in the exclusively agricultural Greenbelt Zone. These two zones have two rainy and cropping seasons in April-July and August-December. The general rainfall patterns for the livelihood zones in southern Sudan are illustrated in Figure 1. It is worth mentioning that households in southern Sudan have noted a shift in rainfall patterns (e.g. the onset of rains in northern areas of southern Sudan is now in June instead of April-May) over the past couple of decades; this should be substantiated by ground level or remote sensing data.

With the last population census conducted in 1983, and over two decades of conflict in the interim, population figures in Sudan (and especially southern Sudan) are the subject of continual debate. In 1983, the census figures estimated Sudan's total population at close to 20 million people, with 80-85% settled in rural areas. Recent estimates for southern Sudan (1998-2004), mostly extrapolations derived from multiple sources and indicators, vary widely from three million to eight million.

A Summary of Food and Income Sources in southern Sudan

As already noted, households in southern Sudan rely on a combination of agriculture, wild food gathering and hunting, fishing, livestock keeping and barter/exchange as the basis of their livelihoods. Access to food is seasonal and location-dependent. By carefully balancing household food needs with strategic movements to seasonal areas of supply, households are able to increase their resilience in the face of regular natural hazards, such as droughts and floods. It is only when insecurity keeps people or cattle from moving that periods of unusually acute hunger occur.

Greenbelt Zone:

Households in the wetter southwestern areas of the Greenbelt Zone rely almost exclusively on agriculture to meet their food needs. Here, surplus production is common and households cope with dry years by increasing their dependence on root crops and exchange.

Arid Zone:

In the Arid Zone, which occupies the southeastern tip of the country, households practice a nearly pure form of pastoralism and there is almost exclusive reliance on livestock and livestock trade for food. Seasonal migrations in search of both water and pasture provide opportunities for substantial trade and exchange with neighbouring communities.

Hills and Mountains Zone:

The Hills and Mountains Zone falls somewhere between these two extremes (agriculture and pastoralism), with reliance on cattle, trade and root crops increased in difficult years.

Western and Eastern Flood Plains Zones:

In the Western Flood Plains Zone, livestock and agriculture, supplemented by fish and wild foods, are the main food sources. Similar food sources are available in the Eastern Flood Plains Zone, but with an additional option of game hunting.

Ironstone Plateau Zone:

Households in the Ironstone Plateau Zone are heavily dependent on crop production and are well placed to access surpluses in the neighbouring Greenbelt.

Nile and Sobat Rivers Zone:

Apart from crops and livestock, wild foods and fish contribute significantly in the Nile and Sobat Rivers Zone. Fish and wild foods are collected in varying quantities depending upon the season and location.

Sources of food

Figure 2 illustrates the relative contributions of different food sources in various zones, and reflects a typical year during the 1999-2002 period. These years were regarded as 'normal or near normal' by most local informants when reflecting on the past 10 years, and are used as a baseline or point of reference against which to monitor changes.

Crops contribute the majority of households' food baskets in the Greenbelt, Hills and Mountains and Ironstone Plateau zones and are mainly comprised of sorghum, maize, cassava and millet. In the latter two zones, wild foods, labour and purchase/exchange are also significant, especially among poorer households. In comparison, crops contribute less in the Western and Eastern Flood Plains and the Nile and Sobat Rivers zones, particularly for poor households. These households obtain most of their food from off-farm food sources such as wild plants, game and fish, complemented by either purchase or labour exchange. The reverse is true for better-off households as they tend to rely more on their own crop and livestock produce. In the Arid Zone, livestock products (meat and milk) and the sale of livestock to purchase grain are the most important food sources for all households.

Sources of income

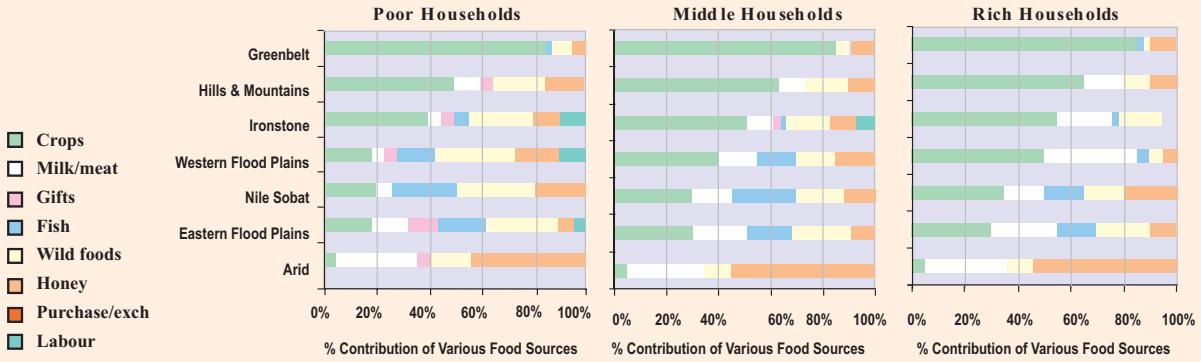
In reality very little cash has been circulating in the southern Sudanese economy over the past 20 years. Most transactions have been in the form of barter or exchange. For instance, local labour is often paid for with food and/or beer, and cattle are often exchanged directly for grain. Cash purchases are gradually increasing, but remain at a very low level compared to other countries in the region. Assets are commonly saved in the form of livestock, which can represent very significant assets for some. The lack of cash, however, remains a major constraint to recovery and limits trade and investment choices. Because of the limited cash in circulation, a range of currencies are in everyday use. In order to rank, assess, compare and understand income values across regions, the income is converted to a sorghum grain equivalent, which is derived by calculating the amount of sorghum that could be purchased if all the income was spent on grain.

Figure 3 demonstrates that the variations among zones are more pronounced for income than they are for food sources. As might be expected, people sell what they produce in order to obtain cash in all zones. So in the Greenbelt, agricultural production forms the main component of household income, whereas in the Arid Zone, livestock sales make up the majority of income. In the Nile-Sobat Rivers Zone, fish sales, petty trade and remittances are important; and for poor households everywhere (with the exception of the Arid Zone), labour sales and/or remittances make up a notable component of overall income. Tobacco and wild food sales provide additional income in a number of zones as well.

Expenditure patterns

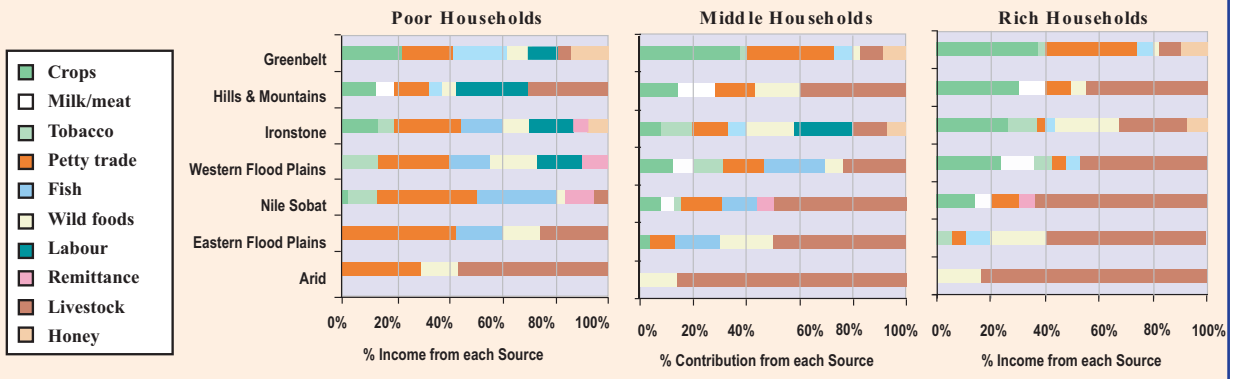
Figure 4 illustrates expenditure patterns of the different groups in each zone. Apart from the surplus-producing Greenbelt, poor households in all of the other zones spend a significant proportion of their income (not

Figure 2: Sources of Food (1999-2002)



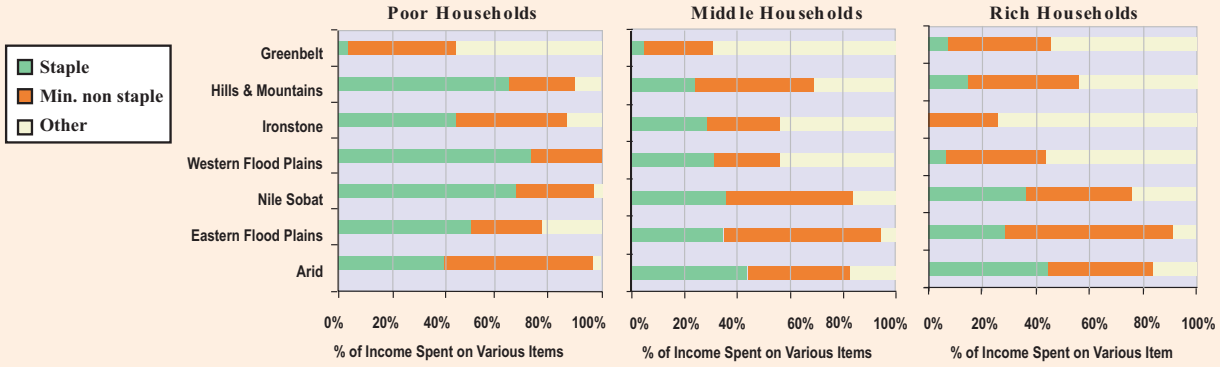
Note: *The charts represent relative proportions of annual household food requirements by wealth group. Please see individual livelihood zone profiles for more information about household dietary energy intake for the different wealth groups.*

Figure 3: Sources of Income (1999-2002)



Note: *The charts represent relative proportions of annual household income by wealth group. Please see individual livelihood zone profiles for more information about household income for the different wealth groups.*

Figure 4: Expenditure Patterns (1999-2002)



Note: *The charts represent relative proportions of annual household expenditure by wealth group. Please see individual zone profiles to compare absolute values of total expenditure for the different wealth groups.*

less than 40%) on staple grains, followed by essential non-food items (the minimum non-staple category on the graph), such as veterinary and health services, clothes, soap, etc. Generally, it is estimated that the total value of poor households' cash income may be equivalent to 2-3 sacks of sorghum per household (1 sack = 90 kg). In the Greenbelt and Arid zones, where cash income (derived from crop and livestock sales respectively) may be higher, other types of expenditure (payment for education and labour, savings, restocking, etc.) are more significant. This also applies to the wealthier groups in the other zones. Households in the Greenbelt often invest in education or savings in Uganda and in local labour, while pastoral households spend their cash on purchasing grain, veterinary medicine, and the protection of animals (acquiring arms to both conduct and protect against livestock raiding).

Practical Implications for Monitoring and Programming in the Post-Conflict Period

Implications for livelihood monitoring and programming

The relationships between livelihood zones are as important as the relationship of different wealth groups within each zone in determining access to the basic means of living for most people. Different wealth groups specialise in the production of one or two food sources that other groups require, and each livelihood zone has its comparative advantages as well. These variations in local advantages provide the context for a rich network of economic links. For example, if the rich and middle groups move away or decline, as was the case in Bahr el Ghazal in 1997-98, the poor can find themselves without vital employment income, and without crucial demand for petty trade or sales of fish and wild foods to their better-off neighbours. This highlights the need to monitor shifts in the status of all wealth groups and shows why it can be dangerous to decline to monitor better-off groups. In times of conflict, the better-off wealth groups can often be at serious risk when their livestock are raided. The dynamics of the relationships among different wealth groups and between livelihood zones often determine whether or not households will manage to survive during periods of conflict. Years of conflict have heavily damaged this system and the inherent exchange of milk, wild foods, grain, fish, and other commodities (including labour) that were accessible through the traditional system, and supported through kinship ties, in both normal and difficult years.

Broader analysis shows that the seeds of crisis were rarely a result of short-term shocks such as droughts or reduced crop yields alone. The war, and the increased raiding that resulted, took away large numbers of livestock, caused displacement and prevented normal coping activities. The interruption of seasonal activities resulted in lower production and an increased need to trade livestock (at reduced rates) for grain. Post-conflict planning will need to take these important socio-economic relationships into account to avoid a possible over-emphasis on supporting increased local crop production rather than restoring trade, developing new markets, and promoting the exchange opportunities that are part of a functional economy.

Implications for monitoring the Millennium Development Goals

Currently, the challenge facing the new government and its humanitarian operation

partners is the establishment of baseline indicators for southern Sudan against which to monitor and measure their progress. This brings in the concept of the Millennium Development Goals (MDGs) as an important tool that can be used for measuring progress. In the Millennium Declaration of September 2000, member states of the United Nations set a date of 2015 by when they would meet eight MDGs for: 1) eradicating extreme poverty and hunger, 2) achieving universal primary education, 3) promoting gender equality and empowering women, 4) reducing child mortality, 5) improving maternal health, 6) combating HIV/AIDS, malaria and other diseases, 7) ensuring environmental sustainability, and 8) developing a global partnership for development.

Due to its long history of conflict, southern Sudan ranks among the lowest countries in terms of progress towards achieving the MDG goals. Prolonged conflict has meant that local authorities and humanitarian operations have focused on addressing emergencies and saving lives, rather than development and reconstruction. Also, awareness of the MDGs has been extremely limited. However, following the peace agreement, interest in the MDGs is beginning to gain momentum. In 2004, the SSCCSE and UNICEF published a report entitled *Towards a Baseline: Best Estimates of Social Indicators for southern Sudan*, which illustrates that southern Sudan is far from reaching its MDG goals and emphasises the need to strengthen activities to facilitate their implementation and monitor their progress. Table 1 is a summary of the status of key social indicators in southern Sudan, which are a reflection of progress towards the MDGs.

Table 1: Status of Key Socio-Economic Indicators			
Millennium Development Goal	Indicator	Value	Year
General	Population size (millions)	7.51	2003
	Population growth rate (%)	2.85	2001
Developing a global partnership for development	Refugees/internally displaced persons (millions)	4.8	2002
Eradicating extreme poverty and hunger	Life expectancy at birth (years)	42	2001
	GNP per capita (US$)	<90	2002
	Percentage of population earning less than US$1 a day (%)	>90	2000
Combating HIV/AIDS, malaria and other diseases	Prevalence of HIV/AIDS in adult population aged 15 – 49 (%)	2.6	2001
Reducing child mortality	Population without access to drinking water supplies (%)	73	2000
	Percentage of underweight under-five children (%)	48	2001
Achieving universal primary education	Adult literacy rate (%)	24	2001
	Net enrolment rate in primary education (%)	20	2000
Promoting gender equality and empowering women	Ratio of girls to boys in primary education (%)	36	2000
Reducing child mortality	Under-five mortality rate (per 1,000 live births)	250	2001
Improving maternal health	Maternal mortality rate (per 100,000 live births)	1700	2000
Ensuring environmental sustainability	No data	-	-

Source: NSCSE, 2004. Towards a Baseline: Best Estimates of Social Indicators for southern Sudan.

Eradicating extreme poverty and hunger:

Poverty is widespread and has been exacerbated by decades of conflict. Apart from the majority surviving on less than a dollar per day, many households are female headed and lack sufficient labour in a labour intensive economy. Efforts to address this goal will need to look at underlying causes (rooted in understanding livelihoods) and factors affecting food production and utilisation and the stability of supplies. Factors such as low incomes, lack of opportunities and chronic malnutrition will also need to be addressed.

Achieving universal primary education:

Conflict has seriously hampered effective rebuilding of education systems. Over 75% of 1.4 million children of school age (7-14 years) do not have access to education. Ensuring that all children complete primary school is a significant challenge requiring the adoption of multiple strategies, including advocacy, the establishment of alternative education programmes, and efforts to address traditional social and cultural barriers.

Promoting gender equality and empowering women:

Gender-related challenges exist in most sectors, including education, health, leadership, control of resources, etc., and are rooted in deep-seated social and cultural beliefs. Advocacy and the implementation of a gender-sensitive development policy that would encourage women's participation would be a good start.

Reducing child mortality:

No baseline studies have been carried out, but the high disease burden, poor health service coverage and high rates of malnutrition are all believed to be responsible for high child mortality rates. Expansion of health facilities and relevant training, including hygiene and preventative education in health centres, are some of the measures that need to be prioritised.

Improving maternal health:

Risks to maternal health include early marriages, more births to replace those lost during conflict, heavy workloads and strenuous daily chores, compounded by a far from adequate health system. This will require improvement of a health infrastructure that specifically addresses maternal health (e.g. in the provision of equipment, drugs, skilled birth attendants, and reproductive healthcare).

Combating HIV/AIDS, malaria and other diseases:

Malaria accounts for an estimated 40% of all health facility visits in southern Sudan. Its negative impact is compounded by limited access to health facilities and drugs, and by malnutrition. Preventative approaches to malaria and HIV, including education and relevant pharmacological regimes, are some of the priorities that can be implemented. However, these can only work well if there is an increase in health facilities and coverage.

Ensuring environmental sustainability:

There are no accurate estimates of environmental parameters, such as forest cover, deforestation rates, fuel use, etc. Natural resource management challenges are primarily institutional due to the widespread lack of policies and weak technical capacities. Development of legal, institutional and policy frameworks for monitoring and conservation of environmental resources is critical.

Developing a global partnership for development:

The establishment and support of a sustainable peace, and efforts to avoid the resumption of hostilities, are pivotal to successful reconstruction and development in southern Sudan. A long-lasting peace will create the conditions necessary for the improvement of social service infrastructure (health and nutrition, education, safe water and sanitation), as well as encouraging vital economic activities such as the establishment of markets, trade and relevant financial systems.

Rural Livelihood Zone Summaries

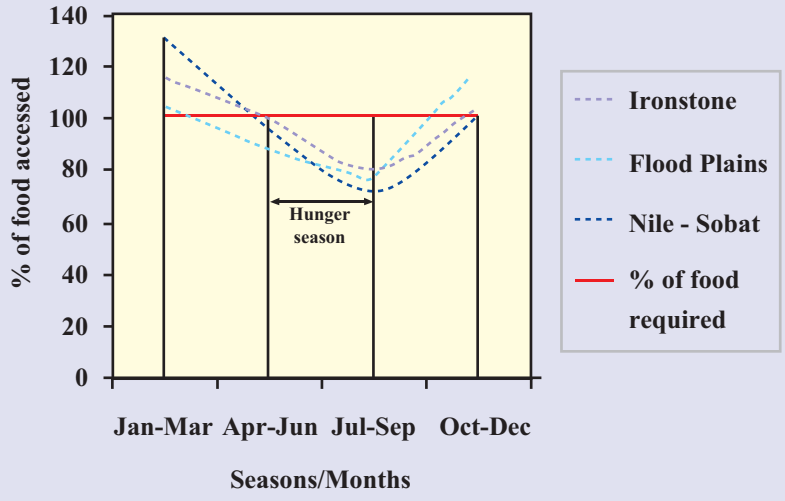
Summary of Hazards

Droughts and floods are the most common natural hazards experienced in all zones other than the Greenbelt. Droughts are a fairly common event, and households have developed means of coping with their regular occurrence. Apart from planting drought-resistant crops like sorghum, millet and sesame, households conserve the food stocks they harvest by sending, for longer periods of time, additional family members to dry season grazing areas. These areas tend to be near rivers, or lowland flood plains, where alternative foods like fish and wild foods are available. By regulating the consumption of food stocks through migration, households are able to save food to sustain their members through the next planting season.

Although floods are also a common occurrence, this 'hazard' usually has more positive consequences than negative. Households in the Nile and Sobat Rivers Zone and the Eastern and Western Flood Plains depend on regular seasonal flooding (July through September) to increase their access to fish and water lily.

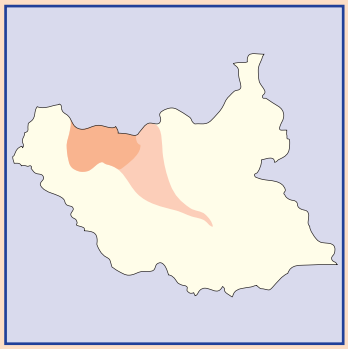
Conflict is the most damaging hazard for livelihoods and basic food security in southern Sudan. Continuous fighting over the past 20 years and its attendant consequences have continually undermined access to markets and migration, and denied households the opportunity to effectively address structural seasonal food deficits which typically occur between April and August (Figure 5), especially in the Western and Eastern Flood Plains, the Ironstone Plateau, and the Nile and Sobat Rivers zones.

Figure 5: Seasonal Food Access by Zone



Zone 1: Western Flood Plains Zone

Agro-pastoralism, gathering and seasonal labour migration



Households in this zone generally depend on livestock, crops, wild foods and fish as their main food sources. There are some differences between the northwestern counties of Aweil, Gogrial and Twic and the southern counties of Rumbek, Tonj and Yirol. Seasonal migration of households to northern Sudan for labour and petty trade is significant in the northwestern counties (darker shaded area) while larger numbers of livestock and exchange are significant in the southern counties (lighter shaded area).

Households, especially the poor in the northern parts, remain vulnerable to typical flood and drought hazards because survival options have become increasingly dependent on fish and wild foods due to the impact of prolonged conflict. In difficult years, poor households increase their reliance on fish, wild foods and, to some extent, labour, petty trade and tobacco sales. Most income is spent on food and essential non-food items, leaving little chance of switching expenditure from non-essential items as a means of coping in a poor production year. However, the potential for income generation and vibrant markets is high given the numerous market centres in the region, and given that wealthy households spend most of their income on non-staple and other expenditure. The main challenge facing households in this region is the cumulative effects of the protracted conflict, which has limited trading opportunities (undeveloped market and associated infrastructure, and lack of cash for exchange), and fragmented households (a significant proportion are female headed).

Numerous nutrition assessments have found that poor health and hygiene practices have significantly increased malnutrition in children, as much if not more than inadequate food intake. Opportunities for increasing food security start with promoting cash income opportunities, strengthening market infrastructure, and improving road conditions and links with northern Sudan and the crop-surplus Greenbelt. Restoration and revival of the existing, but non-functional, railway infrastructure could also complement new road networks. Other improvements should include welfare infrastructure (schools, hospitals/clinics, water, health and hygiene education), and better protection of wild plants. Effective market strengthening should start with assessing existing markets/trade linkages, including the impact of the poorly understood

Livestock

Goats
Cattle

Main Income Sources

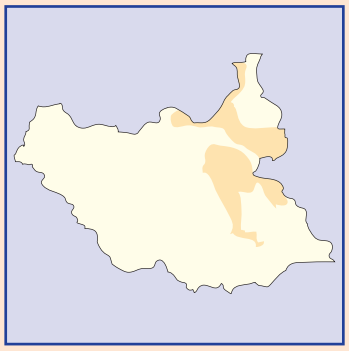
Livestock
Crops
Petty trade
Off-farm sources
Migration

north-south labour migration on household food security, which has been sustained through the past 20 years of conflict. Improvements are largely dependent on the implementation of the peace agreement and the emergence of strong governance and local leadership, particularly in the southern parts of this zone where inter-clan conflict has persisted even after the signing of the peace deal.

During the war years, this zone has been a focus of conflict, with its close proximity to the northern areas, the presence of the railway line, and strategic political positioning. As people begin to return and re-establish their lives, special care must be taken to address the needs of broken households, commonly headed by widows, who are more inclined to pursue less labour intensive activities such as petty trade around market or town centres. With lack of male representation, there are increased risks of marginalisation, especially in terms of relief and other services. Also, acceptance within the community is more complicated for these families.

Zone 2: Eastern Flood Plains Zone

Agro-pastoralism, hunting and gathering



Livelihoods in this zone are quite similar to the Western Flood Plains, differing primarily in that households cultivate less and move longer distances for grazing, water, fishing and exchange. Also, wild game contributes significantly to the food basket. These households access long-distance markets, some situated in Ethiopia. This zone is inhabited by different tribes and is prone to inter-ethnic hostilities, including cattle raiding, which have escalated since 1999. Due to conflict, this zone is the most disadvantaged in terms of basic services.

Livestock, crops, fish, wild game and wild foods are the main sources of food. However, wild game, traditionally a significant food source, is now increasingly threatened, implying that more sustainable food sources need to be sought to compensate for the potential reduction in game.

Current challenges include recurrent inter- and intra-tribal hostilities, lack of cohesive local political leadership, and poor infrastructure for facilitating access to food and non-food needs. This includes poor access to local and cross-border trade with Ethiopia due to a lack of roads and

Livestock

Cattle
Goats

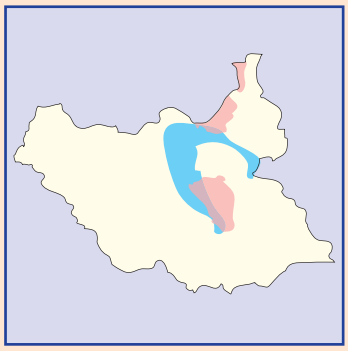
Main Income Sources

Livestock, fish
Sorghum
Tobacco
Charcoal
Firewood

transport, and under-utilisation of the transport and food production potential of the Sobat River and associated wetlands. The steeper banks of the Sobat flood less than the banks along the Nile. Also, the region has very few vibrant markets. There is an urgent need to prioritise and speed up support for grassroots peace initiatives, without which recovery and development initiatives will continue to be thwarted.

Zone 3: Nile and Sobat Rivers Zone

Agro-pastoralism, fishing and remittances



This is one of the most resilient regions when interpreted in the context of food security and the protracted conflict. The resilience stems from the Nile-Sobat Rivers Zone, where fish and wild foods, especially water lily, are found in great abundance and are accessible throughout the year. Crops, and to a lesser extent livestock, also significantly contribute to food security in this zone. The area is prone to seasonal annual flooding (July-December) from the Nile and Sobat rivers, which increases yields of fish and wild plants. Tobacco sales also provide an important contribution to household incomes.

Current challenges include: limited access to major markets; under-utilisation of Nile River Basin transport; and untapped water-dependent production potential. Traditionally, the region engaged in commercial fishing and exported fish to other countries. One option for development would be to strengthen the capacity of households to maximise opportunities availed by the Nile Basin, including domestic fish production and preservation, water lily farming and protection, rice production, flood-recession agriculture, and flood management. Concurrent improvements would have to be made to road and market infrastructure, and environmental protection would need to be made a priority. Where remittances are important, like in Shilluk areas and Bor County (red shaded areas), investments are likely to occur faster. Remittances come from kin living abroad and in northern Sudan. The potential for increased incomes from oil fields for households located in the central parts of the zone (Unity State) is also emerging. Alongside these food security improvements, strategies also need to be implemented to address the control of diseases associated with the harsh Nile Basin.

Livestock

Cattle
Goats

Main Income Sources

Fish/fish oil
Remittances
Tobacco
Labour (towns)

Zone 4: Ironstone Plateau Zone

Agriculture, hunting and gathering

Crop cultivation, wild plant and honey collection, and game hunting are the main food sources in this zone. Livestock production is limited by the presence of tsetse fly in many parts of the region. Despite the zone's high agricultural potential, drought often affects local crop yields. The soils, high in ironstone, have low water retention capacity, and water shortages are a chronic problem during the dry season.

Bordered by the surplus crop-producing Greenbelt Zone to the south, the Ironstone Plateau depends on exchange relations with its more agriculturally suited neighbour. Large amounts of commercially viable shea butter oil, fruit and honey production occur in this zone, and sale of these products constitutes an important component of cash income.

Improving road and market links with the Greenbelt and credit availability could be the quickest way of improving access to food all year round, as well as promoting opportunities for paid employment. Increased sales of honey, shea butter and cassava would increase access to cash income, supplement income from labour, and increase resilience following drought years. Improved links with the Western Flood Plains could also increase market opportunities, especially if the railway network is revived and expanded. It is important to note that future population growth will increase pressure on hunting and wild food gathering activities, particularly in the post-peace period, and these sectors will require careful planning in terms of management and protection. Improving access to water will also be critical as it will reduce the pressures on scarce labour, freeing up time from collecting water for more productive activities. The border area between the Ironstone Plateau and the Greenbelt zones has hosted several displaced Dinka communities from the Nile-Sobat Rivers Zone (Bor County) over the past 14 years. The prolonged presence of these people and their large cattle herds has resulted in a long-running livelihood conflict, as their livestock have repeatedly destroyed the host community's crops over the years. This is yet to be resolved.

Livestock

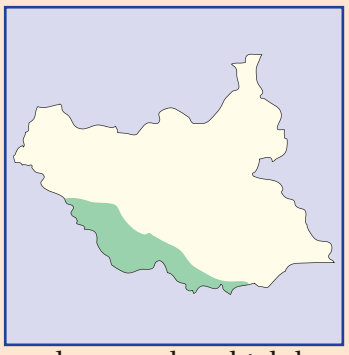
Few goats, sheep and cattle

Main Income Sources

Shea butter
Honey
Cassava
Labour

Zone 5: Greenbelt Zone

Exclusively agriculture



This is the traditional surplus-producing agricultural region, also known as the 'bread-basket' of southern Sudan. Unlike other zones, rainfall is usually not a limitation. Immense exchange opportunities exist with the neighbouring crop-deficit zones and as far as Uganda, but movement of this surplus is highly constrained by the extremely poor road network, which has discouraged farmers from producing as much as they potentially could.

The most urgent priority is the improvement of the road infrastructure in order to increase access and trigger demand for crops from the surrounding zones (Hills and Mountains, Ironstone and southern parts of the Western Flood Plains). In turn, this would stimulate increased agricultural production, especially now that credit to promote agriculture has become available through the southern Sudan Agriculture Enterprise Finance Programme (AEFP). Potential for households to increase their cash income is higher than all the other zones because they tend to be food secure, allowing them to utilise extra income on education in Uganda or to invest in savings. Also, benefits of cross-border exchange with Uganda are potentially much higher but can only be realised if road links with the country are improved. Factors likely to hamper some of these recovery efforts include attacks by the rebel Lord's Resistance Army (LRA), which have spread to this region since September 2005, as well as conflicts between displaced Dinka refugees from the Nile-Sobat Rivers Zone (Bor County) and their host communities. For effective implementation of the above recovery programmes, the priority must be to curb the LRA insurgency and to strengthen local governance structures.

Crops

Sorghum
Maize
Cassava

Main Income Sources

Crops
Petty trade

Zone 6: Hills and Mountains Zone

Agro-pastoral

Households in this zone depend upon a wide variety of crops, typically cultivated twice each year. A significant amount of cassava is grown and ensures that most households are food secure even during drought years. In addition, households in some areas (e.g. Torit and Budi) rely more heavily on livestock.

Drought (in the mountains) and floods (in the lowlands or plains) are not uncommon in this zone. Livestock-keeping households face continuous conflicts over cattle and associated resources. However, opportunities for improvement are significant, given that:

- Labour for cash or food is very common, especially in the western areas, implying that improved access to crop surplus areas would increase the survival options of labour dependent households;
- Promotion of labour opportunities would be more successful if both improved access to better producing areas and increased availability of cash are addressed concurrently. Credit facilities are already available to farming households in the neighbouring Greenbelt, and extending this service to this zone could yield significant benefits;
- Resource-based conflict resolution initiatives among livestock keeping households would go a long way to restoring harmony and fostering local exchange opportunities, especially in the eastern areas.

Significant development in parts of Torit, Juba and Magwi depends on the resolution of insecurity caused by the northern Uganda-based LRA rebels. This needs to be given the utmost priority. Due to distances between Pibor and the other counties, future development in the Pibor Hills and Mountains sector will be more beneficial if links are established with Ethiopia and the pastoral livelihoods in the extensive lowlands of Pibor and Kenya.

Livestock

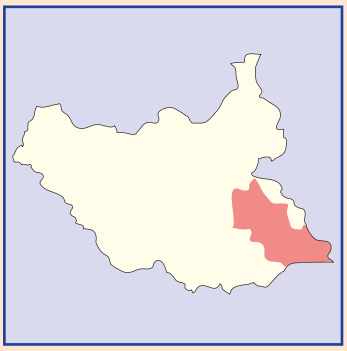
Cattle
Sheep
Goats

Main Income Sources

Crops
Labour
Remittances

Zone 7: Arid Zone

Typically pastoral



This is the driest of all the zones, and here drought is the norm. Households are mostly nomadic pastoralists who depend on livestock for grain exchange, livestock products and wild foods. Some households attempt to grow sorghum, but more often than not it fails, making the exchange of livestock for grain and access to water and pasture in neighbouring areas (including Kenya) a necessity. However, cattle raiding and poor relations with neighbouring communities often disrupt this critical access.

Increased commitment by all stakeholders to support conflict resolution, peace-building and arms control initiatives will be paramount in order to promote the conditions for improved local and cross-border trade and exchange. Peace-building initiatives need to be complemented by demining and improvement of road infrastructure. It is important to note that most households have significant purchasing power because of the large size of their herds. This also implies that increased access to veterinary services and facilitation of cross-border links with Kenya for livestock and grain exchange will be critical.

It is important that agencies interested in participating in developing the area take into account events in the neighbouring Hills and Mountains Zone because the two areas harbour traditional hostilities rooted in cattle ownership, and any perceived development imbalance could trigger undesirable outcomes. It is also vital to 'tread lightly' in this pastoral livelihood system, assessing the impact of new development options before implementing them, and working closely with local leaders to reduce the potential for unintended damage and conflict.

Livestock

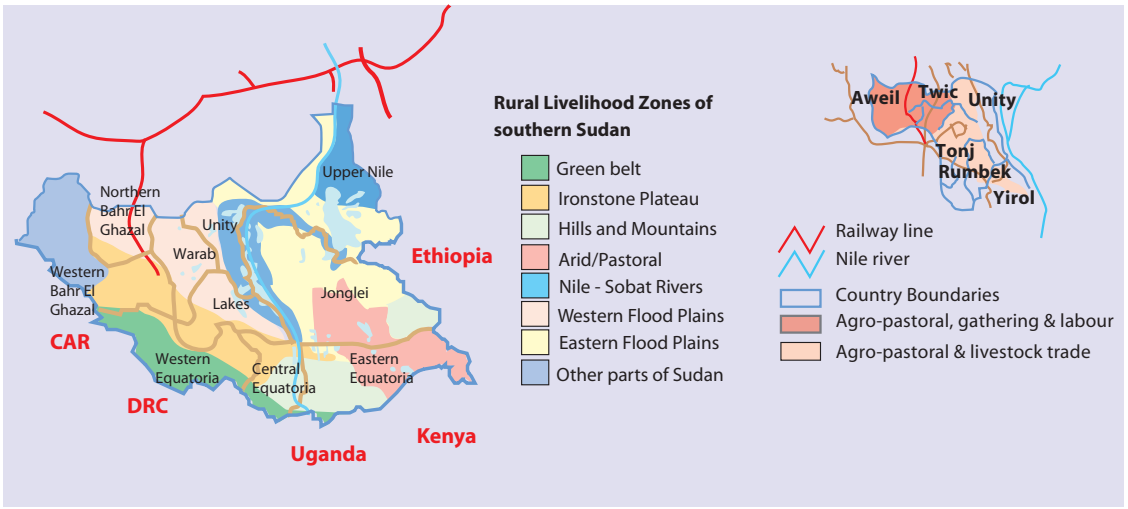
Cattle
Sheep
Goats

Main Income Sources

Livestock
Game meat

Zone 1: Western Flood Plains Zone

Map 2: Location of the Western Flood Plains Zone, and Western Flood Plains Zone Counties



Main Conclusions and Implications

The Western Flood Plains Livelihood Zone was a focus of bitter conflict during the war. A major part of the zone, Northern Bahr el Ghazal, experienced a famine in 1998 that reportedly claimed up to 75,000 lives. This famine was not the product of a series of drought years, as is sometimes reported, but a combination of poor production, massive asset depletion, and major displacement caused by several years of ongoing conflict. The high degree of conflict in this zone resulted from two factors: first, Bahr el Ghazal is a homeland for the Sudan People's Liberation Movement (SPLM), and second, the railway from Khartoum to Wau passes through the area. Following the 2005 peace agreement between the Government of Sudan and the SPLM, the area stands to gain significant benefits from investment by the new government and plans to upgrade and extend the railway.

Unrestricted seasonal migrations for pasture, grazing, and labour and livestock markets are an essential part of life in the Western Flood Plains. Constraints to these movements restrict people's normal ability to obtain food and income. The traditional economy is based on cattle, which form the crux of the social system, representing a household's physical wealth and its social standing. Cattle traditionally provided a direct source of nutrients through milk and meat, as well as a means of accessing grain through exchange. However, one outcome of the war has been that wealthier households have begun to rely more heavily on crop production, in part to offset the risks associated with having all one's 'food' derive from a source that can be raided or slaughtered in battle, and in part to reduce the number of cattle exchanged for grain. With livestock markets disrupted during the war, the latter reason has assumed

greater weight. Crop production has its own inherent risks, however, in a region where both floods and droughts are common. Better-off groups appear to have benefited from recent investments in agriculture (such as the growing use of ox-ploughs), which have had an overall benefit in increasing the availability of sorghum and some expansion of employment opportunities for poorer households. On the other hand, there was little expansion in crop production for poor groups during the war, despite repeated efforts by the humanitarian community to provide seeds and tools. Poorer households are constrained by a lack of labour, the lack of active markets, and, ultimately, the vagaries of the weather. With sustained peace, it is hoped that increased cash income and production will lead to asset recovery for these poorer groups.

Zone Description

Administratively, the zone is comprised of Northern Bahr el Ghazal (further subdivided into the counties of Aweil East, West, South, North, Centre, Gogrial and Twic), Warrap (Tonj County) and Lakes States (counties of Yirol, Awerial, Cuibet and Rumbek). The zone is occupied by predominantly agro-pastoralist Dinka groups, of whom the Rek and Twic form the majority.

Natural capital

The zone is prone to seasonal flooding with rains occurring any time between May/June and October. Flooding of local rivers (the Nile's tributaries) usually occurs between July and September. Water levels in the zone's major river systems (Lol and Jur) depend on rainfall in their catchments that extend as far as the Central African Republic (CAR) border, as well as on local rainfall, which feeds swamps and tributaries along the course of the rivers. Flooding is a normal and important feature of these river systems, supporting fish and water lily production. In the south of the zone, smaller and much more seasonal river systems provide important water sources as well as grazing. Dry season grazing for cattle is predominantly found along the major rivers of Jur, Lol, and Bahr el Gazal in the north. In the south of the zone, greater distances must be travelled to dry season grazing, either along the Nile or towards the border with the Nile and Sobat Rivers Zone.

Land for cultivation and settlement is for the most part openly available. Lands are held in common by the local community, and are managed through traditional legal structures. In the north of the zone, there is a greater demand for better arable land due to higher population densities. Recently, peace has begun to allow renewed utilisation of the *gok* or highlands of the north, which are considered very fertile and are not susceptible to flooding. In the south of the zone, where greater security prevailed even before the peace agreement, farm sizes are increasingly large. Soils in this zone are predominantly black cotton in lower lands and a sandy loam in higher areas. Forested areas in the zone harbour a rich diversity of wild plants and fruit that provide a significant source of dietary energy and nutrients (e.g. *lalop*, a type of desert date), as well as raw materials for construction and fuel.

Human capital

Approximately 40% of southern Sudan's total population (excluding post-CPA returnee groups) lives in this zone, which is the most densely populated of all the livelihood zones. Agricultural employment, particularly in the

north of the zone, is an important component of the economy. Larger farms owned by the better off depend on agricultural labour to extend their operations, and poorer households benefit from the food and income they obtain through this employment. Large numbers of returnees will likely rely on such labour opportunities while they re-establish themselves. It is hoped that returnees will also bring with them new sets of skills learned while in exile. Formal employment opportunities are few because economic and production systems have remained largely undeveloped.

As in other parts of southern Sudan, disease places a major constraint on human productivity in this zone. Nutrition surveys conducted here between 1999 and 2004 indicate an 18-25% prevalence of global acute malnutrition (GAM), and around 2.8% severe acute malnutrition (SAM). These high rates of malnutrition are increasingly associated with poor health service coverage (primary health care centres and units), and poor hygiene and sanitation practices. As in other zones, primary school education is available, although coverage is far below global standards.

Social capital

Traditional kinship structures were weakened by the war, particularly in the northern parts of the zone. These kinship structures are reported to be more intact in the south. Conflict has been near-constant among the local Dinka clans over grazing land, as well as with the neighbouring Nuer along the Unity State border.

Physical capital

Land and cattle remain the main physical capital assets. Although existing roads are in extremely poor condition, with peace, the roads, railway line and associated infrastructure are expected to improve and foster local development.

Economic or financial capital

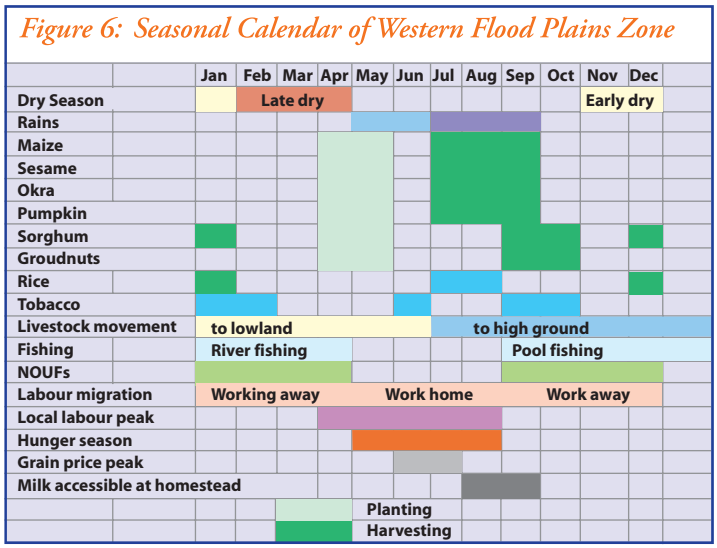
With the exception of the Greenbelt and the Hills and Mountains zones, households in this zone have the potential to generate more income than elsewhere in southern Sudan. That being said, current income levels are still very low in relation to global standards. Cash earning opportunities have been limited by a shortage of hard currency, a total absence of financial institutions and credit facilities, and poor market infrastructure. Most towns are little more than large villages separated by vast distances.

Seasonal Calendar

The main growing season in this zone normally begins in May/June and ends in September/October. Typically part of a household will occupy a permanent settlement on higher ground throughout the year, while the other household members migrate between home areas and dry season encampments.

By January, households normally assess their harvests and make decisions about the allocation of household labour until June, the next planting season. Some members are sent to hunt, others to gather wild foods and fish, while others still might be delegated to seek employment far from home. By sending selected household members out of the homestead for part of the year, households manage their cereal consumption in order to conserve cereal for the planting season.

Figure 6: Seasonal Calendar of Western Flood Plains Zone



Early depletion of household stocks requires additional earning of income in order to be able to purchase extra sorghum.

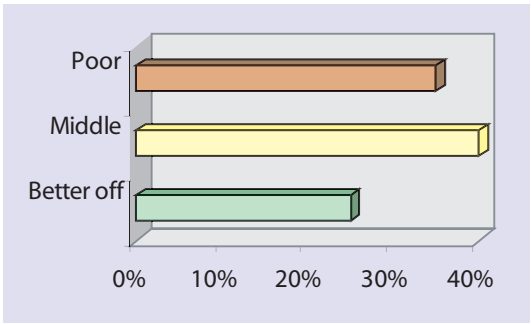
Although rarely acknowledged, labour migration plays a large role in generating this income for households in the northern parts of the Western Flood Plains Zone, due in large part to the proximity to northern Sudan. Migration is typically undertaken by male household members after the harvest, between November and April; they normally return home in time to help with land clearing and preparation before the start of the main rains. In the southern part of the zone there is a greater reliance on livestock exchange. Crop cultivation is greater in the southern parts due to the increased use of draft animals in land preparation.

Wealth Breakdown

As in other zones, cattle signify - and to some extent determine - wealth and status in the Western Flood Plains Zone. Wealthier households[8] are those with more cattle; in practice, these households tend to have more labour available as well. Poorer households may have small stock (sheep and goats) and a small number of cattle, and they rely more heavily on their own labour (e.g. gathering wild foods, working for others, fishing) to procure food and other basic goods necessary for survival. Figure 7 summarises the basic characteristics of different wealth groups in the zone.

Although conflict has caused significant asset depletion and downward shifts in wealth status, in recent years a more stable

Figure 7: Wealth Breakdown for Households in the Western Flood Plains



Group	Livestock holdings	Area planted
Poor	0-5 cattle 0-10 shoats	0.5-2.0 acres
Middle	5-20 cattle 10-25 shoats	2.5-3.5 acres
Better-off	20 and above	3.5-4.5 acres

[8]Middle and better-off men will commonly marry more than one wife. In the livelihoods analyses represented in these profiles, a household size of six is used and the household is considered to be the number of people that eat from one pot. In southern Sudan, each wife tends to prepare food for her own offspring and not the offspring of her co-wives; therefore, the wife and her children (plus the husband) have been considered the basic unit of analysis, rather than the husband plus all of his wives.

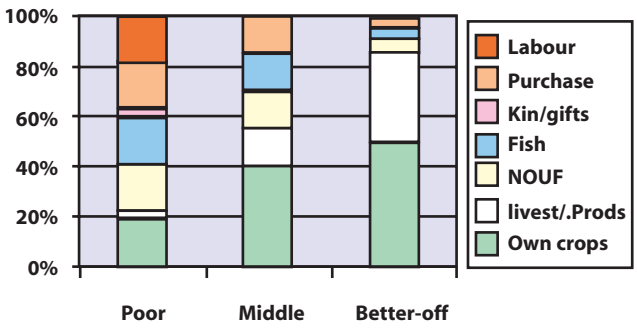
pattern has set in. Traditionally, strong kinship ties bound families together through a series of rights and responsibilities, which translated into an important safety net during food shortfall years. It was not uncommon for children to spend time with better-off relatives in difficult times and for livestock to be loaned on a temporary basis to those lacking milking cows. However, it is commonly believed that kinship ties have weakened as a result of intensive conflict during the 1990s.

The better-off groups are commonly at least two to three times more productive than the poor. This is partly attributed to the amount of land that can be cultivated by better-off households with their access to more labour (both within the household and through hiring poorer households), but also because of their access to manure from their own livestock to use as fertilizer. This suppresses Striga weed (which is widespread in the northern parts of this zone) and improves soil fertility and moisture holding capacity, resulting in higher crop yields. Livestock of wealthier households also tend to be healthier due to better access to veterinary inputs.

Sources of Food

Figure 8 summarises the annual relative contribution of each food source to total dietary energy requirements for each wealth group. As noted above, the most food secure households in this zone are those that own cattle. By contrast, the poor comprise households with few livestock who are short of household labour and as a result are constrained in their ability to increase crop production and involvement in other income-generating activities. To meet their basic needs, most poor households rely on collecting food plants, catching fish, cultivating some crops, and seeking employment or petty trade opportunities.

Figure 8: Sources of Food in Western Flood Plains Zone



The poor generally exchange or purchase as much sorghum as they grow themselves. Over the years, insecurity has made it very difficult for poor households to generate sufficient savings to purchase cattle to accumulate wealth and improve their social status. Wealth group differences translate directly into differences in consumption and total food intake, and they determine differences in income options as well.

Crops: Crop production plays an important role in the local economy of the Western Flood Plains Zone, but none of the wealth groups manages to cover all of its annual food requirements with its own crops alone in a typical year. By producing crops, households minimise the need to sell or exchange livestock. Sorghum is the main staple crop in this zone. Both short- and long-term sorghum varieties are cultivated, with longer term sorghum grown more in the south of the zone.

The main harvest is between September and October in the northern part of the zone, and between December and January in the southern part. Groundnuts are the second most

important crop. Other crops include maize, simsim (sesame), pumpkins, beans, millet and rice. People plant in both lowlands (locally known as *toic* and characterised by clay soils) and highlands and plateaus (locally known as *gok* and *alel* respectively, and characterised by sandy soils). The risks associated with drought and floods are minimised by planting in both areas every year. Lowland farms perform better in drought years, as more moisture tends to be retained in these areas.

The reverse is true during flood years. Rice is grown in a few lowland areas in the northern parts of the zone. Quick growing crops (short-cycle sorghum, maize, okra and pumpkins) are planted close to the homestead and harvested in two to three months. These are often consumed 'green' during the hunger gap, and contribute between 5-10% of annual household food needs. Drought, floods, pests, weed infestation (especially Striga), and lack of labour are common constraints to production. This has resulted in strategies that minimise risk rather than those that tend to maximise production.

Because of the risks associated with rain-fed agriculture, poorer groups are inclined to split their labour between their own plots and working for wealthier households, who will pay them for their work in cash or kind. The use of 'far fields' (land prepared away from the home and the first plot) is reported to be increasing. Over the past five years, the use of ox-ploughing has been increasing and significant increases in the area of land under cultivation have been reported in localised areas. However, in compiling these profiles it was not possible to obtain a consolidated evidence base for the extent to which this new practice has taken over in the zone as a whole.

NOUFs (naturally occurring uncultivated foods, or wild foods): Wild foods are consumed in all years by all wealth groups, and the fact of their consumption should not be regarded as an indication of unusual stress - although the composition of the wild food 'basket' and its relative weight in the overall food consumed by a family can be an indicator of stress in some years. The main wild foods include the shea butter nut *(lulu)*, seeds of water lily, tamarind *(cuei)*, desert date *(thou*, also called *lalop*), jackel berry *(cum)*, red fruit found in wooded grassland (*ajuet* or *dhiot*), fruit of *zizpu mycronata* (lang or buffalo thorn), and wild rice *(akudha)*, among many others.

Most of these fare best with good rains, although some, such as *thou*, do well in drier years as well. Shea butter nut is particular to the southern parts of the zone and is important as a source of income as well as a food source. *Lalop* is more common in the northern parts where a wide variety of grains, fruit, roots, nuts and leaves are both eaten and sold. Detailed studies have been undertaken to document the nutritional content of these foods and the way they are collected and prepared.[9] For the most part, poor households in this zone collect wild foods and rely on them to make up a significant proportion of their annual needs. Better-off households purchase wild foods to use as a relish for other foods.

Just how much wild food collection and consumption can expand in bad years is a matter of debate, and a factor that calls for careful monitoring. In poor crop production years, wild food yields may decrease as well, and it can take longer periods of time to collect sufficient quantities to cover the needs of the whole household.

[8]Gullick, C. Blessing or Burden (1998)

Livestock products: Milk and meat contribute significantly to annual food supplies for better-off groups who own more cattle. Other groups occasionally access milk through exchange and gifts/loans from kin during peak lactation and hunger seasons, which normally coincide with the busy pre- and post-harvest periods. Ghee, a milk by-product, offers the advantage that it can be stored and traded. Goats provide milk for most poorer groups. During the cultivation period, richer households may slaughter a bull for their labourers.

Meat is also consumed during festivals and occasionally to provide food during the hunger season. When cattle move to the dry season grazing areas, household members who remain in the permanent settlement areas lose access to milk. The loss of this food source as well as poor sanitation practices at these times have resulted in noticeable increases in child malnutrition rates, with peaks occurring towards the end of the dry season. Now that there is peace, this phenomenon could improve as one or two good 'milkers' are more likely to be left at the homestead, while some households will keep small stock such as goats where adequate fodder and water are available.

Fishing: Fishing is especially important for poor and middle groups, and functions as an expandable food source for all socio-economic groups in flood years. For poor groups, a combination of fish and wild foods commonly contributes about 40% of annual household food requirements. The Nile River level is affected in particular by rainfall in southern Sudan, and water levels in Lake Victoria, where a 10-year low was recorded in 2004. In addition, rainfall catchments in the Central African Republic (CAR) feed parts of the Western Flood Plains Zone. So even in a year when there has been poor precipitation in the zone itself, fishing may not be directly affected. Rainfall in the CAR, which feeds the main rivers of Akuem, Lol and Jur, as well as in East African countries, which feeds Lake Victoria and the Nile River, are thus two distinct catchments to monitor. Fishing is carried out throughout the year in the permanent rivers and seasonally in the *toic* (swampy areas) pools.

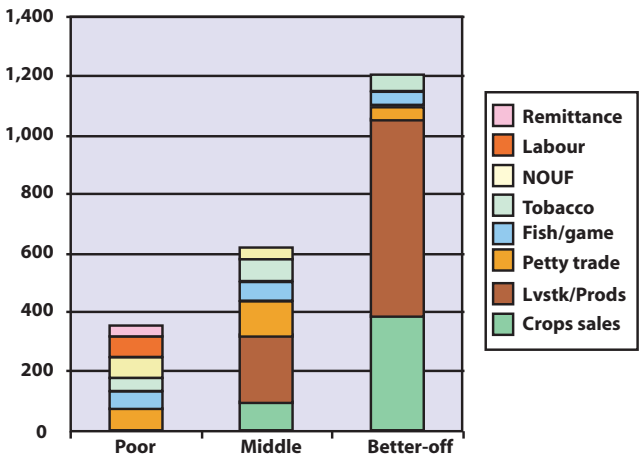
The majority of inhabitants fish at two specific times of year: October to December, using basket traps; and February to April (Rumbek and Yirol), using spears, baskets, hooks and nets. Fish are consumed fresh, with surpluses dried for later consumption and/or sale. After the dry season, lung fish which have been buried since the previous year emerge from the ground and are also caught. There have been some reports that fish stocks have declined over the years, which is attributed to the increased use of cast nets that remove fingerlings along with the main catch.

Purchase and exchange: Purchase and exchange take place both in the form of cash (using numerous currencies) and barter (direct exchange of goods). Barter trade takes place in the villages while cash exchange mostly takes place in formal markets. Livestock plays a primary role in the marketplace, and is generally exchanged directly for grain. How many animals are sold by a particular household each year is determined by local crop production levels that year, the size of the household, and the number of unproductive stock in its herd. Terms of trade tend to fluctuate during the year, with the value of cattle in relation to grain being highest just after the harvest and lowest at the end of the dry season, when livestock body conditions are at their worst.

Sources of Income

Figure 9 illustrates the relative importance of different sources of income for each wealth group in the Western Flood Plains Zone. The total value of income for the poor is equivalent to approximately 360 kg of sorghum or 25-30% of annual food needs, while for the better-off the value is slightly over three times, or approximately 1,200 kg of sorghum. The chart also illustrates the importance of labour opportunities for the poor. The middle and better-off invest proceeds from livestock sales in land cultivation, which in turn helps poorer households to earn necessary income. This inter-dependence has critical implications for promoting production incentives and ensuring market mechanisms are strengthened in the coming years.

Figure 9: Sources of Income in Sorghum Grain Equivalent (Kgs)



Barter continues to be a common practice the further away households are from market centres and trade routes. However, over the past five years cash has become increasingly important. The main products and services sold are crops, fish, livestock, wild foods, labour, tobacco, game, home-brewed beer and honey. Crop sales include sorghum, groundnuts and sesame. Tobacco is regularly used as a form of currency for trade.

The sale of livestock is the main source of income for middle and better-off households. Poor groups rely heavily on selling homemade products such as beer, tea, charcoal, mats and baskets, as well as petty trading of tobacco, relief items, and hibiscus leaves (known locally as *kerekede*). They also sell products collected from local forests, rivers and fields, such as poles, firewood, game, dried fish and wild foods. Better-off groups generally sell their surplus crops, and purchase fish and wild foods from the poor. Wealthier traders may also buy and transport these items to outlets in the north. The sale of labour is vital to many poor households, and may include land preparation, weeding or harvesting work. Other activities can include grain milling and pounding or the mudding and thatching of tukul houses. A high level of re-thatching and mudding of houses is an indicator of recovery and security, which helps to boost incomes for the poor.

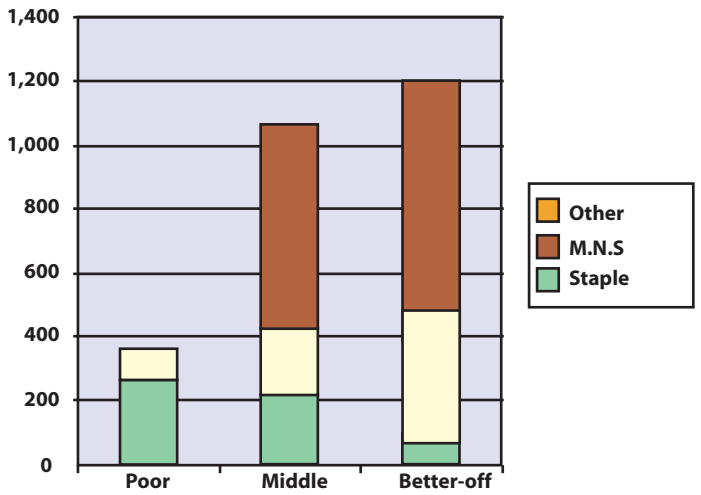
Labour migration has traditionally been an important way to obtain income to supplement production. The demand for labour peaks between January and March and is most commonly found on northern farms. Labourers frequently return with half to one sack of sorghum, or the equivalent of 3-7% of the household's minimum annual dietary energy requirements. Sometimes they may return with cash and/or household items, and occasionally with livestock. Aside from what someone brings back to the household in terms of cash, the savings in food gained from his absence is also an important consideration. When a household member is away and not eating from the homestead 'pot', the estimated value of food saved is calculated at 4% of the household's minimum annual kilocalorie requirements.

Expenditure Patterns

The main categories of expenditure in the Western Flood Plains Zone include:

- Food (staple grains, mainly sorghum);
- Minimum non-staples (including those non-food items necessary for the survival and minimum wellbeing of a household, and in this analysis limited to what poor households spend on items such as essential clothing, salt, sugar, tea, matches, tax, and basic household utensils); and
- Others (including anything in excess of food and minimum non-staples, such as livestock, additional household goods, taxes, school materials, etc.).

Figure 10: Expenditure in Sorghum Grain Equivalent (Kgs)



Food accounts for the largest proportion of expenditure for poor households. Currently, based on field evidence, the minimum non-staple expenditure includes only the very basics for survival for the poor. The analysis shows that poor households do not have sufficient income to allow for expenditure on basic services such as health and primary education, even if these facilities were available. Further levels of taxation would place additional burdens, and some of these households will be hosting returnees. The better-off group spends the highest proportion of their income on 'other' expenses, which can include productive inputs, education and medical expenses, but more typically comprise expenditures on cattle and bride price payments, as these two categories are associated with a sense of greater economic security.

In addition, as mentioned above, much of the income for middle and better-off households is spent on purchasing labour from the poor groups. This is vital for a functioning economy and for the poor to make ends meet. The implications of this are that focusing local development initiatives only on the very poor is unlikely to stimulate - and could in fact undermine - linkages between households that ensure growth in good years and a safety net in bad years. Supporting such local linkages by helping better-off households find economic opportunities will encourage growth and provide additional income opportunities for the poor.

Markets

Traditionally, trade networks ensured that markets were functional throughout the year and that grain was available during the hunger season for households that had run out of their own food stocks. During the war many markets were disrupted, and others came under the control of northern troops. The main markets were Akoc, Gogrial,

Mayen Abun, Rumbek, Thiet, Tonj, Wau and Yirol. New but smaller markets emerged to replace old ones, including Barpakeny, Malual Tit, Abyei, Manyiel, Nabagok, Pankot, Marial Wau and Warapec. Markets such as Warawar, Nyamlel and Mangar Ater continued to function during the conflict but were regularly disrupted by fighting. Trade with Uganda has increased significantly since 1998, after the Sudan Government lost control of the major towns of Yei, Rumbek and Tonj, located along the Uganda-Sudan route. Ugandan markets are now influencing local livelihoods, particularly in the southern parts of this zone. Improved access to Uganda has also facilitated access to the neighbouring Greenbelt Zone, which is typically a surplus crop producing area. Livestock are being sold in Uganda, and non-food items brought back into southern Sudan.

There are signs that traditional trade ties are being re-established, following the signing of the CPA. 'Peace markets' that emerged for rival groups to exchange their wares during the conflict period continue to function. They were established because northern Arab groups needed to graze their livestock while southern households needed goods from the north. Warawar is one example of such a market. From these peace markets, many smaller markets have also proliferated. With peace, markets and trade hold a huge potential to strengthen the food security and sustainability of livelihoods in the zone, particularly if roads are improved and the railway network is revived and expanded.

Hazards and Threats

Frequent hazards to food security in this zone include:

- Drought and floods. However, floods tend to present increased fishing and wild food collection opportunities. This is reversed following drought conditions;
- Effects of the parasitic Striga weed, which reduces maize and sorghum yields;
- Inter-clan tensions over grazing resources, which are particularly acute in the Lakes and Warap states, in the counties of Rumbek, Yirol, Cuibet and Tonj;
- Years of insecurity, which have reduced resilience and kinship ties, leading to a segment of households becoming chronically food insecure.

Recovery Priorities

Conflict and insecurity have been the most devastating hazards in this zone, followed by drought. People in this zone pursue a number of strategies to cope with climatic hazards. Better-off and middle groups are more likely to sell livestock if food access from other sources is limited. These groups will also be able to reduce expenditure on non-food items and use it on grain, and to increase their wild food consumption. Also, better-off households will tend to purchase cattle as a priority when the situation recovers. Migration to more favourable areas is another option that may be utilised by these groups, which tend to have stronger links with neighbouring areas.

Poorer groups tend to expand wild food collection and sales, and fishing when possible. Local and long-distance labour opportunities are also expanded upon, depending on seasonal

availability. Other income options that may be expanded include the sale of local beer, grass, mats, wild foods and dried fish. It should be noted that wild foods are a highly expandable food source - often by up to 25-30%. During the 1998 famine, wild foods contributed up to 40-50% of household food needs. However, as pointed out above, the amount of time, number of household members involved, and distances being travelled to achieve this need to carefully monitored. Eating leaves (frequently reported as a stress indicator) is not necessarily an indictor of stress but of levels of reliance, and types of wild foods being consumed or sold must be carefully considered when conducting any analysis of coping.

Given the above context, the recovery priorities of poor households will need to include the strengthening of local economies, including labour (cash-earning opportunities) and commodity markets, as well as the protection of wild food resources. Also, road improvements will be necessary as they hold the key to the development, improvement and expansion of local markets and other trading opportunities. The strengthening of governance and local leadership are urgently required in order to tame persisting inter-clan conflicts and the breakdown of law and order, especially in the southern parts of this zone.

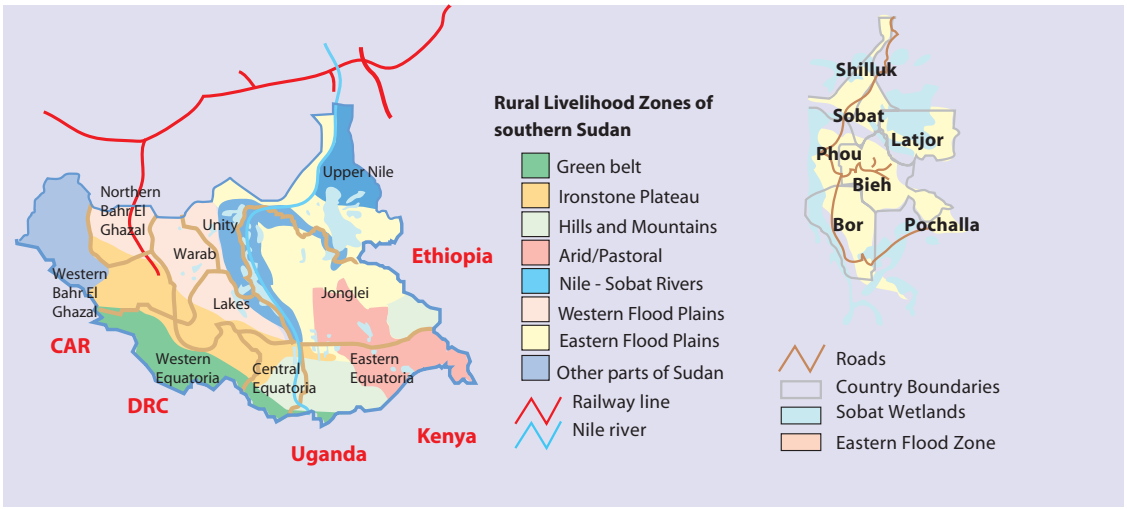
Table 2: Seasonal Monitoring Calendar for Western Flood Plains Zone

Expected Activities	***Quarter***	***Examples of Key Points to Monitor***
• Harvests in the southern parts of the zone • Seasonal movement (labourers and cattle to the north) • Increased market and non-market transfers • Peak of wild food collection (*lalop*, water lily, *lang*, *cuei*) • Peak fishing in swamps, rivers and lakes • Tobacco harvest (Bahr el Ghazal) • Grain exchange with local surplus areas • Land preparation • Some migration of households/ household members from the highlands to the lowlands (prompted by water needs plus access to fish and wild foods)	January – March *Late dry season*	• Whether cattle are in the traditional grazing areas, reasons if they are not, and implications • Health of cattle, dry season disease levels, milk yields, pasture access • Status of fish and wild food access. What quantities are households able to catch and over what period? • Proportion of households moving to the north compared to a normal year • Local labour opportunities • Sources of grain • Prices of key staples, labour and terms of trade between livestock and grain • Performance of rice in the growing areas • Sourcing of seeds • Land sizes being prepared • Main food sources compared to the typical late dry season food basket

• Cattle return from camps, labour migrants return from the north • End of wild food collection • Onset of rains • Land preparations, planting of sorghum, maize, groundnuts and sesame • Shea butter nut collection in southern areas (Wau, Rumbek, Kuajok Payam, Gogrial) • Hunger season, high cereal prices, increased slaughtering of livestock	April – June *Early wet season*	• Numbers of cattle traded • Terms of trade (cattle/grain) • Prices of major commodities • Cash brought from the north and how it is spent • Timing of rains, size of land planted compared to the past • Crop conditions • Milk yields • Status of support from kin and operation of hunger courts in the relevant areas • Levels of borrowing (loans) • Main food sources compared to the typical early wet season food basket
• Weeding, consumption of early crops of maize, sorghum and vegetables; planting of groundnuts • Movement of livestock to higher ground • Start of flooding and limited access to markets • Late planting of long-term sorghum in the southern parts of the zone	July – September *Harvest / Late wet season*	• Level of performance and consumption of early crops and the main harvest • Area planted with groundnuts and associated labour opportunities • Flooding levels and their implications on food access and prices in the early and late dry season • Prospects of a second season in select areas situated in parts of Twic • Performance of long-term sorghum in the relevant areas • Main food sources compared to the typical late wet season food basket
• Conclusion of early crops harvest and start of the long-term sorghum harvest • Movement of cattle to dry season grazing • Resumption of exchange activities • Reduced cereal prices • Tobacco harvest • Harvesting of long-term sorghum • Onset of wild food collection, especially *lalop* and water lily • Recession of flood waters • Onset of migration to north Sudan	October – December *Harvest / Early dry season*	• Status of the long-term sorghum harvest • Livestock physical conditions and output • Terms of trade (cattle/grain) • Cash income opportunities and actual earnings, including from tobacco • Yields of major wild foods (amounts accessed) • Status and impact of receding floods waters • Prospects and onset of migration to north Sudan

Zone 2: Eastern Flood Plains Zone

Map 3: Location of the Eastern Flood Plains Zone, and Eastern Flood Plains Zone Counties



Main Conclusions and Implications

The Eastern Flood Plains Livelihood Zone shares similar broad characteristics with the Western Flood Plains Zone across the Nile River. While both zones are agro-pastoral at their core, with fishing and wild foods as important supplements, the Eastern Flood Plains Zone lies further towards the 'pastoral' end of the spectrum, and it is common even for the poorer households in this zone to own cattle. Due to seasonal constraints of access to water and grazing land, Eastern Flood Plains residents tend to follow longer seasonal migration routes in order to fish, graze their livestock, and engage in exchange in distant markets. A relatively low population density enables residents to practice higher degrees of migration, livestock keeping, hunting, and gathering of wild foods. With their larger herd sizes, households tend to cultivate smaller plots of land than their neighbours in the Western Flood Plains Zone. Like those towards the west, however, Eastern Flood Plains residents rely heavily on local rivers (i.e. the Nile, Sobat and Pibor rivers) for fish, wild foods, and alternative pasture in years when crop production or pasture access fails.

Because migration for access to water, grazing and trade plays such a central role in the food security of households in this zone, conflict and political insecurity have been one of the biggest threats to local livelihoods. One example of this direct link between food insecurity and conflict is found in the Shilluk region, where loss of trade due to insecurity has seriously disrupted access to food over the past two years. The political dynamics of this zone have been prone to constant change because of the strong presence of militia groups, especially in the eastern belt (Bieh, Latjor and Pibor). Cattle raiding and endemic ethnic tensions have also periodically triggered conflict.

Zone Description

Administratively, the two administrative regions or states of Upper Nile and Jonglei make up most of the zone, comprising the seven counties of Bor, Sobat, Phou, Bieh, Pochalla, Latjor and Shilluk. Recently, these counties have been subdivided further.

Natural capital

The Eastern Flood Plains Zone is characterised by flat, low-lying terrain with black cotton soils. Savannah grasslands and acacia trees are the typical vegetative cover. Annual rainfall tends to occur between June and September, and ranges from 700 to 1,300 mm. The two main rivers - the Sobat, originating in Ethiopia and serving as a boundary between Jonglei and Upper Nile states, and the Pibor, which runs along the Sudan-Ethiopia border - are central to the long-distance seasonal migration that is a hallmark of this livelihood zone. Flooding of the Sobat River and its tributaries normally results from either local rains within the zone, and/or heavy rainfall in the Ethiopian highlands. Thus it is possible for flooding to occur even in a year when there is no heavy local rainfall. The steep banks of the Sobat tend to limit overflow, thus constraining the areas where wet season grazing is found.

Land for cultivation and settlement is, for the most part, openly available. Lands are held in common by the local community, and are managed within traditional structures. Security permitting, more than one field is cultivated, with the second or third field chosen in an area with different characteristics than the first in order to reduce the risks associated with droughts or flooding. Crop performance tends to be unreliable due to poor agricultural practices, the difficulty of cultivating the heavy black cotton soils, and unpredictable weather patterns. The Shilluk area, situated in the northern part of the zone, has always been set apart by the fact that it operates as its own kingdom. Here, livelihoods function adequately, even in the face of local production failures, as long as mobility, trade and remittances are not disrupted.

As in the Nile and Sobat Rivers Zone, the main cattle grazing areas are located along the two main rivers and are generally shared among the different Nuer groups. Additional grazing areas are located in the interior of Latjor and Phou states, but are only accessible to households living in these respective areas. The zone is occupied by four ethnic groups: the Nuer, Dinka, Anyuak and Shilluk. These ethnic groups - and the clans within them - have a long history of conflict over pasture, water and cattle. These long-standing conflicts have periodically resulted in serious food insecurity, for example following fighting beteen the Lou and Jikany Nuer in Waat and Nasir in 1995. Since 1999, political instability and conflict have escalated and disrupted traditional migration patterns, exchange activities, access to fishing, and access to dry season grazing areas. This cycle of conflict over grazing has also given rise to periodic seasonal peace negotiations among groups throughout the zone. Generally, households in Phou (Gawaar) use the toic in Zeraf island areas, or sometimes travel to Dinka grazing areas in Bor. Households in Bieh (Lou) will drive their cattle to Phou, Bor or the Sobat, depending upon their relationships with each of their neighbours.

Human capital

Formal education has not been an option for most children in southern Sudan during the years of conflict. Primary school education is available in the zone but at a level far below

global standards. As a result, the labour force is made up of people focused on traditional production methods. Labour is not as lucrative an option as in the northern regions of the Western Flood Plains, due to the widespread lack of transportation and prohibitive distances from employment zones in the north. In times of hardship (e.g. following cattle raids or crop failures, or when trade is constrained), people compensate by increasing access to fish and/or wild foods. However, young people are increasingly seeking employment in northern Sudan and government towns (a practice even in normal years) and sending remittances in money and goods back to their families.

Human productivity is seriously undermined on a periodic basis by dry season water shortages, which are a predominant and chronic feature of this zone. As water becomes scarce, people have to move increasingly long distances, and residents have been known to walk up to five days to find water. In addition to extended migration patterns, water shortages also give rise to a high incidence of waterborne illnesses and malnutrition during the dry season. Insecurity worsens the health and water situations for those who do not migrate: during conflict, more members of the family stay at the homestead, increasing pressure on local water sources.

Health service coverage (primary health care centres and units) is low both by global standards and by the already low standards of southern Sudan. Services have been repeatedly constrained by insecurity. Guinea worm infections are endemic, with most transmissions occurring just prior to the rains. While the incidence of guinea worm can be found throughout the zone, it is most prevalent in the southern central parts of Nyirol/Waat. Eradication of lieshmaniasis (kala azar) is often cited as a priority by both communities and health agencies. Nutrition surveys conducted at various locations in this zone, particularly from 2000-04, demonstrate average prevalence rates of 27.1% global acute malnutrition (GAM), and about 5.6% severe acute malnutrition (SAM).

Social capital

Social or kinship networks remain very much intact in this zone, with strong relationships often extending across the border into Ethiopia. However, a high level of local conflict also exists among the zone's various ethnic groups. The pastoral Murle, situated to the south, are often accused of triggering conflicts due to cattle raiding. In addition, competition over grazing and water in the dry season grazing areas often leads to conflict between ethnic groups or clans. Politically, the area has been unstable as well, with many of the ethnic groups establishing ambivalent relationships with various political factions, seriously undermining local governance.

Physical capital

As in other zones, the principal forms of physical capital are cattle and arable land. Community-based animal health services exist across the zone, but often these services are limited by a lack of medicines and the presence of local conflicts.

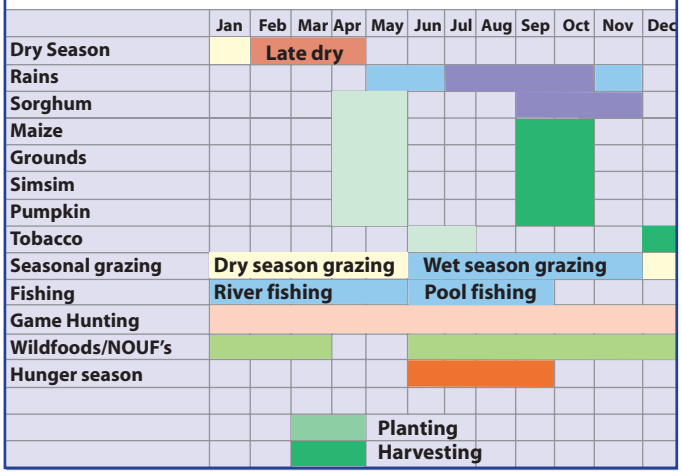
Economic or financial capital

There are no financial services in this zone. Currency itself is as scarce as in other areas of the south.

Seasonal Calendar

The seasonal calendar (Figure 11) depicts the seasonality of a range of livelihood activities, including crop production, fishing, livestock activities and wild food collection. Contained within these activities is the critical seasonality of household decision making.

Figure 11: Seasonal Calendar of Eastern Flood Plains Zone



For example, for the poor, crucial decisions need to be made about how the household will manage to make ends meet during the hunger season. How many people will be sent to dry season grazing areas, how many will remain at home, will employment be sought outside the zone: these are just a few of the decisions that must be made. The decisions made by other wealth groups, such as whether they plan to hire extra help or farm out some of their herds to poorer households, will also help to determine poor households' decisions - making for a complicated rubric of possible choices.

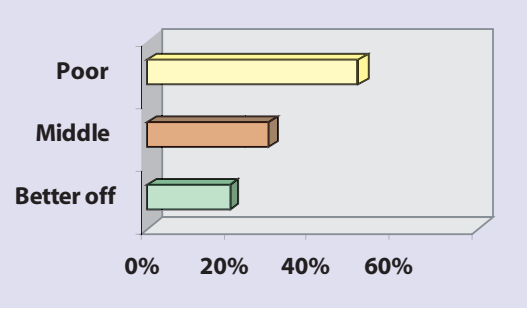
Wealth Breakdown

Figure12 depicts the basic characteristics of different wealth groups in this zone, showing the number of cattle owned and the size of land cultivated by households (again, defined as a woman and her children) in each wealth group. Sheep and goats are also important, both as a 'stepping stone' to the acquisition of cattle, and as an alternative means of accessing food (through milk and meat). Poor households will work hard to obtain cattle and build a herd, by selling surplus cereal, catching excess fish to trade, or selling goats.

Livestock holdings in the zone may arguably be higher than current estimates because:

- Despite the raiding, there has not been a notable expansion of cultivation to compensate for reduced livestock

Figure 12: Wealth Group Information for Eastern Flood Plains Zone



Group	Livestock holdings	Area cultivated
Poor	3-5 cattle	0-0.5 acre
Middle	5-10 cattle	0.5-1 acre
Better-off	5-15 cattle	1-2 acres

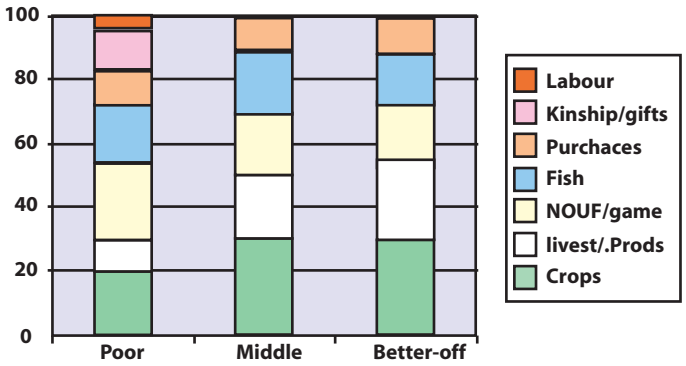
Note: This breakdown has taken into account the likely the negative impact of cattle raiding on cattle holdings. The raiding has been persistent among tribes in this zone as well as with tribes situated in the pastoral zone bordering to the south.

contributions to the food basket, even among better-off households;
- Long-distance movements and exchange have been repeatedly cited as enabling grain access, implying that cattle are used to acquire grain; and
- Cattle raids are often retaliatory, implying that a significant number of raided cattle are often recovered.

Sources of Food

As shown in Figure 13, all three wealth groups share remarkably similar levels of access to food in the Eastern Flood Plains. This can be explained by the fact that threats and opportunities are likely to be similar across all wealth groups and by the presence of strong kinship or sharing systems. The poor own fewer livestock and hence their limited access to milk, ghee and meat makes them more dependent on kin to access the food levels indicated. Access to milk is not always dependent on livestock ownership, with many poor households tending animals belonging to wealthier relatives and thus accessing greater amounts of milk.

Figure 13: Sources of Food in Eastern Flood Plains Zone



NOUFs (naturally occurring uncultivated foods, or wild foods): The most common wild food in the zone is the desert date (*Balanites Aegyptiaca*, locally known as *thou*). Water lily (*Nypmphaea lotus*) seeds and reeds are also readily available in swampy areas and can be significant in calorific terms. Other wild foods include *cuei* (tamarind), and gum from acacia forests, along with other fruit, roots, grains and leaves. Wild foods are consumed in all years and should not necessarily be regarded as an indication of stress. The fact that they can be expanded upon in difficult times makes them a particularly important local resource. Most wild foods fare best in wet conditions; however, thou does especially well in dry seasons. Although a vital food source for the poor, the better-off purchase wild foods to make sauces and add flavour to meals. Game meat also provides a significant contribution to people's diets. Although game is available throughout the year, most hunting takes place in the dry season when animals migrate to the lowlands in search of pasture and water. The dried game meat is sold in order to purchase other items or is exchanged for cereal.

Livestock products: Milk and meat make a significant contribution to annual food for the better-off groups. Other groups also access milk through exchange and gifts/loans from kin during peak lactation periods. Ghee, a milk by-product, has the additional benefit that it can be stored and traded. Meat is obtained especially during the cultivation period when richer households usually slaughter a bull for their labourers. Meat is also consumed during festivals and occasionally to provide food during the hunger season. Blood is sometimes consumed during festivals and the hunger season. A key role of livestock is to use in exchange for grain, with the number of animals sold determined by how much access to other production a household has as

well as prevailing terms of trade. When cattle move to the dry season grazing areas, milk is often less available for younger children. This, combined with the fact that water, hygiene and sanitation practices are low at these times, tends to result in seasonal peaks in malnutrition rates for under-fives. (Note: The contribution represented here may not represent households in Shilluk, where fewer cattle are held.)

Crops: Sorghum (short- and long-cycle) is the most common crop grown, followed by maize. The main harvest is normally between August/September and October but can sometimes stretch into November if rains and planting are delayed. Ratoon (re-growth of sorghum stalks after the first harvest) cropping sometimes occurs in the eastern part of Phou and Bieh areas, and the wetland areas of Latjor. Cassava is of significance in Pochalla County, which is more agriculturally productive because planting is done twice a year. Other crops grown in this zone include simsim (sesame), pumpkins, beans, millet and some root crops. Crop production takes place in lowlands, highlands and plateaus in order to mitigate against frequent floods and drought.

As mentioned above, a greater emphasis is placed on cattle than on crop production in this zone, and as a result, middle and better-off groups cultivate less than their counterparts in the Western Flood Plains Zone. Drought, floods, pest and bird infestations, and the need to maintain household mobility, act as important constraints to production. Quick-growing crops, including short-cycle sorghum, maize, okra and pumpkin, and sometimes also peas, beans and other short-term greens, are planted close to the homestead, where they help to ease the effects of the hunger season. The contribution of these crops, which are commonly consumed in their 'green' state, can be as much as 5-10% of annual food needs.

Fishing: Fishing is a particularly important source of food for poor households in every year, and an expandable option for all socio-economic groups during times of stress. For poor groups, a combination of fish, wild plants and game meat regularly contributes close to half of annual food requirements. Most fishing takes place in the dry season, when yields are highest.

Fish catches are consumed while fresh and surpluses are dried for later consumption and/or sale. In a poor year, up to four members of a household may be expected to fish. When water levels are high, hooks, nets and spears are used; as the water recedes, baskets and traps are used. In very wet years, fishing also takes place in streams and pools. After the dry season, lung fish that have been buried since the previous year emerge from the ground and are also caught. In recent reports, concerns have been expressed that fish yields have been decreasing over the years. However, these have not been confirmed through field studies.

Gifts/kin support: Gifts from kin are common for the poor in this zone, due in part to strong social linkages and traditional kin support, and to obligations being necessitated by frequent movements of poor household members.

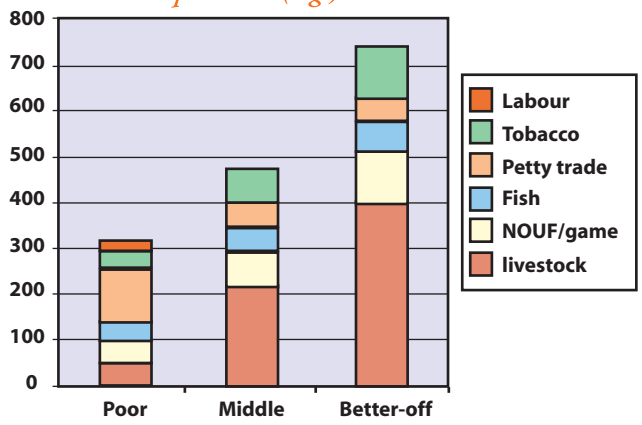
Purchase/exchange: Trade is conducted locally and also across the Ethiopian border, although the region itself has few vibrant markets. Household members will travel long distances to access markets in Ethiopia, and the Ethiopian Birr is in common use.

Payment in kind: Some poor households engage in local labour opportunities to access both food and cash. Some members may also travel to Ethiopia to look for work, although the potential expandability of this option strongly depends on availability and access.

Sources of Income

Figure 14 illustrates the absolute levels and proportional sources of income for each wealth group in the zone. The main sources of income are again very similar for all wealth groups, although levels of income are noticeably different. The major differences are that poor households tend to rely more on petty and game-meat trade, while better-off households clearly sell more livestock and livestock products.

Figure 14: Income Sources in Sorghum Grain Equivalent (Kgs)

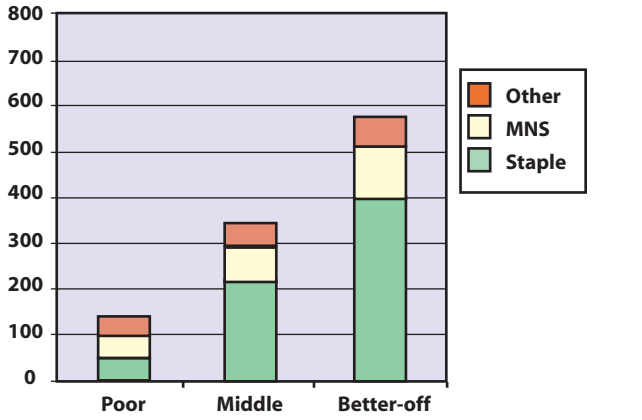


The total value of income for the poor would be slightly over 300 kg (3.3 90 kg sacks) of sorghum or the equivalent. For the better-off, the value would equate to slightly over 700 kg (8 sacks).

Expenditure Patterns

The main categories of expenditure are food (staple grains), minimum non-staples (MNS) such as sauce and non-food items, livestock, household goods, taxes, licenses, children's school materials, clothing, salt, soap, fishing equipment and medicine.

Figure 15: Expenditure in Sorghum Grain Equivalent (Kgs)



In comparison to other groups, poor households spend a greater share of their income on purchases of grain. Better-off households spend a significant proportion of their income on 'other' expenses, such as the protection of their livestock from cattle raiders. Cattle raiding peaks during the wet and hunger season (July). This is the time when demand for grain is high, and households have to tread a delicate balance between investing in security measures and buying grain to take them through the hunger season.

Markets

Although market accessibility has been severely hampered by the war, it is hoped that the peace agreement will bring significant improvements on this front. In circulation at the moment are the following currencies: Kenya Shillings, Ethiopian Birr, United States Dollars, and Sudanese Dinnars and Pounds.

Before the war, trade was largely conducted at the dry season grazing and fishing areas or at market centres (e.g. Malakal, Atar and Kongor). Cereal was brought from Renk and Kosti into Malakal and from local surplus pockets in the Duk Ridge (stretching from Mogok to Panyagor[11]) for exchange with cattle. Currently active markets are Tonga, Malakal and Fangak, located in the neighbouring Nile and Sobat Rivers Zone. Populations in Bor also source goods from Ugandan and Kenyan markets, while those in Latjor and Bieh access goods from Ethiopia.

Barter is used by all wealth groups to obtain sorghum. The better-off and middle wealth groups trade livestock for cereal, while poor groups trade fish, wild foods and labour. Since the devastating raids of 1992, a high degree of restocking has occurred in the Bor area, with cattle acquired from the Nuer (Bieh), Murle (Pibor) and Dinka (Yirol). Tobacco is a very important trade and exchange commodity with a high value, and is particularly traded on the southern border with the Murle.

Commodities from northern Sudan come primarily by train, lorries and small steamer barges sailing down the Nile from Khartoum to Kosti and then by barge to Malakal. From Malakal they are transported by boat up the Sobat River to Akobo and Nasir. From Malakal, commodities also come up the Zeraf River as far as Toch and down the Nile (Bahr el Jebel) as far as Juba. The boats and barges are variously owned and rented by the Government of Sudan, traders and non-governmental organisations. From Malakal, small-scale commodities are moved overland primarily by porters, by canoe and, since May 1998, using the land route opened from Doleib Hill to Lankien. This has now become the main route used even by those walking. A common route used by the Gawaar areas of Phou State is from Malakal to Doleib Hill (usually by vehicle), crossing the Sobat by barge, following the Jonglei canal and branching off along the way. Commodities coming from Uganda are mostly destined for Bor County while commodities from Ethiopia reach Latjor and Bieh areas.

Threats and Hazards

Frequent hazards to food security in this zone include:

- Inter-tribal and inter-clan conflicts;
- Conflicts over grazing resources;
- Cattle raiding;
- Disease outbreaks, especially cholera, other causes of diarrhoea, guinea worm infestation, and kala azar;
- Drought (a periodic hazard).

[11] Including Yuai Poktap, Duk Payuel, Duk Padiet, Ayod, Mogok Pagil and Kandak, as well as Akobo, Kaikuny, Nyandit, Lankien and Atar.

Recovery Priorities

Household strategies for coping with drought or conflict vary from place to place. In Bieh, for example, despite persistent cattle raiding and insecurity, households have managed to cope through long-distance trading with government-controlled towns, and Malakal especially, or through increased exchange with Bor and Phou. In Akobo, where insecurity is common, fish and cross-border trade with Ethiopia often help to relieve pressure. Pochalla has the advantage of two cropping seasons, which means that households can offset losses in one season with production in another. Wild game and trade with Ethiopia are also important here.

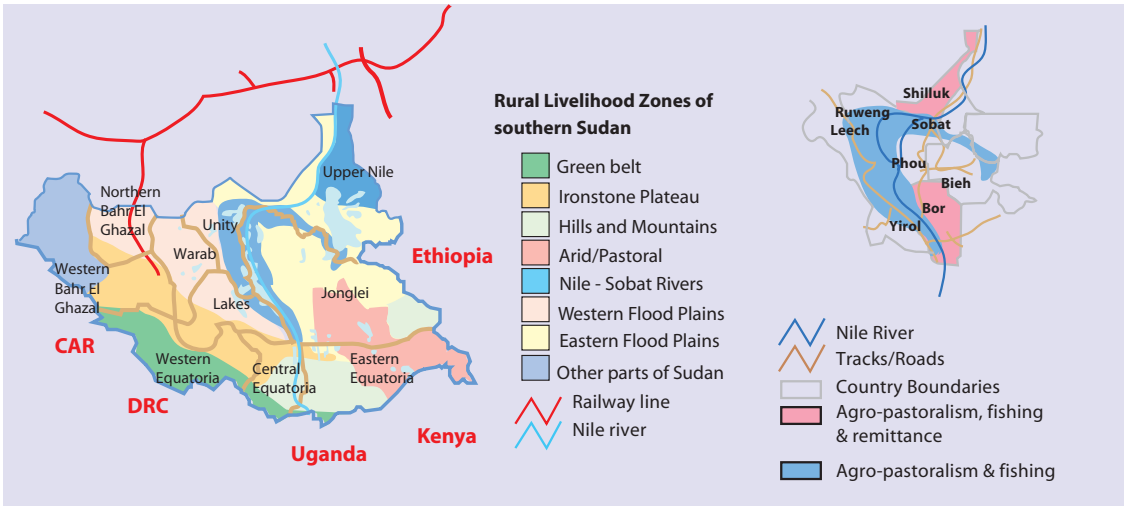
Given tribal diversity and long-running hostilities in this zone, relationships between neighbours are always an important determinant of needs. Local exchange relationships are continually fluctuating and therefore affect appropriate response and recovery strategies. Livestock access to seasonal water and grazing areas is critical, and early peace negotiations with neighbours will help improve food security. Broken peace agreements between groups and lack of access to grazing land and main exchange points would be most detrimental - and, therefore, a specific indicator of crisis in this zone.

In this context, prioritising peace-building initiatives and improved governance at the grassroots level, followed by the improvement of basic roads and expansion of market infrastructure, is essential to facilitate the recovery of households across the region.

Table 3: Seasonal Monitoring Calendar for Eastern Flood Plains Zone		
Expected Activities	***Quarter***	***Examples of Key Points to Monitor***
• Increased water shortages in areas far from rivers • Reduced water levels of main rivers • Long-distance movements to trade in main towns or neighbouring communities, often livestock for grain, e.g. Phou-Bieh, Bieh-Malakal, Bieh-Bor, Bieh-Latjor, Bieh-Sobat, Pibor-Bor • Harvest of long-term and ratoon sorghum • Increased hunting and *lalop* collection • Peace negotiations or increased cattle raiding	January – March *Late dry season*	• Extent of water shortages • Active and accessible markets, level-terms of trade and prices • Exchange and peace relations between different communities involving two or more of the following: markets situated in main towns, Gawaar of Phou, Lou of Bieh, Dinka of Bor, Atar of Sobat, Murle of Pibor, Jikany of Latjor • Performance of and access to long-term and ratoon sorghum, and *lalop* harvests • Quantities of game accessed • Main food sources compared to the typical late dry season food basket
• First rain improves access to water and triggers strong household members to return to permanent settlements to prepare land • Continued fishing and exchange along the main rivers • Hunting continues • All households return in June with more rains	April – June *Early wet season*	• Animal conditions and exchange relations • Contributions from hunting, fish, water lily, stored lalop seeds, livestock products and exchange • Area cultivated
• Weeding, consumption and harvest of early crops of maize, sorghum and vegetables • Flooding in many low-lying areas • Cattle raiding	July – September *Harvest / Late wet season*	• Crop performance and harvest • Flooding levels and their impact • Livestock conditions and raiding • Access to fish and water lily • Main food sources compared to the typical late wet season food basket
• Seasonal movements to river banks for water, pasture, fish, water lily and exchange • Collection of *lalop* • Beginning of the hunting season • Increased risk of cattle raiding • Flooded areas begin to dry up, and river levels start to decline • Negotiations to access grazing	October– December *Harvest / Early dry season*	• Access to water sources, pasture, fish, wild game and exchange • Crop and *lalop* harvests • Livestock conditions and cattle raiding • Prospects for accessing grazing land, sorghum ratoon, second sorghum crop in select areas (Akobo, Nyirol and some low-lying areas of Latjor) • Access to fishing equipment, particularly in Latjor • Access to markets situated in GoS towns, i.e. Malakal, Ulang, Nasir, and as far as Ethiopia

Zone 3: Nile and Sobat Rivers Zone

Map 4: Location of the Nile and Sobat Rivers Zone, and Nile and Sobat Rivers Zone Counties



Main Conclusions and Implications

The inherent resilience of livelihoods in the Nile and Sobat Rivers Zone derives principally from the Nile River Basin where fish and numerous wild foods, especially water lily, are found in abundance. The water resources of this zone have enabled it to withstand the impact of the protracted conflict better than other zones - although not without cost. Years of conflict have undermined the social fabric and physical assets of an otherwise resilient livelihood system, by limiting access to major markets and disrupting agriculture and livestock-keeping. With the signing of the Consolidated Peace Agreement, the potential exists to eradicate hunger and food insecurity in this zone, provided that protection mechanisms (i.e. through legal and institutional development) are established early enough to prevent the unsustainable exploitation of its natural resources - especially the water resources that have already been negatively affected by oil exploration and road construction in some areas.

The Nile and Sobat Rivers Zone clearly has a high potential for the expansion of the commercial and nutritional value gained from its fish resources. Fish has been an export commodity in the past, and should be recoverable with sustainable investment and development of the industry. The waterways hold considerable potential for transportation, offering a strong alternative to roads that would be hard to construct given the soil characteristics, numerous swamps and regular flooding of this zone. Although ongoing exploitation of the vast local oilfields promises some income opportunities in the zone, it is expected that the revenue generated will be disproportionately concentrated in the hands of a minority, and the degree to which this revenue will stimulate rural economic

development and poverty alleviation is highly uncertain. Other economic opportunities include flood recessional agriculture (i.e. following annual flooding) and the potential for horticulture for domestic and export agricultural markets. Where recessional agriculture is not possible, irrigation may be a viable alternative.

Zone Description

Natural capital

The Nile and Sobat Rivers Zone encompasses the land surrounding three main rivers, namely the Nile, Sobat and Pibor rivers. Most of the land surrounding the rivers is low lying and contains soils with a high clay content, making it susceptible to flooding. The zone receives between 700-1,300 mm of rainfall annually. This zone is distinct from the Eastern and Western Flood Plains zones in that local livelihoods are far more dependent on the rivers, which harbour the most productive fishing and water lily harvesting areas in southern Sudan. The zone cuts across three administrative areas, namely Jonglei, Upper Nile and Unity states, which are further divided into the counties of Payinjiar, Leer, Koch and Guit (former Leech State), Zeraf Island (parts of the former Phou State), the eastern part of Yirol and western part of Bor, the southern part of Latjor and Ruweng, and the eastern part of Shilluk.

This livelihood zone is predominantly inhabited by the Dinka, Nuer and Shilluk ethnic groups. While all local households practice fishing to some degree, an exclusive group of pure fishermen (i.e. who do not own cattle), commonly referred to by the Dinka as the mony-thany, also lives in the zone. The zone has a history of conflicts, which have led to occasional splits within the Sudan People's Liberation Movement into four factions. During one such split around North Bor in 1992, the area experienced severe loss of livestock, and displacement of many households into the Hills and Mountains, Ironstone Plateau and Greenbelt zones. For those who remained, it resulted in a greater dependence on the river for fish and wild foods. Since 1999, cropping around Bor has significantly increased. As a result, significant restocking has taken place in recent years, along with some households intensifying their engagement in agriculture.

Inter-tribal conflict has also been rife. The Murle tribe of Pibor County, who border Bor to the southeast, lack dry season grazing areas and as a result have a reputation for negotiating access to grazing and then looting the hosting communities' cattle at the end of the dry season as they return to their homes. Other clashes commonly occur among the Nuer, and between the Dinka and Nuer. Clashes are common in Yirol County, particularly in Adior Payam (in the south and west). However, after years of cattle raiding and displacement, the 1999 Wunliet peace agreement between the Dinka and Nuer brought some peace along the Leech-Yirol and Leech-Tonj borders, which has improved trading activities. More recently, conflict with the GoS and resulting insecurity has plagued the Shilluk kingdom.

In the last five years, communities living in the northern part of the livelihood zone have suffered due to insecurity and displacement associated with the oilfields. The displacements became more widespread when oil drilling and the construction of roads started, forcing some inhabitants to move away from their traditional areas. In some parts, access to

fishing areas, grazing, and markets have also been disrupted.

The Nile, Sobat and Pibor rivers and the vast oilfields are the most significant natural resources in this zone, providing one of the highest levels of water and pasture availability in southern Sudan. The safest water points are predominantly found in Bor and Panyijar. Open water sources are often shared with livestock, and water is also collected from local pools during the rains. Dry season pastures are predominantly found along the rivers and swamps and are often shared by different community groups. This overlapping need for grazing areas has traditionally been the source of regular conflicts. Although oil exploitation has now started, the likely impact of its revenues on rural households has not yet been established.

Human capital

Approximately 10% of the population of southern Sudan lives in this zone. Human productivity is often impaired by diseases such as malaria (in the wet season) and diarrhoea (in the dry season). Guinea worm is also endemic, with most transmissions occurring just before the onset of the rains, and the incidence highest in Old Fangak County. Leishmaniasis (a disease caused by parasites transmitted by sand flies and characterised by severe body wasting and spleen enlargement during its advanced stages) is also endemic, particularly in the northern reaches of Shilluk. Nutritional survey data from the region indicates an average global acute malnutrition rate of 22.6% and an average severe acute malnutrition rate of 3.8%. Primary healthcare coverage, while low by global standards, is the second best in southern Sudan, with the highest coverage in Bor, Old Fangak and Panyijar counties. Healthcare services generally do not extend into rural or remote areas, and even the few existing health centres do not always have staff or sufficient medicines. Primary school coverage, while low by global standards, is also relatively good by southern Sudanese standards. Again, coverage is concentrated in the Bor, Panyijar and Old Fangak areas.

There is considerable labour migration, particularly from the Shilluk, Atar and Sobat areas, where there is better access to transport to the north and to the commercial farms of Kordofan or Renk. Local employment opportunities are few and far between, and - like most of southern Sudan - formal education has not been an option for most children during the years of conflict.

Physical and social capital

The principal forms of physical capital in this zone are cattle and cultivated land (see 'Wealth Breakdown'). Households with these assets are able to participate in all-important social occasions (i.e. weddings and feasts), as well as to pay fines. Different levels of subsistence and resilience are also associated with different levels of capital accumulation. Canoes and nets are another important form of physical capital for communities in this zone. Some groups like the Mony-thany depend almost exclusively on these assets. Canoe-building in many areas is becoming a lost art, reportedly due to the disruption caused by the war.

Economic or financial capital

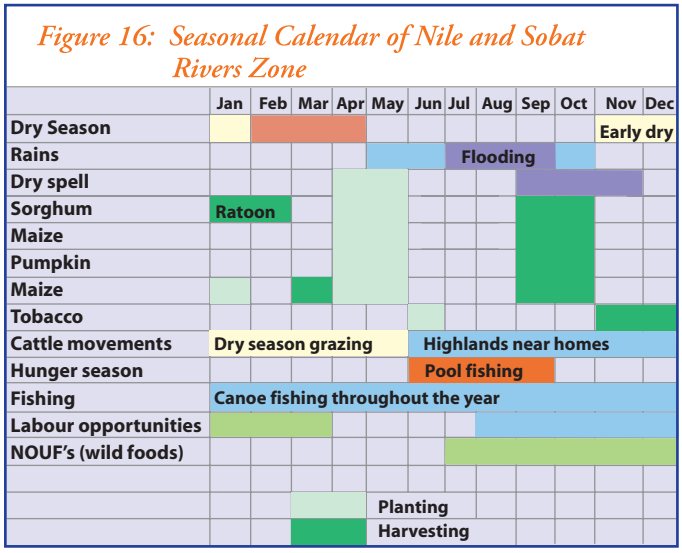
Information on financial capital also appears in the 'Wealth Breakdown' section. In general, however, it is recognised that cattle are used to bank savings and that they can represent large capital assets. Credible information on financial capital currently remains limited. Production is limited primarily to subsistence farming. Agricultural production equipment is largely limited to traditional wooden sticks

for land preparation and weeding. Where humanitarian agencies have been operating, there are also some metal hand tools in evidence. In these non-monetised economies, credit services are informal and are generally restricted to in-kind loans (grain, milking cows and labour exchange) between relatives and neighbours.

Seasonal Calendar

Unsurprisingly, the livelihoods in this zone are highly dependent on changing water levels in the Nile and Sobat rivers. Seasonal flooding between July and September increases yields of fish and wild foods, so that flood years are easier to manage than drought years. The onset of rains can start between May and July. With the rains comes the *nyai*, a Dinka term referring to a one-night fishing spree when households can catch enough fish to last between one and three months. Much of the catch is preserved for later consumption or sale. Planting an early crop of maize is common. In some areas where receding floods leave sufficient soil moisture, more than one maize or sorghum crop can be grown. This flooding and recession of the waters enables some households to cultivate two or three times in a year, as well as to benefit from ratoon cropping.

Figure 16: Seasonal Calendar of Nile and Sobat Rivers Zone



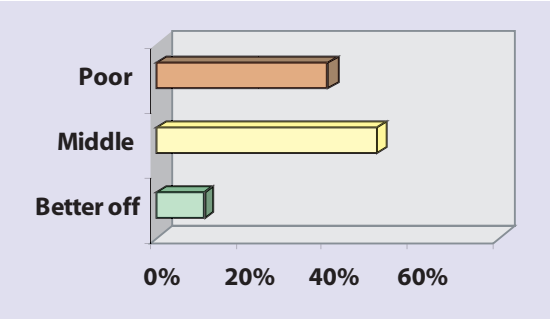
Like in many other zones, the hunger season between June and August is the time when access to all food sources is at its lowest, especially if insecurity has disrupted normal coping activities. The calendar illustrates how access to different food sources, including milk (through kin or exchange), wild foods, fish and markets is balanced to enable the poor to make ends meet during the weeks before the harvest period. Canoes are critical for accessing fish and wild foods (water lily), as they make it possible for some households to fish in the deep Nile waters throughout the year.

Wealth Breakdown

Wealth in this zone is determined by a household's livestock herds and its area of land under cultivation (reflecting the household size and access to available labour). Households tend to cultivate two pieces of land: one near the homestead (usually slightly upland) and the other farther away (usually on lower ground). This is done in order to spread the risks associated with both drought and flooding. Access to canoes and fishing equipment can also be wealth indicators, although these are commonly shared between households. An estimated 30% of households own canoes.

Wealth group inter-dependence is a hallmark of southern Sudanese society. Poorer households rely on richer kin to obtain access

Figure 17: Wealth Group Information for Nile and Sobat Rivers Zone



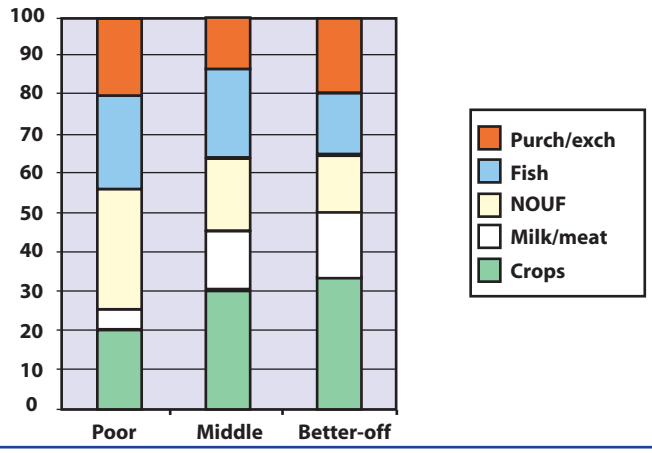
Group	Livestock holdings	Area cultivated
Poor	0-5 cattle	1-1.5 acres
Middle	5-15 cattle	1.5-2 acres
Better-off	>15 cattle	>2.5 acres

to milk, through direct gifts or the loan of a milking cow. In return, the richer relatives may receive fish or extra labour from their poorer kin. Cereals can be borrowed in times of need, and loans are recorded through complex traditional systems often linked to cattle and other outstanding obligations such as dowries. Thus, while better-off groups may be more directly affected by a cattle raid, the poor will also be indirectly affected as they will lose access to whatever surplus their richer relatives may have had to share.

Sources of Food

Figure 18 represents the relative importance of different food sources for each wealth group in the Nile-Sobat Rivers Zone. While better-off households rely more on their advantageous access to land and cattle (which translates into more crops, milk and meat), poorer households tend to obtain the largest proportion of their annual food requirements from wild foods and fishing. Although both poorer and better-off households rely almost equally on exchange (cash and/or barter), the source of income for the poor is labour, whereas it is livestock for richer households.

Figure 18: Sources of Food for Nile and Sobat Rivers Zone



For the middle and better-off groups, fish and wild foods (including game meat) also make a significant contribution to annual requirements. Wealth group differences translate directly into differences in consumption and total food intake. They also help to reveal the different income options of groups. The food sources below will vary from one household to another and with the changing seasons.

Fishing: In the Nile-Sobat Rivers Zone, communities rely heavily on fish due to their easy access to the rivers, and the annual wet

season flooding of the Nile, Sobat and Pibor rivers (the Pibor has steeper banks and floods less), as well as their tributaries and seasonal pools in the flood plains. Water lily and fish together make the largest contribution to the food sources of the poor, and have literally saved hundreds of lives during the war years. Dug-out canoes play a critical role, ensuring sufficient catches of fish and water lily harvests. It is estimated that a third of the population own canoes and these are commonly shared between households. When excessive flooding occurs, shallow-water fishing and water-lily collection are more common. However, canoes are essential for deep-water fishing in the dry season. All these food sources are highly expandable; fishing is possible all year round and water lily can be harvested every nine days.

NOUFs (naturally occurring uncultivated foods, or wild foods): Among a wide range of wild foods, water lily and *lalop* (desert dates) are the most commonly cultivated. The *lalop* fruit is often consumed immediately and the nuts stored for later consumption. Other NOUFs include roots, vines, berries, fruits, leaves, bark and tubers, many of which can be preserved and either consumed or sold later. They are far more important than "snacks for children", as has occasionally been reported. The consumption of leaves should not be quoted as an indication of imminent crisis. Databases have been developed that record the nutritional value, seasonal occurrence, collecting parties, and methods of cooking and preparation of these NOUFs. In this area, there is also greater potential for people to hunt game, such as dik-dik and other types of antelope, which can be a significant source of meat as well as a source of income from skins.

Crops: Planting seasons and the number of plantings vary with river access and the degree of flooding. The first cultivation may begin in the dry season (January to March), with a second after the wet season (April to July). Some households may even plant three crops if they move closer to the rivers as the flood waters recede. (The potential for extra cropping should always be taken into consideration when conducting assessments.) These variations between areas are a form of risk reduction, as rarely do all areas have poor seasons at the same time, and the variations can create opportunities for trade and exchange. Crops can actually be found growing throughout the year when the use of receding waters has been optimised, which has become a significant risk management strategy in some areas. Flooding, which is more typical, and drought are common occurrences in this zone. Lowland areas generally perform better in drought years due to their clay soils and higher water retention capacity. Dykes are constructed to deal with excess water during flooding. Re-planting is common, with a mix of crops sown and planting dates staggered to minimise the risk of loss. Two or three weedings are necessary because weed infestation is heavy, and the area of land cultivated is often determined by a household's ability to weed it. Other crops grown include groundnuts, okra, pumpkin, beans, and other legumes.

Livestock products: The Nuer are known to have high-yielding cattle and milk averages are recorded at between 1 and 1.5 litres per day. The Dinka are reported to be more interested in the colour and shape of their cows' horns, and breed more for these characteristics than to achieve better milk production. However, milk is very important as are milk products such as ghee, which can be stored and traded. The main lactation period coincides with the rains and peaks immediately after the main calving period. During periods of scarcity, milk may be shared between kin. When cattle move away from the homestead, children

may have less access to milk and this has often been noted as a chronic seasonal problem in nutritional surveys. (With improved security more 'milkers' would likely be left at the homestead, helping to reduce this problem to some extent.) Meat consumption peaks after the harvests when marriages and other festivals occur. Blood is also consumed in Nuer communities at these times.

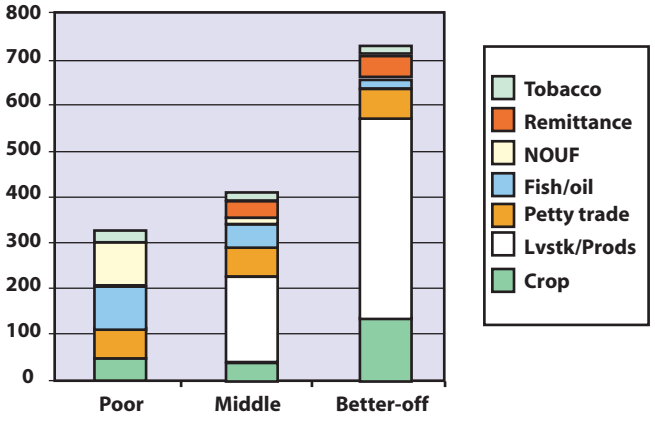
Purchase and exchange: This takes place using either cash or barter. The better-off have almost three times the income of the poor and so their expenditure patterns vary greatly. The poor spend a high proportion of their income on sorghum and whatever remains covers essential non-food items. Very little, if any, other expenditure is possible for the poor. The better-off have more choice, spending a lower proportion on staple foods, a little more on basic essentials, and what remains on productive inputs (especially veterinary supplies if they are available). Anything left over is likely to be banked in the form of additional cattle. The ability to purchase/exchange extra sorghum is the single biggest determinant for the poor to get through the pre-harvest hunger season. Increased income opportunities will certainly enhance food security, market access and trade, and help to overcome variations in the weather and household labour constraints, which continue to limit increased production for the poor. Poor households currently access most of their income through petty trade activities, the sale of fish products, and tobacco. (See 'Sources of Income' below). The lack of markets, seasonal access problems, lack of infrastructure, cash and the mixed currencies continue to pose the greatest constraints to local trade.

Gifts/kin support: This usually takes the form of food given by wealthier households to their poorer relatives. However, a great deal of sharing also occurs during festivals and social occasions such as weddings and funerals. When milk is abundant, children (mostly boys) may access greater quantities by spending time with the cattle herders.

Sources of Income

Livestock sales, fish and fish oil sales, beer and handicraft sales comprise the major income generating activities. Trade in these commodities takes place in local markets in such towns as Malakal, Tonga, Renk, and as far as Kosti. These same towns, in addition to Khartoum and other big towns in northern Sudan, serve as labour markets. Remittances, petty trade, and tobacco sales are other notable contributors to household income.

Figure 19: Income Sources in Sorghum Grain Equivalent (Kgs)



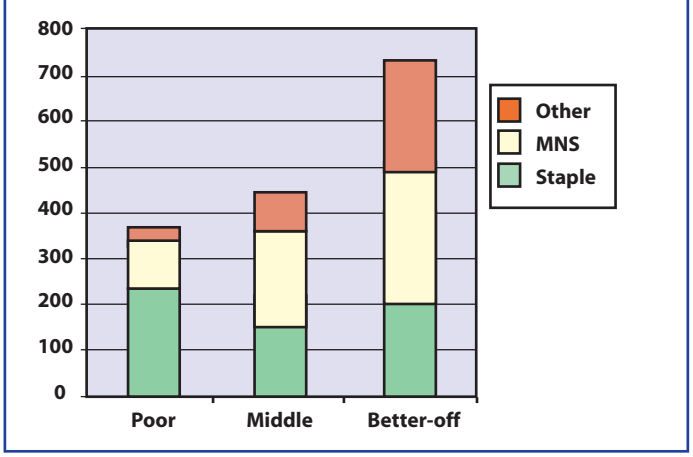
Livestock sales are a male-dominated activity. Bulls are sold and the proceeds used to buy heifers and calves. These transactions are commonly barter-based, although cash-based transactions are becoming increasingly common. Goats and sheep sales are generally

in cash because they are cheaper. Remittances are particularly significant for Shilluk and Bor counties, and are mainly from relatives living abroad and those working in major towns in northern Sudan. Remittances are reported to have increased in recent years, although the level of increase remains unknown. Remittances are mainly used to purchase cereals and other non-food items. Petty trade (including the sale of reed mats, grass, ropes, pegs, antelope skins, beer, and blacksmith goods such as spears, hoes, bells and axes), the sale of NOUFs and fish are the major income sources for the poor, while livestock and crop sales are the predominant income sources for wealthier groups. Tobacco is an important source of cash, which is also frequently used as a substitute 'currency' to purchase clothes, salt, soap, livestock and veterinary medicines. Annual income for the poor is equivalent to about 4 sacks (360 kg) of sorghum.

Expenditure Patterns

The poor spend most of their income on grain, the staple food, leaving negligible amounts for non-food expenditure. The middle and better-off spend comparable amounts to the poor on staple food, while reserving most of their income for non-food items such as livestock, household goods, taxes, agricultural inputs, veterinary services, school materials, clothing, fishing equipment, and the hire of labour. Minimum non-staple expenditure for the poor is for basic survival; most poor households cannot afford access to basic health services, primary education or increased taxation. Tax varies between 2.5-7%, but it appears that the poor pay a disproportionate amount in relation to their income levels.

Figure 20 : Expenditure in Sorghum Grain Equivalent (Kgs)



Markets

Communities in the Nile and Sobat Rivers Zone trade among themselves as well as with government towns. Items such as fish, cereal, livestock, vegetables, charcoal, mats, poles and firewood are sold. Manufactured items such as clothes, salt, sugar, tea leaves, cooking oil and utensils, fishing nets and mosquito nets are purchased mainly in the towns of Malakal, Tonga, Renk, and as far as Kosti. Malakal has historically been the central fish market in southern Sudan for traders from the north. Gutthom is another major trading centre established after 1991, which trades in livestock, cereal, fresh and dried fish, and non-food items imported from Uganda.

The exchange of grain among households also takes place in surplus areas in the central parts of this zone. Rarely does every area experience a good or bad harvest in the same year, so trade between these centres is active if physical insecurity is not an impediment. There is also good potential for local trade in grain and fish, as those with more predominantly riverine

livelihoods gather their first maize harvest in March/April, while for those who live inland cultivation begins at around the same time.

Exchange links with the Western Flood Plain counties of Yirol, Rumbek and Tonj were re-established in 1999-2000, following a peace agreement among various community groups. Apart from the sale and purchase of food and non-food items, these three counties also offer labour opportunities during the early dry season (November onwards), when their crops are being harvested. Travel to seasonal labour markets in the north (mainly irrigation schemes and towns) is also common.

The Nile and its tributaries provide good market access in the absence of threats to physical safety. Traders use canoes to travel along the major rivers and sell non-food items such as clothes, soap and cooking utensils in exchange for fish and cereal from communities living along the riverbanks. Dried desert dates and other nutritious naturally occurring wild foods and fish are also traded.

Threats and Hazards

- Flooding is frequent in this zone and often results in heavy crop losses, depending upon the period in which they occur. On the other hand, fish and NOUFs tend to increase following a flood year.
- Cattle raiding and clan tensions over water and grazing occasionally occur during the dry season. Cattle raiding is often retaliatory. Communities tend to solve these problems through local peace agreements when there is food stress, although such agreements often provide only a temporary respite.
- Periodic attacks on sorghum by quelea quelea birds are another hazard.

Recovery Priorities

People in this zone pursue a number of strategies in order to address typical hazards such as flooding. Better-off households tend to sell cattle, while middle households sell more fish and less livestock. Poor households sell fish, labour or craft items. Labour is particularly significant in the northern parts of the zone, where households migrate to northern parts of Sudan in search of work for cash. However, the biggest constraint to these coping mechanisms is the lack of vibrant local commodity markets and cash-earning opportunities. Although improvements to infrastructure and trade will clearly be critical in addressing the problems faced by the various groups, much cannot be achieved without first improving security (which has slightly improved following the signing of the CPA in January 2005). Other priorities will include the development of improved fish and water lily production, processing and preservation, the promotion of recessional agriculture, improvements in water-land transport to main market areas, and increased protection and management of the Nile River's resources.

It is important to note that oil extraction has recently started in the northern parts of this zone. Although this has not yet started to significantly benefit the local economy, it may potentially influence the dynamics of future development activities in the region. To date, conflict and insecurity in these areas continue to impact negatively upon local livelihoods.

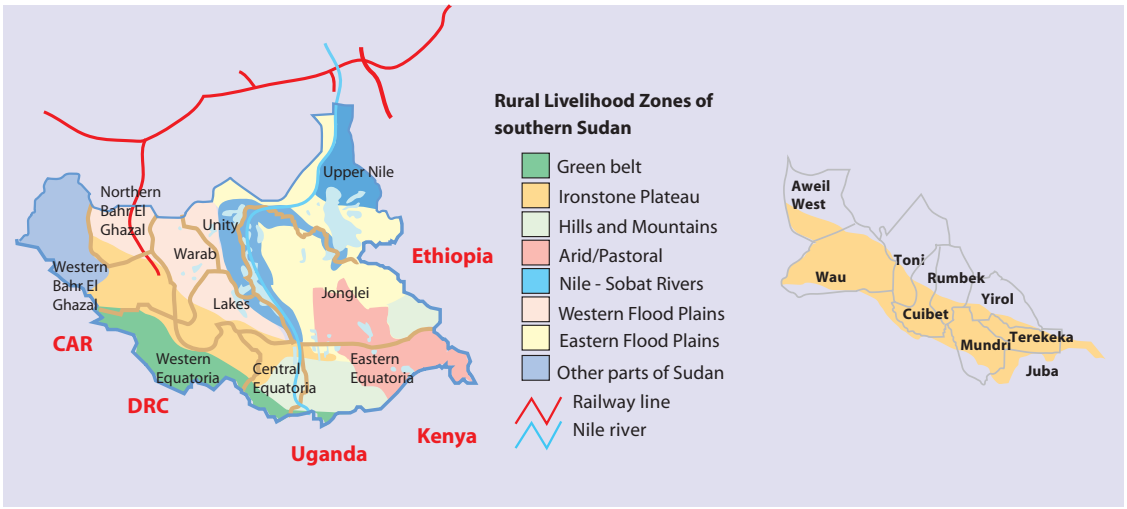
Table 4: Seasonal Monitoring Calendar for Nile-Sobat Rivers Zone

Expected Activities	*Quarter*	*Examples of Key Points to Monitor*
• Seasonal movement of people and cattle towards the main rivers • Movements to the north (labour) and the Western Flood Plains (labour and exchange) • Peak of wild food collection, especially water lily and also *lalop* and *cuei/kuat* • Recession of flood waters and increased fishing camps along the main rivers • Hunting of wild game in some areas • Tobacco harvesting • Increased fish trade • Harvest of sorghum ratoon and a second maize crop in select areas • Land preparation • Dyke preparation	January – March *Late dry season*	• Reduction of river levels and impacts on accessibility and movement • Whether cattle are moving to the traditional grazing areas, reasons, and repercussions • Health of cattle, dry season disease levels and milk production • Quantities of fish and access to fishing equipment and canoes • Status of water lily production and wild food availability • Sources of cash and grain, prices of key staples and labour, and terms of trade for livestock and grain • Sourcing of seeds, land sizes being prepared • Performance of ratoon and the second season of maize in relevant areas • Income from fish, tobacco, game meat, crops and remittances • Status of land preparation and sourcing for seeds • Progress of dyke preparation • Main food sources compared to the typical late dry season food basket
• People and cattle return from grazing and fishing camps • Collection of many wild foods ceases but water lily continues • Onset of rains, land preparation, planting of sorghum, maize and vegetable crops • Harvest of early dry season maize, particularly along the Nile • Occurrence of nyai, a one-night fishing spree • Hunger season: higher cereal prices, increased slaughtering of livestock, and blood consumption in select areas	April – June *Early wet season*	• Fish and water lily available for consumption during the hunger season (both fresh and dried). This includes performance of the *nyai* night fishing spree in areas close to the rivers • Onset of rains, land planted and timeliness of sowing • Frequency of livestock slaughter and bleeding, if any • Consumption of stored wild food (water lily seeds, etc.) • Contribution of remittances • Exchange opportunities with those near the Nile • Impact of early/late flooding, if it happens • Main food sources compared to the typical early wet season food basket

• Weeding, 'green' consumption and harvest of early crops of maize, sorghum and vegetables • Movement of livestock to higher ground • Increased or start of flooding and limited movement • Relocation of households from flooded areas • Fishing and water lily collection near homes • Search for and preparation of fishing equipment and canoes	July – September *Harvest / Late wet season*	• Crop performance and harvest, flooding levels and their impact • Livestock conditions and reports about calving • Increased lactations (improved milk yields with rains) • Degree of sharing (kinship/gifts) • Access to fish and water lily • Main food sources compared to the typical late wet season food basket
• Conclusion of early crops harvest and start of the long-term sorghum harvest. Planting of sorghum or maize in relevant areas • Tobacco harvest • Reduced cereal prices • Flood waters start to recede slowly and increase access to water lily and fish • Search for and preparation of fishing equipment and canoes • Other types of wild foods including game become available	October – December *Harvest / Early dry season*	• Performance of long-term sorghum in select areas and prospects for ratoon cropping • Timing of recession of floods and its implications • Fish and wild food harvests • Access to fishing equipment • Tobacco harvest • Exchange opportunities including access to government towns

Zone 4: Ironestone Plateau Zone

Map 5: Location of the Ironstone Plateau Zone, and Ironstone Plateau Zone Counties



Main Conclusions and Implications

The Ironstone Plateau Zone is mostly agricultural and has a strong potential for increased trade and exchange with the three neighbouring zones of Western Flood Plains, Hills and Mountains, and the Greenbelt. It is also a potential source of much needed labour, particularly for the Greenbelt Zone.

The zone harbours several important towns that will be more strongly linked once the road network is improved, and this will be the start of the recovery of local markets and trade. There are strong prospects for expanded trade in timber and local agricultural products such as shea butter oil (lulu), cassava and sesame. Local traders and increased commercial enterprise from outside investors and entrepreneurs are expected to gradually replace goods and services being provided by external relief agencies to allow normal market dynamics to function again.

Renewed access to towns following the 2005 CPA is likely to revive rural-urban relationships and bring fresh challenges in addressing the needs of the urban poor. New, often urban vulnerable groups are anticipated when the impact of returnees and increasing pressures on rural households and resources take hold. Urban employment opportunities and petty trade will be essential for people who fall in these categories. Some recent recovery of trade activity has seen these new vulnerable groups seeking a subsistence existence around market centres. Restoring trade and markets and promoting this with financial support (the flow of cash in the economy) will be critical. Micro-credit schemes have already begun to operate in some areas.

Local insecurity has been a recurrent problem, especially in livestock-rearing areas where inter-ethnic and livestock-related tensions

commonly link to pressures on local grazing and water resources. These trends have been observed in parts of Mundri, Yirol, Tonj and Rumbek, and southern parts of the Western Flood Plains Zone. However, the root cause will remain until livestock trade increases, allowing adequate livestock off-take through normal trade and exchange mechanisms. Unfortunately this is not being practiced, partly because wealthier individuals and their households choose to collect large livestock holdings to ensure their status and recognition within communities. In the past, when such pressures increased, the risk of impending hardship ensured the exchange of livestock with neighbouring crop surplus areas. Before 1998, food aid was almost unheard of in this zone, but since the 1998 crisis relief appears to have impacted on normal levels of exchange. Constraints to livestock and grain exchange have been linked to increasing livestock numbers and pressure on the environment associated with tensions between communities.

Zone Description

Administratively, the Ironstone Plateau covers most of Wau, parts of Mundri, Terekeka, Rumbek, Cuibet, Tonj, Yirol and Aweil West. The zone also shares a border with CAR. In the past, Wau has suffered serious insecurity associated with proximity of the railway line, which was frequently used to attack households residing nearby. Crops, property and villages were often looted or destroyed as the train travelled from northern Sudan to Wau town. Mundri has remained food secure but has paid a heavy price from insecurity and activities in and around strategically important military posts. Also, the prolonged presence (since 1992) of Dinka from Bor with their cattle in Mundri County has resulted in an escalation of tensions, with an annual pattern of destruction of Mundri crops by Dinka cattle.

Natural capital

Rainfall averages between 950-1300 mm annually in the zone. The lateritic soils do not hold water well and become shallower towards the north of the zone, contributing to some of the most acute water problems in southern Sudan. Agro-climatic conditions favour sorghum, which is the main crop, with short- and long-term varieties planted in May and June. Maize is planted in small quantities with the aim of shortening the hunger season. Mangoes are also common in the zone. In some areas cassava and wild yams are of major importance as they can be utilised in drier years and/or when cereal crops do not yield well. Other crops grown are sesame, groundnuts, cowpeas, green grams, maize, millet, okra, sweet potatoes, and a variety of greens. Animals reared in this zone include sheep, goats and poultry. Shea butter is prepared in the months of April and July. Honey and simsim and cassava are consumed and sold as cash crops. Game hunting is common in the dry season and bush-rat and dik-dik are widely consumed and sold. Naturally occurring uncultivated foods are plentiful in the Ironstone Plateau and form a significant part of the diet, including wild fruits, mushrooms, termites and honey, as well as shea nuts, desert date, borassus palms, and a wide variety of wild yams and other tubers. Water availability is a severe problem because of the granite plateau, where the water table is very deep and difficult to reach with hand tools. The difficulties of water and the widespread presence of tsetse fly infestation have limited the rearing of cattle

in the past, as well as posing serious threats to human health in areas close to rivers. Some areas in the zone have a high incidence of river blindness and sleeping sickness.

Human capital

The sparsely populated Ironstone Plateau contains a range of ethnic groups, predominantly a Nilotic group of Luo, with other tribes including Dinka, Fertit, Jur Chol and Jur Jebel, Balanda, Bongo, Azande, Baka, Mundu, Moru, Mundari and Avokaya. Human productivity is often affected by diseases such as malaria (in the wet season) and diarrhoea (in the dry season). Sleeping sickness, river blindness and leprosy are also found in the zone. As in other zones, basic services (particularly health) do not extend into rural or remote areas, and even existing health centres do not always have staff or drugs. Primary schools do exist in the zone and coverage, while low by global standards, is relatively good for southern Sudan. This zone is occupied mostly by sedentary farmers and a few agro-pastoralists, with most households largely dependent on agriculture and naturally occurring wild foods. Formal employment opportunities and corresponding skills are comparatively few. Local agricultural labour opportunities and links to surplus areas have made the zone a haven for people disrupted by the war.

Physical capital

While land and crop cultivation are the main assets in the Ironstone Plateau, livestock are of significant importance in the cattle-rearing areas. The zone has two distinct parts. The largest northern part has one rainy season and the southern tip has two seasons, with rains occurring at similar times as in the Greenbelt Zone. However, one of these two seasons is sometimes unreliable.

Social capital

Support and exchange mechanisms are mainly confined within ethnic groups. However, inter-marriage and production differences among areas within the zone necessitate exchange across different ethnic groups. For example, reciprocal exchange is important between the Dinka and Jurchol. Grain is borrowed from the Dinka when they harvest in September and paid back in January when the local late harvest arrives.

Economic or financial capital

As in other areas, production is limited primarily to subsistence farming. Agricultural production equipment is largely limited to traditional hand tools for land preparation and weeding. Where humanitarian agencies have been operating, metal hand tools are also in evidence and there has been an increase in the use of ox-ploughs in recent years. Financial services remain informal, and generally consist of in-kind loans (e.g. grain, milking cows and labour exchange) between relatives or neighbours. However, due to the ongoing re-establishment of old towns, the zone has a huge potential for improvements in terms of markets and cash access.

Seasonal Calendar

Although May is the main planting period (Figure 21), risk reduction techniques include staggering the planting dates as well as using a wide range of crops and seed types. Over seven varieties of sorghum are in common use in the zone. Across the zone, sorghum planting can be observed at any time between March and October. This increases the chances of one of the varieties benefiting from the variable local rainfall distribution. In pockets

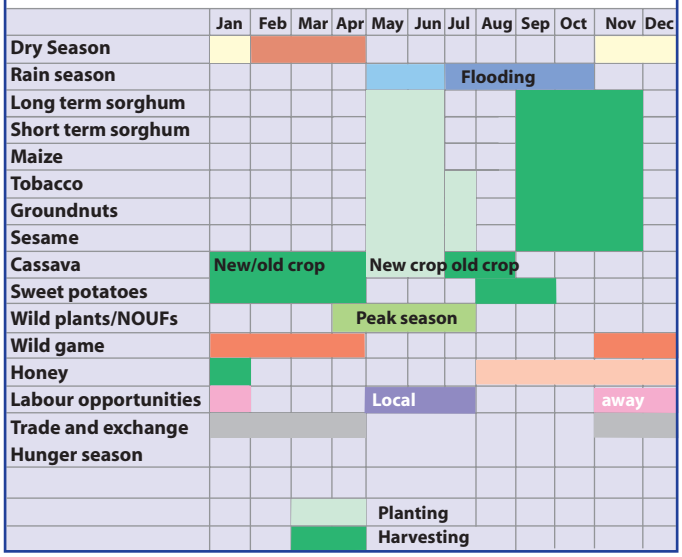
where cassava is grown, harvesting can take place all year round, enabling food security even when an area is disrupted by warfare. Mangoes also provide an important source of calories through the hunger season.

The 'hunger season' refers to the time of year when food reserves can become low, labour demands increase, and the need to weed and protect crops increases as the harvest approaches. During this time, local labour opportunities are an important means for the poor to access food or cash. Extra income from petty trade and some remittances can also help to ease pressure.

Kinship support is often practiced during the hunger season, and associated obligations settled later. Another less obvious form of redistribution of food between kin and all wealth groups occurs at the traditional funeral feasts that are common throughout the year. Game meat (mostly bush-rat and dik-dik) is commonly consumed but also traded during the drier times.

With peace the traditional practice of community hunting parties may be re-established, which occurred in conjunction with grass burning in the dry season before it died out due to increasing insecurity. Fishing is important between February and April, although much of the catch is preserved to be eaten later in the year (especially during the hunger season). Honey and sesame commonly supplement the diet, as do sauces prepared from wild foods and pastes made from insects that appear seasonally.

Figure 21: Seasonal Calendar for Ironstone Plateau Zone



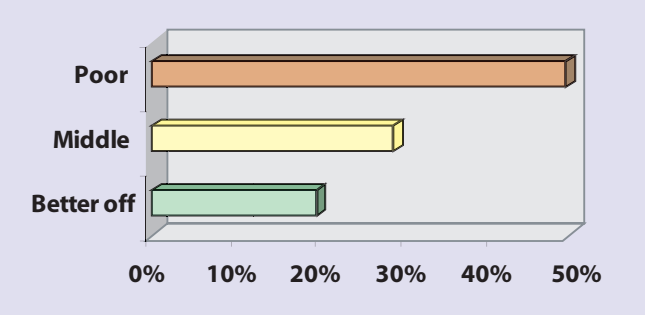
Several strategies have been adopted to ensure that harvests are realised. Different crops - and varieties of crops - are planted on second-year land than on newly-cleared land. Communities cultivate different crops and varieties at different stages of the rains and in fields of varying elevation and soil types. As noted above, planting dates are staggered and seeds mixed to increase the chances of crops benefiting from the variable rainfall. As well as minimising the risk of severe crop loss, this also helps to spread labour requirements more evenly throughout the year.

Drought-resistant cassava and wild yams are widely used to compensate for grain shortfalls following a poor harvest. Other types of wild foods such as lulu are also used to supplement these shortfalls. In some parts of the zone, people have survived for many years by living a type of 'hunting and gathering' lifestyle, as reflected by the limited area of land under cultivation and the tendency not to keep livestock.

Wealth Breakdown

The poor groups form the majority of the population. The number of feddans/ acres cultivated is the main determinant of one's wealth group, with better-off groups cultivating larger plots of land. Although cattle are less popular among sedentary farmers, sheep and goats can be kept in large numbers. The middle and better-off provide employment for the poor and this takes the form of land preparation, planting, weeding and harvesting.

Figure 22: Wealth Breakdown for Ironstone Plateau Zone

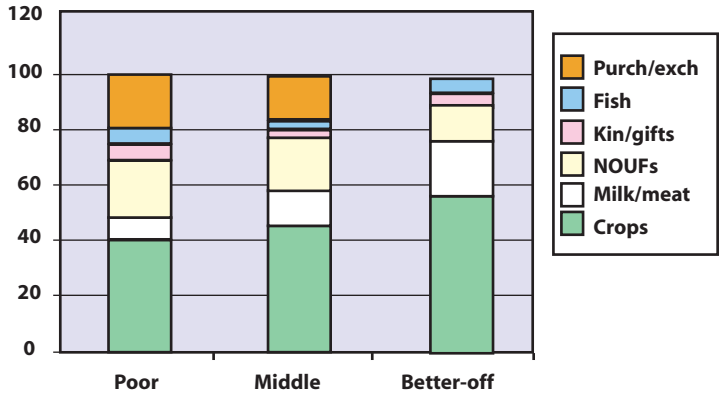


Group	Livestock holdings	Area planted
Poor	0-1 cattle 0-10 shoats	0.5 -2 acres
Middle	1-2 cattle 10-15 shoats	3-4 acres
Better-off	2-3+ Cattle 15-30 shoats	4-6+ acres

Sources of Food

Crops: The main sorghum harvest is from eight-month varieties such as *ullelo*, *mabior* (Dinka), *diri* and *nyarango* (Moru), which are planted in April-June and harvested in December-January. Short-term varieties are harvested in July-September. Maize is becoming more apparent in many areas. Groundnuts are mainly of the short-growth variety. Although grown only in some areas, cassava and other root crops are an important 'safety net' when harvest failure strikes. Simsim (sesame) is used for oil in the home but is predominantly a cash crop, as there is a strong market demand with most of it going to Uganda.

Figure 23: Food Sources in the Ironstone Plateau



Milk and meat: Goats are commonly used for milk and meat, and are traded to access other items and food. Poultry are also kept for meat and eggs.

NOUFs: The main naturally occurring uncultivated foods consumed in this zone include shea butter nut, desert date, borassus, different palms, and a variety of wild yams and tubers. Some of these can be toxic when harvested and require time-consuming preparation (e.g. some local cassava varieties). As well as *thou* (desert date) and *muodo* and *ngaana* (wild yams), other common wild fruit include *lang* and *cum* (jackal berry),

kurnyuk, *akuer*, *kei* and *nguit*. Wild mushrooms are widely eaten in the zone, in addition to termites and other insects (e.g. shield bugs, sausage flies), which are occasionally mixed with honey. These are all consumed in a normal year and are not necessarily indicators of stress. Exotic fruit trees are found in some areas, including mangoes, guavas and paw paws (papayas). During the months preceding the harvest, these fruit, particularly mangoes, are an important source of calories.

Fish: During the fishing months, the community moves to regular fishing sites along the rivers. Part of the catch is dried and brought back to the villages to be consumed during the cultivation season. However, fish provides a relatively lower contribution to the food basket in comparison to other food sources.

Purchase and exchange: Poor and middle wealth groups commonly access the equivalent of 2-3 sacks of sorghum through purchase and exchange in normal years. This is obtained from better-off households, from other parts of the zone, or from the nearby Greenbelt Zone. Income from labouring, sales of shea butter and nuts, simsim, cassava and other produce can usually comfortably cover this expense. If not, sheep or goats can be traded.

Game meat: Although populations of wild animals have declined since the beginning of the war, game hunting is still an important activity. Hunting is done during the dry season and animals hunted include bush-rats, dik-diks, gazelles, monkeys, pigs, bushbucks, and occasionally baboons.

Kinship, feasts and gifts: Death is a normal part of life and when it occurs, the deceased's relations will hold a funeral feast, with drinking and dancing, which can last for three days and nights for a man and sometimes four days and nights for a woman. Large numbers of kin and extended family members will participate and share their resources, although the host holds the main responsibility to entertain the mourners.

In-kind loans are common if shortfalls are experienced, with repayment or reciprocation being recorded for later settlement. Sometimes chiefs or elders may order support to be given to a needy person or household through the court system. This is not classified as kin support in the same way, although relatives commonly carry the responsibility to ensure that these obligations are met.

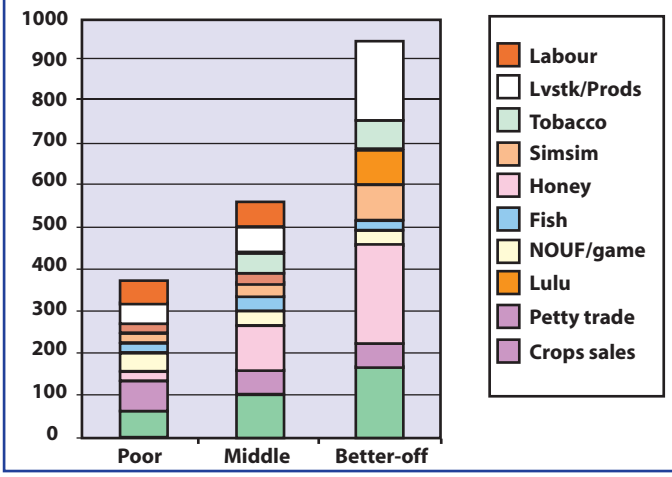
For the majority, at least 40% of annual food requirements will be provided by sorghum and maize, as well as tubers such as cassava, sweet potatoes and yams. Wild foods are the next most significant contribution. Gifts contribute about 5-10% (similar to the contribution of fish), with the degree varying depending on a household's access to rivers and personal preferences. Middle and better-off groups generally get a greater contribution from crops as they cultivate larger plots and are more able to feed their crops with animal manure.

Sources of Income

The sale of shea butter nuts and oil is an important source of income in this zone. The poor may gain income from collection while others process and market the oil and nuts. Simsim, honey and cassava are also commonly traded, although to a lesser extent. Middle and better-off groups gain some income from livestock sales, as well as from milk and other livestock products.

With 8-10 income options, it is usually possible to expand three or four of these if others are constrained, which supports coping in difficult years. Although this wide range of options is good, it also means that any constraints to local commodity and labour markets present a threat to coping. When necessary the poor can also expand their kin support from better-off and middle wealth groups, which commonly takes the form of access to cereal stocks. If they cannot be accessed as gifts or loans, cereals can be sought through labouring or occasional loans from traders. This and the absence of a household member who may seek external employment for a few months also relieve the pressure on a household food supply in times of difficulty.[13] The important contributions of lulu, honey, simsim, tobacco, and livestock product sales suggest that the better-off also engage in regular trading. The development of infrastructure and market activity should reap significant benefits for the zone by enhancing income opportunities for traders, and thereby the labour market for poorer households.

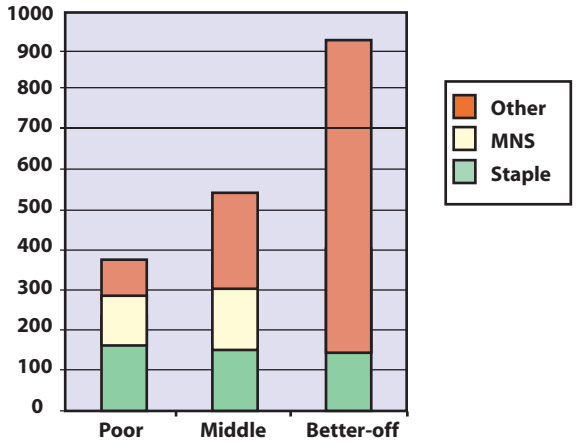
Figure 24: Income Sources in Grain Equivalent (Kgs)



Expenditure Patterns

The main categories of expenditure in the Ironstone Plateau are staple foods, minimum non-staples (MNS) such as sauces, and non-food items (e.g. essential household goods, taxes, licenses, children's school materials, clothing, salt, soap, fishing equipment and medicines). 'Other' expenses include things that are currently classified as non-essential to meeting minimum household needs (for further explanation, see the introduction section at the beginning of this document).

Figure 25: Expenditure in Sorghum Grain Equivalent (Kgs)



The poor spend an equal amount of their income on staple foods and minimum non-staple items. As wealth increases, less is spent on staples and more on MNS and 'other' items. This allows improved access to basic services where they exist. Other expenditure may more commonly be spent on restocking, agricultural and livestock inputs, and labour. The provision of employment for poorer groups is essential in a functioning economy and it is therefore vital to monitor the status of better-off groups and to ensure that market incentives that stimulate increased production are not impeded.

[13] More details on the individual contributions of various income sources and the degree of expandability as potential coping options can be obtained from the F.E.G. spreadsheets held by the SSCCSE/LAF.

Markets

The Ironstone Plateau regularly trades with the Western Flood Plains, where Dinka communities from the plains are able to trade their cattle and to work for relatives and friends for cereal. Surplus cereal production is an important trade item, especially for rich households, and it is increasingly used to obtain cash. In both the labour and commodity markets, payment in kind has for many years been the commonest form of exchange. For example, the Dinka are employed by the Luo/Jurchol to harvest and are paid in kind. In some areas, seasonal arrangements are made to allow cattle to graze in exchange for milk. Payment in kind can be made in sorghum, dried meat, simsim, groundnuts, okra, wild foods, dried fish, tobacco or honey. The planting season is a period when people work on their neighbours' or relatives' farms in exchange for sorghum or fish. Honey is a significant product that is traded in most parts of the zone. Tobacco is another important trade item and can be used as a type of alternative currency. Wild foods such as lulu are also readily traded. Cash received from the sale of crops and other items may be used to purchase staple foods, clothes, salt, soap, milk or meat.

Insecurity has hampered trade in much of the zone. During the war years, the main markets were Bararud, Midel and Acumcum, but now other towns previously occupied by northern troops are opening up, notably Wau. Trade routes, previously restricted by the war, exist within and outside the livelihood zone and are already showing signs of recovery. Wau town is gradually becoming more accessible and exchange links are growing with Tambura, Yei, Rumbek, Tonj and Gogrial. The area has great potential to revive trade and stimulate the economy.

Threats and Hazards

The main hazard in this zone has been high insecurity, which has now largely ended. During the war, coping strategies were developed to deal with seasonal raiding, which accompanied the arrival of the train in areas close to the railway line (this is where the land tends to be more fertile). One important coping option in the zone is cassava, which enjoys a very high resilience to drought. However, its full potential has not yet been fully exploited, given that a significant proportion of the population does not grow cassava.

Chronic and/or frequent hazards in the Ironstone Plateau include:

- Seasonal climatic variations, including droughts and flooding (although flooding is actually also a blessing as it generally improves the availability of NOUFs and fish, as well as some crop production). If there are no constraints to traditional coping, the impacts of these climatic variations are usually manageable;
- Critical water shortages.

Periodic and/or acute hazards include:

- More than one drought year in succession;
- Pest infestations;
- Human health epidemics or disease outbreaks;
- Insecurity.

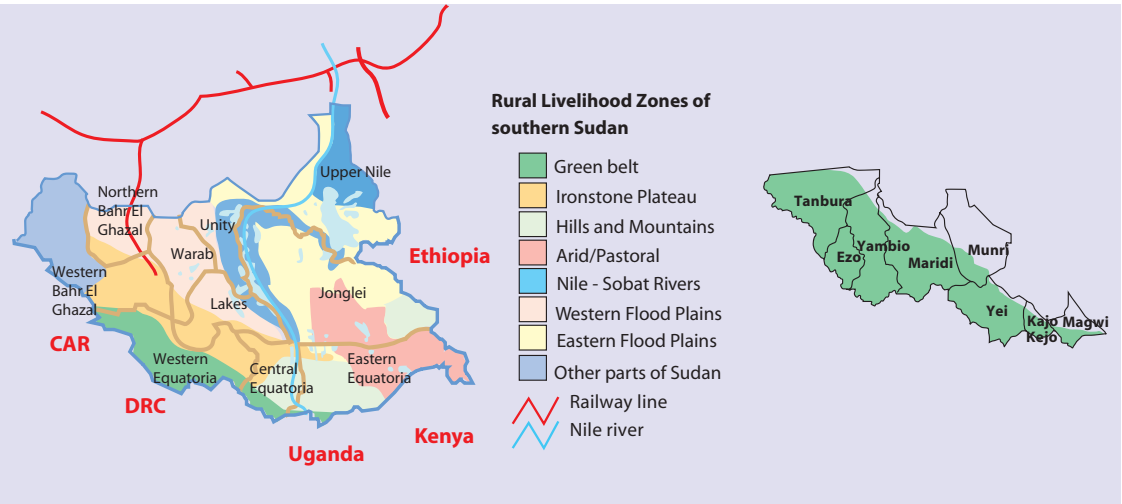
Recovery Priorities

In terms of food security, improving road links with the neighbouring crop-surplus Greenbelt Zone and improving cassava production are potential priority activities that would increase the resilience of households to drought-related food shortages. Improved water access is also critical as this would facilitate movement of the population, especially for households that are reliant on labour exchange. It is important to note that the area faces more acute water problems than any other region. Increased coverage of health services, particularly those that address leprosy, river blindness and sleeping sickness, should be prioritised. Greater local conflict resolution efforts are also required to help resolve lingering conflicts with the Dinka from Bor.

Table 5: Seasonal Monitoring Calendar for the Ironstone Plateau Zone		
Expected Activities	***Quarter***	***Examples of Key Points to Monitor***
• Threshing and storage of grains • Increased market and non-market transfers • Debt settlement • Wild food collection (lalop, yams and other roots) • Grass burning and community hunting • Cassava harvest • Tobacco harvest • Fishing • Land preparation begins • Grain store repair and cleaning • House mudding and thatching • Possible labour migration	January – March *Dry season*	• Wild food access • Review of household budgeting to next harvest threshing • Prices of key staples • Terms of trade between livestock and grain • Plans for sourcing or sale of seeds • Land sizes being prepared • Main food sources compared to normal • Grass burning • Water quality and access • Levels of trade and what is being traded • Changes in price of staple compared to norm for season
• Onset of rains • Land preparations, planting of sorghum, maize, groundnuts and sesame • Shea butter nut collection in southern areas (Wau and Rumbek) • Cereal prices increasing • Slaughtering of goats and brewing to match increasing labour opportunities • Hernias and other health problems peak • Fishing • Wild foods peak	April–June *Early wet season*	• Timing and distribution of rains • Status of fish and what quantities households are able to catch and over what period • Terms of trade (livestock/grain) • Price changes of major commodities • Cash or barter trade; what is being traded • Size of land planted compared to the past • Availability of household labour • Germination reports • Levels of borrowing (loans) • Main food sources compared to the norm
• Weeding • Harvesting and 'green' consumption of early crops of maize, sorghum, vegetables and groundnuts • Planting of groundnuts and sesame, and transplanting of tobacco completed • Honey collection begins • Sesame harvest begins • Increase in brewing • Possible time of hunger in bad years	July –September *Late wet season*	• Level of performance and consumption of early crops and the main harvest • Area planted with groundnuts • Level of labour opportunities • Prospects of a second season in select areas • Performance of long-term sorghum • Main food sources compared to the typical season • Status of support from kin • Operation of hunger courts
• Conclusion of early crops harvest and start of the long-term sorghum harvest • Planting of millet • Resumption of exchange activities • Sesame sales • Honey sales • Reduced cereal prices • Tobacco harvest • Kin exchange, loans and settlement of obligations • Christmas celebrations	October–December *Harvest / Early dry season*	• Status of the long-term sorghum harvest (from observations and estimates) • Physical conditions of livestock • Terms of trade (livestock/grain) • Cash income opportunities and actual earnings, including from tobacco, honey, brewing, etc. • Drying racks and threshing levels, etc. • Preparations for normal celebrations

Zone 5: Greenbelt Zone

Map 6: Location of the Greenbelt Zone, and Greenbelt Zone Counties



Main Conclusions and Implications

Vital trade links with the neighbouring countries of Uganda, CAR and the DRC have provided the Greenbelt Zone with major strategic importance during the war years. Although the zone has been less affected by insecurity than most regions, the conflict has forced local households to maintain a minimum subsistence level of agricultural production in an area with extremely high production potential. With the implementation of the CPA, and ongoing improvements in road infrastructure, the potential for crop production and the development of agricultural markets and trade is enormous. The related increase in household incomes would help to support a wide range of needs, including education and access to basic social welfare services. In the past, some of the surplus crops produced in the Greenbelt have found their way across southern Sudan and as far as Uganda - providing a strong signal of the area's immense potential.

Zone Description

Administratively, the Greenbelt Zone is bordered by Uganda, the DRC and CAR, and includes the counties of Tambura, Ezo, Yambio, Maridi, Yei, and parts of Mundri, Kajokeji and Magwi.

Natural capital

The Greenbelt is the most fertile traditional cereal growing zone of southern Sudan. It has very reliable rainfall, with average annual precipitation of 1,350-1,600 mm. Most of the vegetation is luxuriant broadleaf woodlands, which decrease towards the north of the zone. The main economic activity is farming, with a wide variety of crops including sorghum, maize, millet, cassava, groundnuts, rice, sweet potatoes, fruit, sesame, tobacco, sugarcane, soya beans, vegetables and coffee. Some of

these crops have in the past been exported to Uganda. Insecurity in the early 1990s displaced some Greenbelt households to the DRC, Uganda and CAR - several of which are now returning and reportedly reintegrating well with host communities.

Being predominantly agricultural, fewer cattle are kept in this zone compared to other zones, which is reflected in different coping strategies, i.e. instead of trading cattle for grain, Greenbelt households tend to increase their consumption of root crops. A variety of root crops are grown and the use of these can be expanded if other crops do not perform well. Land for cultivation and settlement is for the most part openly available. Land is held in common by the local community, and managed within traditional structures. The zone is one of the most naturally endowed in terms of vegetation cover, which consists of dense deciduous forests to the south, becoming less dense towards the north. Like other areas of southern Sudan, the forests provide plentiful materials for housing and fuel, as well as a broad variety of naturally occurring uncultivated foods and fruits.

Human capital

Approximately 16% of the population of southern Sudan lives in the Greenbelt Zone. The zone has some urban centres but most of the population is rural. Approximate health indicators for the south, generated by SSCCSE, indicate that malaria, respiratory infections and diarrhoea are the most common illnesses. Sleeping sickness is also endemic. Fortunately, the zone has been less affected by the war, and thus has better welfare services such as schools and health services. The coverage of health services is likely the highest (although unevenly spread) in southern Sudan. Primary school coverage is also better than in other zones, including educational opportunities in neighbouring Uganda, which has produced a relatively more skilled population than in other areas. There is also a potentially large and educated labour force from the Greenbelt living as refugees in Uganda. Above all, the zone's reliable rainfall and two consistent growing seasons guarantee sufficient access to food as well as rich diets. The area has better market linkages locally and regionally - although poor roads have severely constrained their potential growth.

Social capital

The Greenbelt has one of the most diverse mixes of ethnic groups in southern Sudan. These groups are generally sedentary farmers who traditionally have avoided the conflict witnessed in other parts of southern Sudan. This peaceful inter-ethnic coexistence can be considered an added advantage as it poses fewer challenges for development agencies in the immediate post-CPA period.

Physical capital

Land is the principal asset in this zone, together with complimentary resources such as tools and labour. The Greenbelt's natural fertility supports the production of a wide range of cash crops, including coffee, fruit, sugarcane, tobacco and teak trees. Gold is also available, although information on its potential is sparse.

Economic or financial capital

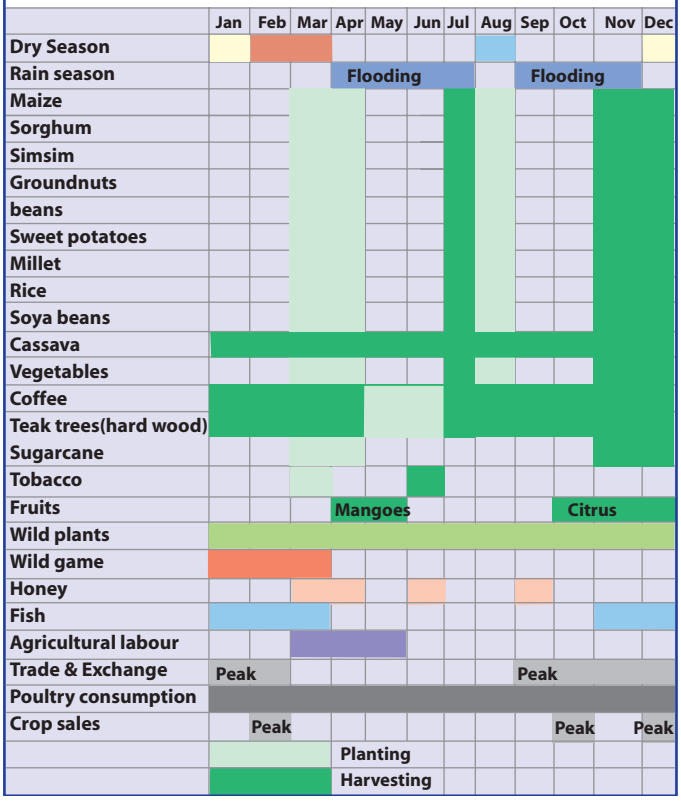
Although production has been largely limited to subsistence farming using traditional tools for land preparation and weeding, many households have been able to produce surplus crops for sale. These crops provide the main source of cash income, which most households use to pay for their children's education locally or in Uganda. As in other

areas, financial institutions have only been in existence for the past 2-3 years, since credit facilities became available through southern Sudan's Agricultural Enterprise Finance Programme (AEFP).

Seasonal Calendar

The Greenbelt Zone has two reliable rainy seasons. Sorghum, maize, groundnuts, simsim and cassava are the most important staple food crops. Other crops include millet, rice, and several varieties of beans. Most of these crops are grown in both the first and second seasons. As already mentioned, coffee, fruit, sugarcane, tobacco and teak trees are considered cash crops, although their contribution is not well established. Simsim, sorghum and soya bean surpluses are exported to Uganda, while poultry is the main source of meat and is consumed locally. Apart from crop sales, poultry, honey and fruit, including mangoes, oranges, pineapples and lemons, provide additional sources of cash. The main wild foods available include yams, palms, shea butter and termites. Wild game includes dik-diks, gazelles and monkeys.

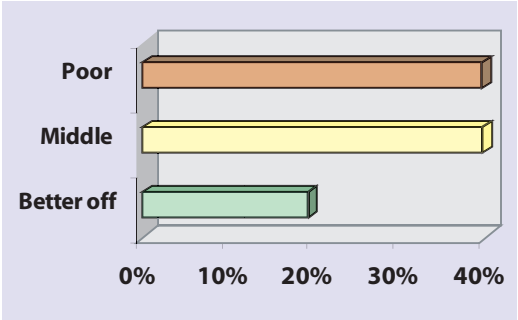
Figure 26: Seasonal Calendar for the Greenbelt Zone



Wealth Breakdown

Factors that distinguish the different wealth groups are the size of land cultivated, assets owned, and individual economic activities.

Figure 27: Wealth Breakdown for the Greenbelt Zone



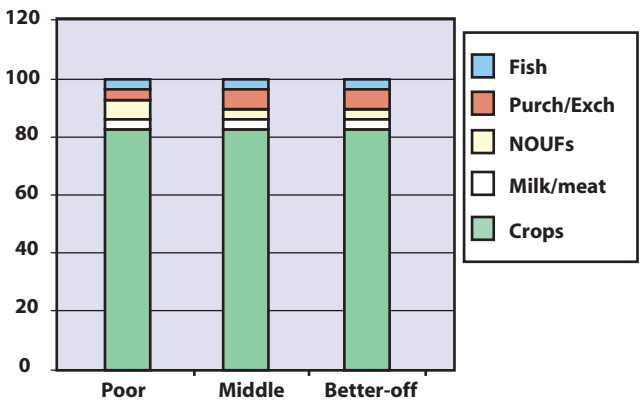
Wealth Group Information

No of feddans/acres	Assets and Activity
Poor	
1-4 feddans	Assets are basic household items and poultry. Petty trade.
Middle	
4-8 feddans	Assets are bicycles, shoats, jerricans, poultry. Trade.
Better-off	
8-13 feddans	Assets are poultry and saving of significant amounts of money. Engage in major trading.

Sources of Food

Households' own crop production makes up the bulk of the food basket for all wealth groups in the Greenbelt (Figure 28). A normal year will usually yield crop surpluses. Naturally occurring uncultivated foods (NOUFs) are common and are used as relishes to flavour dishes. Purchase and exchange allow for variation in the diet when market access and traders are functioning normally. Hunting is also common in the dry season, with game meat regularly purchased and exchanged among groups. Fish, fruit (especially mangoes), and wild foods have different seasons when they are available in abundance - allowing for expandability if needs arise in a difficult year. Chickens are commonly reared. Livestock are not considered a major food source, but more an investment for better-off households. The contribution of livestock to food requirements is less than 5% across all wealth groups, although their meat is commonly consumed at times of celebration and traditional festivals. Fish is either obtained directly through fishing or through purchase. Cassava is considered an insurance against hunger following the poor performance of grain crops. Thankfully, however, poor performing years are usually few and far between.

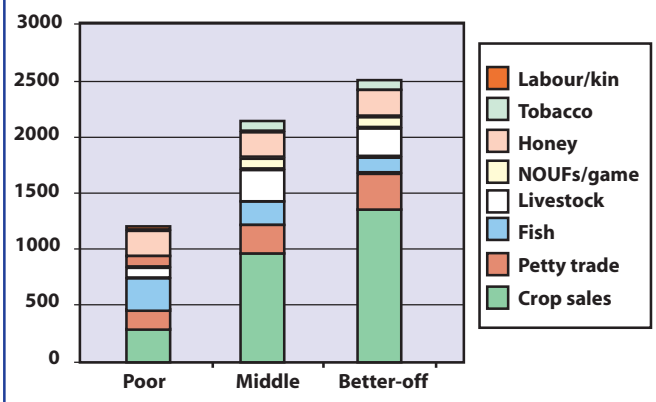
Figure 28: Food Sources for Greenbelt Zone



Sources of Income

Crop sales provide the main source of income and enjoy significant potential for expansion across the zone. Constraints to increasing income from crop sales are linked more to market access than production. Commonly traded crops include sorghum, maize, sesame, cassava and tobacco, as well as vegetables. NOUFs, game meat and fish are more commonly traded by the poor. Honey is an important source of income among all wealth groups. Petty trade revolves largely around non-food items, usually purchased from Uganda during trips for education, medical treatment, or visiting relatives. Petty trade can also include the sale of reeds, mats, ropes, traditional tools, beer, firewood and grass, especially by poor households. Better-off households tend to trade in cereal and oil crops, while poorer households sell crops such as cassava, fruit and local vegetables. Bartering is common, with game meat and honey often exchanged for cereals.

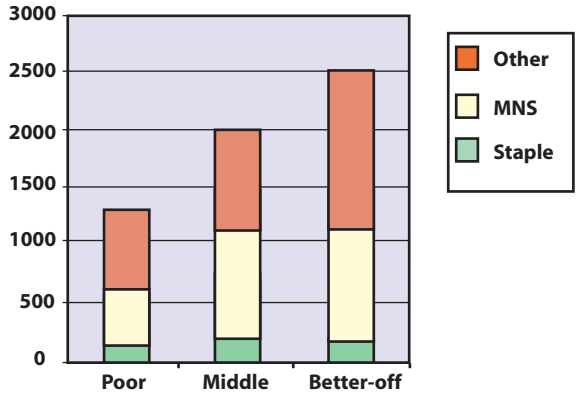
Figure 29: Income Sources in Sorghum Grain Equivalent (Kgs)



Expenditure

In contrast to the other livelihood zones, many Greenbelt households spend significant sums sending their children to schools in Uganda. With their relatively greater wealth, local households generally have sufficient resources to provide access to medical and other basic services if they are available. Most groups have the potential to reduce their 'other' non-essential expenditure in difficult years. Typically, a smaller proportion of household income is spent on staple foods in this zone compared to others.

Figure 30: Expenditure in Sorghum Grain Equivalent (Kgs)



The larger part of 'other' expenditure in the Greenbelt is on education, followed by non-food items, which can include agricultural inputs. Other expenditure also occurs on small livestock, household goods, taxes, licenses, children's school materials, fishing equipment and medicine. As mentioned before, the potential for achieving primary education levels is higher in this zone than in others, although facilities are still inadequate.

Markets

Since 1997, access to traditional markets once considered inaccessible due to the war has gradually been opening up. Today, the most active markets include those in Uganda, the DRC and neighbouring Western Flood Plains areas of Rumbek, Yirol, Cuibet, and as far as northern Bhar el Ghazal. Currencies used include the Sudanese pound, the Uganda shilling, the US dollar, DRC currency, and the Kenya shilling. Local markets are located mostly in historical or old urban centres and are well distributed across the zone. However, these markets tend to be severely constrained by poor road access, especially during the wet season, when movement of goods and grain becomes very difficult. This often increases the price of goods and cereals in the high demand areas to the north. In some cases, inability to move grain to areas of demand has resulted in huge post-harvest losses, exacerbated by high humidity and endemic pests.

Cash crops such as sugarcane, coffee, teak and other types of timber, and cereals are traded across the Greenbelt's southern borders. While the SSCSE does record some of the volumes traded, it is difficult to track all the trading routes - many of which have been active even through the years of insecurity.

Hazards and Threats

- Post-harvest crop losses due to high humidity and infestation by pests (resulting from lack of good storage facilities);
- High taxation rates;
- Lack of access to markets for the sale of surplus crops;
- Poor road infrastructure;
- Health problems (particularly the high incidence rates of river blindness and sleeping sickness);
- Attacks by the Lord's Resistance Army (LRA) and local rebel groups.

Recovery Priorities

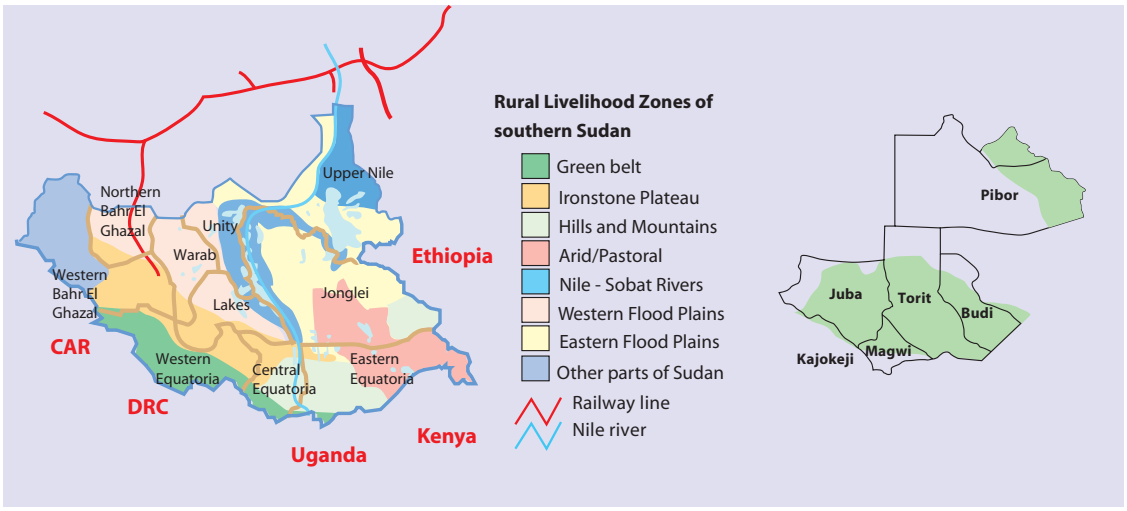
A major priority in this zone will be the improvement of its road infrastructure, especially to link it with the main markets of the Western Flood Plains and northern Uganda. Such strategic improvements would stimulate the revival of the area's once vibrant grain markets, as well as its community-owned marketing cooperatives. A better road network would naturally stimulate market growth, increase agricultural production, and accelerate the viability or relevance of credit facilities such as the AEFP. It would also serve to bring down grain prices in the high demand areas to the north. The improved movement of grain and other surplus crops would also have the knock-on effect of increasing labour opportunities within the zone.

Other priorities for recovery include the improvement of health and education facilities, which would eventually be cost shared, given that local households have the potential to pay for some of these services. However, this may only be successful if the ability of households to earn cash is improved, starting with road and market improvements. Over the past year, attacks by the LRA on resident populations have spread from the Hills and Mountains to this zone and could potentially disturb peace, stability and recovery efforts in this region. In order to restore security, strengthening local security and governance structures must be among the Greenbelt's top priorities.

Table 6: Seasonal Monitoring Calendar for Greenbelt Zone		
Expected Activities	***Quarter***	***Examples of Key Points to Monitor***
• Reduced river levels • Dry season fishing in the main rivers • Peak trade and exchange • Increased movement to and from Uganda • Hunting of wild game • Threshing and storage of crops harvested in the second season • Increased fish trade • Land preparation for first season rains • Onset of cassava consumption • Beginning of agricultural labour	December – February *Dry season*	• Carrying over of second season crop harvest, and status of crop sales/surpluses • Status of cash crop production and sales • Prices of major food commodities locally and across borders (Uganda, DRC, CAR) • Status of access to trade and exchange locally and across borders (Uganda, DRC, CAR) • Status of access to wild game and fish • Status of cassava consumption • Agricultural labour availability
• Onset of first season rains • First season planting • Post-harvest crop losses • Consumption of wild plants (especially roots) • Coffee, teak, sugarcane planting • Agricultural labour • Consumption of first season green crops	March – July *First rainy season*	• Timeliness of first season rains • Amount of land and crops planted under each crop • First season rain and crop performance • Agricultural labour availability • Potential first season crop harvest • Prices of major food commodities locally and across borders • Status of cash crop production and sales • Carry over of crop surpluses
• Onset of second season rains • Second season planting • Consumption of first season harvest • Consumption of second season green crops • Trade and exchange	August – November *Second rainy season*	• Timeliness of second season rains • Amount of land and crops planted under each crop • Second season rain and crop performance • Potential second season crop harvest • Prices of major food commodities locally and across borders • Status of cash crop production and sales • Carry over of crop surpluses

Zone 6: Hills and Mountains Zone

Map 7: Location of the Hills and Mountains Zone, and Hills and Mountain Zone Counties



Main Conclusions and Implications

Two distinct rainy seasons and the relationships between highland and lowland (plains) systems gives Zone 6 some unique characteristics that have helped to sustain its food security through times of conflict. Agro-pastoralists normally use livestock as their safety net in difficult years as they can trade them for grain. More agriculturally based systems tend to depend on the reserves found in their root crops. This zone has the benefit of both options in addition to important trade and exchange options inherent in highland and lowland economies, and the seasonal and spatial variations that stimulate trade. Unfortunately, most of these options have been frequently disrupted by conflict, but given a sustained peace following the signing of the CPA in early 2005, this zone should experience a re-strengthening of the traditional resilience of its agro-pastoral livelihoods.

Zone Description

Administratively the Hills and Mountains Zone extends across Juba, Torit, Budi and parts of Pibor counties, and partially into Magwi and Kajokeji. Many different ethnic groups inhabit the zone, namely: Moru in Juba, Lotuka in Torit, Acholi in Magwi, Buya and Didinga in Budi, and Murle, Jie and Kachipo in the hilly parts of Pibor. Households in this zone are mostly agro-pastoral.

Natural capital

The zone is characterised by mountains, plains and valleys, which provide a variety of strategies for its residents to cope with drought and flood conditions. Mixed seasons (two seasons in the highlands and one in the lowlands) enable local households to minimise the risks associated with agro-climatic

variations and crop failures. In the highlands, the first season is from April to July and the second from September to December. The plains have one growing season, from April to July. Most households tend to cultivate and keep livestock in both the hills and plains. Apart from crops, Naturally Occurring Uncultivated Foods (NOUFs) are important to local livelihoods, especially during years of food insecurity.

Social capital

Despite over 20 years of conflict, traditional social or kinship relationships have remained strong. This is because of the nature of settlements found in the mountains, where most households are united in compressed villages, which require regular communal maintenance.

The steep terrain has also forced households to terrace their fields, which requires close interaction and cooperation. Localised rainfall variations over the mountains from year to year encourage reciprocity among villages, and serve as a critical food and resource redistribution mechanism. However, hostilities associated with inter-ethnic cattle raiding has limited interaction between ethnic groups.

Physical capital

Apart from land, cattle are the main asset in this zone. However, traditionally, there has been insecurity caused by cattle raiding among the many different ethnic groups. This insecurity has escalated over the past 20 years with increased access to firearms, and has particularly affected traditional exchange opportunities between the different groups. In addition, insecurity caused by the LRA fighting in neighbouring northern Uganda and crossing into southern Sudan has negatively affected movement and cultivation. Traditionally, mobility has been critical for the effective exchange of food and other items, as well as cattle grazing.

Human capital

Household labour is oriented towards subsistence agricultural production, livestock protection, and the maintenance of villages. Agricultural labour is also practiced but is localised in most areas. It is important to note that this scenario is now changing due to the re-establishment of major market towns such as Juba and Torit, as well as improved road links with Uganda. During the 20 years of war, some households have had the added advantage of educating their children in Uganda.

Economic or financial capital

In economic terms, the zone is strategically placed to trade grain and livestock with Uganda to the south. For this reason, households are potentially placed to generate more income than in other zones. However, the long-running LRA insurgencies have severely limited the expansion of trade and associated cash income options. Currently, the main income sources are livestock, crops, and some agricultural labour.

Seasonal Calendar

As mentioned earlier, there are two distinct rainy seasons in the highland areas, although the lowlands have only one. April marks the full onset of the rains. However, households may start with dry planting in March. Dry spells are common any time between June and July. July-August marks the end of the first season and the beginning of the second.

However, some of the second season crops such as cassava, sweet potatoes and millet are planted as early as June. Crops planted in both the first and the second seasons include sorghum, cowpeas, groundnuts and sesame. Cassava is critical in bridging shortfalls arising from the poor performance of sorghum. It is also the main food source between January and August. The main constraints to crop production include erratic rains, the infestation of crops by striga weeds (particularly in the southern parts), and cassava mosaic disease.

Figure 31: Seasonal Calendar for Hills and Mountains Zone

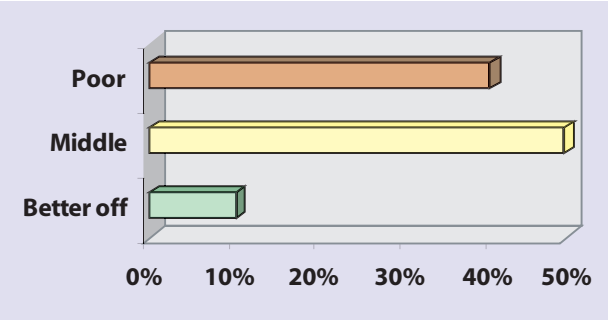
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Dry Season												
Rain season												
Long term sorghum	S										S	S
Short term sorghum									F	F	F	
Maize												
Cow peas/greengrass	S								F	F	F	S
Millet	S										S	S
Tobacco												
Groundnuts	S								F	F	F	S
Sesame												
Cassava	New/old crop				New crop		old crop					
Sweet potatoes	S										S	S
Wild plants/NOUFs				Peak season								
Wild game												
Honey												
Labour opportunities				Local							away	
Trade and exchange												
Hunger season												
					Planting			F	First season harvest			
					Harvesting			S	Second season harvest			

A wide variety of wild food plants are available in the Hills and Mountains, including roots, fruits and berries, and leafy vegetables. Wild game is also available. Although the typical hunting period usually lasts for three months, it is possible to hunt for up to six months of the year.

Wealth Breakdown

Wealth in this livelihood zone is measured by the size of land cultivated and the number of cattle owned by each household. The better-off households own over 20 head of cattle. Crops are the main food source for all wealth groups, followed by wild foods and game, and then purchase and exchange. It is interesting to note that purchase and exchange play a greater role for the poor than for other groups. The better-off consume a relatively greater proportion of milk and meat. In terms of income, livestock sales far outweigh earnings from other sources for the middle and better-off, while for the poor livestock sales and labour are the most important income sources, followed by crop sales and petty trade. Kin support and remittances are then expanded if and when needs arise.

Figure 32: Wealth Breakdown for Hills and Mountains Zone

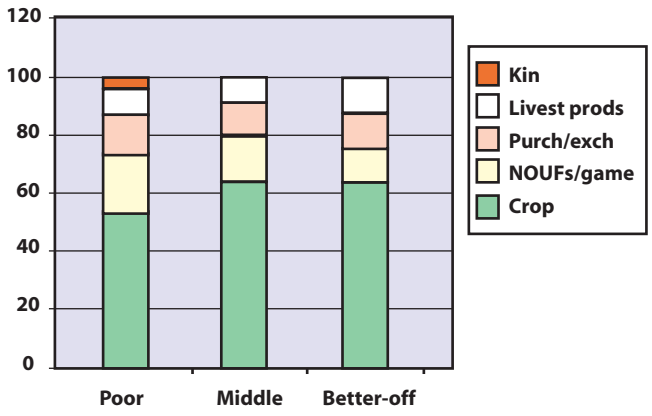


Group	Livestock holdings	Area cultivated
Poor	3-5 cattle 6-19 goats	1-2 acres
Middle	6-20 cattle 20-44 goats	1-3 acres
Better-off	21-40 cattle 45-60 goats	2-5 acres

Sources of Food

Figure 33 illustrates the relative contributions of each food source towards meeting the minimum energy needs of a household within each wealth group. Crops, livestock and grain from trade form the main sources of food for the residents of this zone. A household's own crops provide the highest contribution of food needs to the annual basket in a year for all socio-economic groups. Wild foods are the next significant category for poor and middle groups, while for the better-off, livestock and livestock products are the next most significant food source.

Figure 33: Food Sources in Hills and Mountains Zone



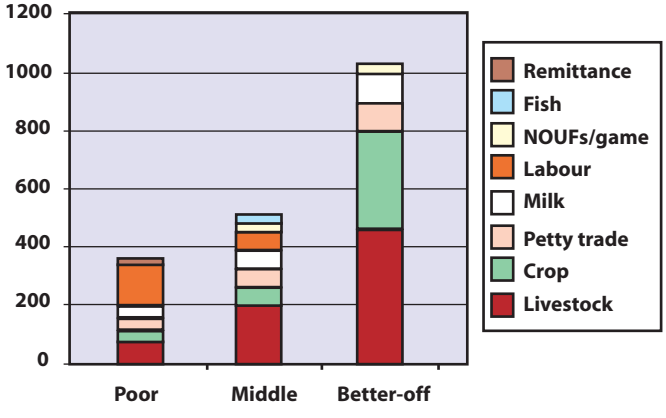
Poorer groups shepherd animals for their better-off relatives and in return receive access to milk, which can be stored in the form of ghee. For poorer groups, labour exchange is another source of grain and root crops. They go to work on the farms of richer groups, doing cultivation and weeding in return for meat and milk, and harvesting in return for grain. Fish seldom form a part of the diet, although for those who are near a water source - in the toic - fishing takes place during the dry season from December to May. Kinship is another way in which poorer groups are able to access grain.

Wild plants and game are also important food sources. Depending on the area, a variety of nutritious wild plants are available, including palm, desert dates, shea butter, yams and other tubers, wild rice, grass seeds, tamarind, and many leaf varieties. Hunting of wild game is typically carried out between December and February, with the main animals hunted including gazelles, dik-dik, wild pig, rock rabbits, guinea fowl, hares, buffaloes, bush rats, and warthogs.

Sources of Income

Overall, the main sources of income in the Hills and Mountains are trade in livestock, followed by crops, followed by petty trade and milk sales. Not surprisingly, labour is an important income source for the poor, who typically work on the farms of their middle and better-off neighbours. If the better-off groups are not able to offer sufficient labour opportunities, the poor will seek external labour and then either send remittances or return

Figure 34: Income Sources in Sorghum Grain Equivalent (Kgs)

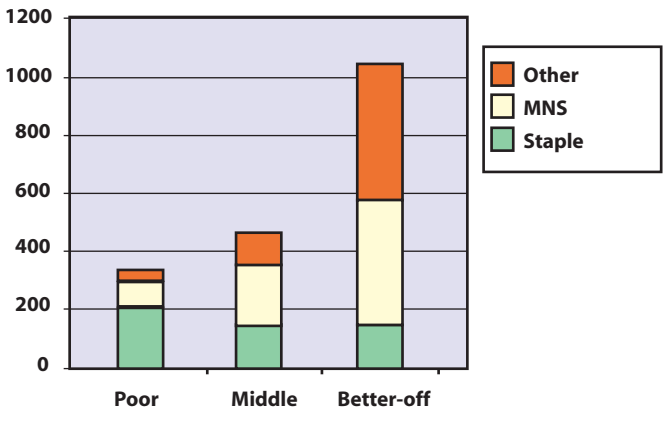


later with goods. While a household member is away from home, there is the added advantage to be gained from that person not consuming any food at home. The total income accruing to different wealth groups is valued at approximately 3.5 sacks of sorghum for the poor, 5-6 sacks for the middle group, and 11.5 sacks for the better-off. However, this depends on the price of sorghum grain in the market, which can increase by 2.5-3 times between pre- and post-harvest periods. As in other zones, lack of cash in the economy and safe places to keep savings and/or banking services has also affected trade and exchange. However, despite past insecurity, most households achieve their daily minimum food requirements, which are normally only at risk when conflict disrupts normal coping activities and prevents essential seasonal activities or movements.

Expenditure Patterns

The poor spend the biggest proportion of their income on staple cereals such as sorghum and maize. Figure 35 illustrates how increasing wealth allows greater expenditure on Minimum Non-Staple (MNS) items, including soap, salt, batteries, essential clothing, household items and water containers. Unfortunately, this category also commonly includes taxes, the repaying of outstanding loans, and the reciprocation of kin support.

Figure 35: Expenditure Sources in Sorghum Grain Equivalent (Kgs)



The 'other' category includes education and increasing access to basic social and welfare services. The poor can be seen to be living very close to the borderline, with little opportunity to think about any 'other' expenditure as staple and minimum non-staple expenses are soaking up all of their resources. In times of difficulty, 'other' expenditure can be reduced to allow increased access to essential needs. It is at these times that the poor become dependent upon kin ties.

Markets

Juba, Torit, Lafon and Kapoeta were major trading centres before the war. Trade and exchange have, however, continued to thrive, with exchange routes between Kenya and Sudan being sustained by the Didinga. Farmers in surplus cereal areas such as Nagishot trade with the Didinga and the Boya or Lotuka, who tend to have more cattle. In a normal year, middle and better-off groups trade their surplus cereal and bulls for cash and are then able to purchase more livestock. In a year when crops have not performed very well, these households are able to trade their bulls in order to purchase cereal. Some groups trade goats for *malodas* (traditional cultivation tools or axes) or cereal. Tobacco is also used as a mode of exchange for cereal, goats and cash, while honey and chickens provide other sources of exchange that are recorded under petty trade. Many of these groups have links with traders in areas that are further away, including Uganda and Kenya.

Poorer households who own no cattle or goats trade in local beer, chickens, honey, mats and pots for cash or cereal. This trade is mostly local. After selling their stocks, communities obtain cash or barter exchange and are then able to purchase clothes, salt, soap, blankets, sheets, and other needed items. The main trading season is between December and February and during the hunger gap. Insecurity threatens food security because of the importance of the income derived from the cattle and cereal trades, which provides access to surpluses from surrounding areas. The lowland and highland economies depend upon such exchange, and the seasonal variations in access create the trade opportunities that benefit both parties.

Generally better-off groups will sell their surplus livestock and cereals, while poorer groups trade in a variety of other items to obtain an income. Poorer groups are also more likely to engage in barter exchange and labouring. Labour markets can be disrupted both by conflict and untimely food aid interventions.

Hazards and Threats

Frequent hazards encountered in the Hills and Mountains Zone include:

- General insecurity from the LRA, particularly in the southern parts;
- Inter-ethnic cattle raiding;
- Drought;
- Striga weed and birds.

In order to minimise the risk of losing their crops, households tend to farm in two areas: the hills and the plains. In addition, several varieties of sorghum are grown, i.e. short-term and long-term varieties, in order to ensure success of at least one crop. Consumption of energy rich wild foods such as desert dates, honey, roots and tubers also increases during difficult times.

Recovery Priorities

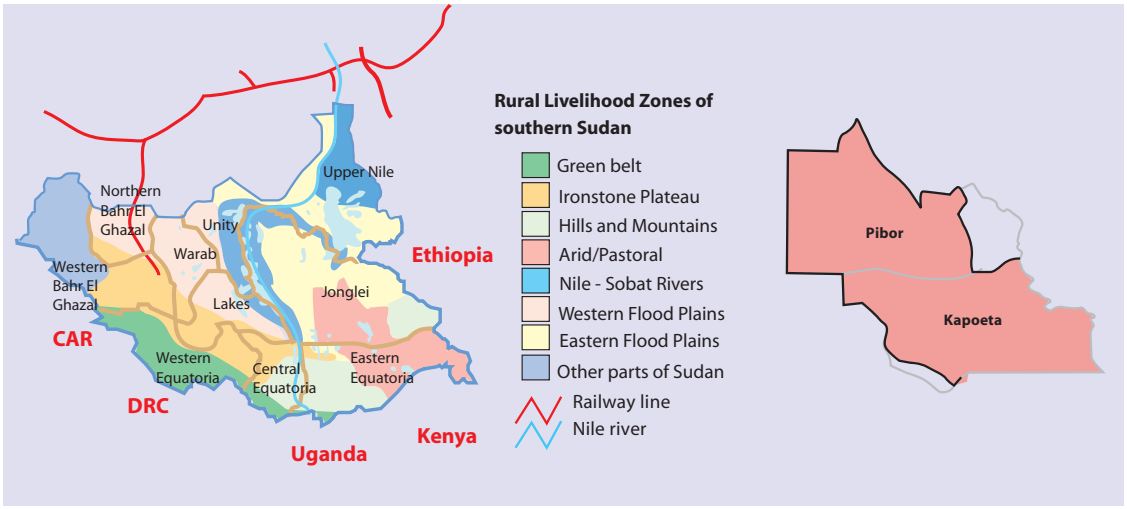
Conflict has undermined an otherwise sustainable livelihood system in the Hills and Mountains Zone. Here, insecurity is the most limiting hazard - usually in the form of cattle raiding or attacks from the Uganda-based LRA, who as well as looting and burning property have been known to kill, rape and abduct children.

The presence of landmines is another problem that has severely constrained the development of arable land. Although the removal of landmines is underway, the risk of exposure remains. The improvement of the security situation remains the pivotal priority for local recovery, including efforts to curb the LRA insurgency as well as inter-ethnic peace-building initiatives to address the cattle raiding situation. Such improvements are likely to significantly improve local inter-community exchange of goods, assets and labour, and to stimulate cross-border livestock and grain trade with northern Uganda and north-western Kenya. Accelerating the removal of landmines and the improvement of the road infrastructure would promote access to and the expansion of existing markets such as Juba, Torit, Kapoeta and Lafon, and possibly support the emergence of new markets. At the same time, the provision of credit to boost a potentially expanded internal and cross-border trade would enhance the availability of labour opportunities, particularly for poorer households.

Table 7: Seasonal Monitoring Calendar for Hills and Mountains Zone		
Expected Activities	***Quarter***	***Examples of Key Points to Monitor***
• Performance and status of second season crops • Threshing and storage of crops harvested in the second season • Dry season trade and access (cross-border and between main towns) • Exchange between hills and plains and different ethnic groups • Traditional cattle raiding • Exchange movements to and from Uganda • Hunting of wild game • Land preparation for first season rains • Onset of cassava consumption • Wild food consumption	December – March *Dry season*	• Quantity of second season crop harvest carried over • Prices of major food commodities and livestock, locally and across borders • Terms of livestock and grain trade • Access to trade and exchange, locally and across borders (Uganda and Kenya) • Access to wild game • Status of cassava performance and consumption • Labour availability • Access to dry season wild foods • Levels of conflict associated with cattle raiding • Status of food access and exchange mechanisms between the hills and plains/ valleys and among different ethnic groups
• Onset of first season rains • First season planting • Agricultural labour • Consumption of first season green crops • Consumption of wild plants, especially roots and oil nuts • Traditional cattle raiding	April – July *First rainy season*	• Timeliness of first season rains • Amount of land planted under each crop • First season rain and crop performance • Agricultural labour availability • Potential first season crop harvest • Prices of major food commodities, locally and across borders (Uganda and Kenya) • Wild food consumption levels compared to normal • Levels of conflict associated with cattle raiding • Status of food access and exchange between the hills and plains
• Onset of second season rains • Second season planting • Consumption of first season harvest • Consumption of second season green crops • Trade and exchange • Traditional cattle raiding	August – November *Second rainy season*	• Status of the first season harvest • Timeliness of second season rains and planting • Amount of land planted for each second season crop • Second season rain and crop performance • Potential second season crop harvests • Prices of major food commodities, locally and across borders (Uganda and Kenya) • Status of cash crop production and sales • Levels of conflict associated with cattle raiding • Status of food access and exchange between the hills and plains

Zone 7: Arid/Pastoral Zone

Map 8: Location of the Arid Zone, and Arid Zone Counties



Main Conclusions and Implications

The people that live in the Arid Zone are almost pure pastoralists and are experts at survival in a very harsh, drought-prone environment. Family groups employ several risk reduction strategies in order to ensure their survival, such as keeping some of their livestock scattered throughout the zone with friends and relatives, and maintaining a high degree of mobility in order to optimise the grazing land available. During the dry season, livestock are taken to distant pastures up to four or five days' walk from the homestead.

When drought occurs, households migrate to the neighbouring Hills and Mountains' Kidepo Valley or Bor County in the Eastern Flood Plains and Nile and Sobat Rivers Zone. If the main rainy season fails, they will migrate towards the Ethiopian border and into Kenya. Conflict is very common with the hosting ethnic groups in these migration areas. This is particularly so in the Hills and Mountains and Bor County, and is caused by cattle raiding practices that often result in Toposa and Murle being denied access to grazing lands in subsequent seasons. This in turn forces them to engage in peace talks with their neighbours (the Buya, Turkana, Didinga and Dinka) in order to regain access to grazing lands. Livestock, hunting, wild foods, trade and exchange are the most important food sources in the Arid Zone.

The increased concentration of settlements in the east of the zone has led to overgrazing, which in turn has resulted in growing gully erosion. Communities try to cultivate in low ground spots where there are good catchments and silt deposits from surrounding slopes; however, erosion often washes away these crops. The vegetation that is now growing in the region is not suitable for cattle, although it can support small stock.

Due to their proximity to the Kenyan border and exposure to relief interventions, the southern parts of the zone are at risk of attracting development activities and promoting settlements that may conflict with the pastoral livelihood and the already fragile environment. These areas should be carefully monitored to prevent lasting environmental damage. Typically, rainfall conditions, especially in the southern parts of this zone (Kapoeta County), are not supportive of crops, although some households do cultivate. Thus, crop failure is not unusual and is not considered a big threat. Constraints to seasonal movements and access to grazing, and negative trends in terms of trade for livestock and grain, pose the biggest threats to local livelihoods, which are particularly susceptible to increases in sorghum and maize prices.

Zone Description

The Arid Zone (which can also be referred to as the Pastoral Zone) lies at the south-eastern tip of southern Sudan, and is bordered by Kenya and Ethiopia. The zone covers Kapoeta County and extends into many parts of Pibor County. The zone is predominantly inhabited by two main tribes of Toposa (Kapoeta) and Murle (Pibor). To the west is the Hills and Mountains Zone, where surplus production can normally be accessed through exchange.

Natural capital

The zone is typically dry Sahelian savannah, with an average annual rainfall of less than 200 mm. The soils of the large plains are predominantly sandy loam, with the clay fraction tending to be higher in the north, west and east of the zone. There are few permanent rivers or water points. Along the Ethiopian border, there is a range of high country that offers good grazing and numerous water points.

Livestock drive the Arid Zone economy. Some sorghum is cultivated, but it fails frequently due to poor rains. Before 1985 the Toposa permanently inhabited a few arable areas of Karukuonjie, Maachi, Mogos, Pongo and Riwito. However, most of them moved to less productive areas following increased insecurity.

Human capital

The Arid Zone has been dominated by inter-ethnic conflicts between the Toposa and the neighbouring pastoral tribes of Jie, Didinga, Murle, Buya, and the Turkana of Kenya. Primary school education is available in the zone but at a level far below global standards. Human productivity is seriously undermined on a periodic basis by dry season water shortages, which are a predominant and chronic feature of this zone. As water becomes scarce, people must move increasingly long distances, and residents have been known to walk up to five days in search of water. Water shortages also give rise to a high incidence of waterborne illnesses. Insecurity worsens the health and water situation for those who do not migrate; during periods of conflict, more members of the family stay at the homestead, increasing pressure on local water sources. Health service coverage is low both by global standards and by the already low standards of southern Sudan. Services have been repeatedly constrained by insecurity.

Social capital

Social or kinship networks remain very much intact in this zone, with strong relationships also extending across the border into Ethiopia. Despite, or perhaps because of, these strong

social networks, a high level of local conflict exists among the groups of this zone. Politically, the area has been unstable as well, with many of the ethnic groups establishing ambivalent relationships with various political factions, seriously undermining local governance. Kinship bonds within the community are strong and redistribution of food takes place along kin lines. Unfortunately, cattle raiding practices among the pastoral tribes often result in conflict, which extends into neighbouring zones and over the Kenyan and Ethiopian borders.

Physical capital

The principal form of physical capital in this zone is livestock. Livestock holdings by household are, on average, higher here than in other zones. Community-based animal health services exist across the zone, but are often severely limited by a lack of veterinary medicines.

Economic or financial capital

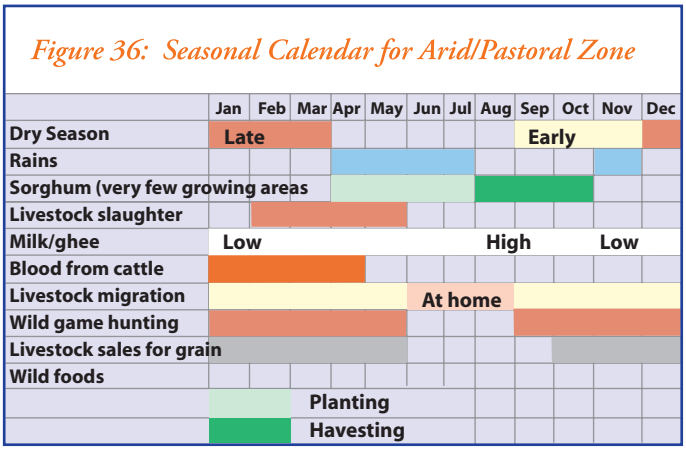
Currency is as scarce as in other areas of the south. There is a heavy reliance on livestock holdings, which represent the main assets of the people, and upon which the local economy is based. Exchange of livestock products for cereal or other goods is critical for survival. Natural livestock multiplication and cattle raiding have been the primary means for restocking herds.

As a result of incessant cattle raiding in this zone, security remains precarious. Trade and markets are important for survival as most inhabitants obtain their cereal through purchase or exchange. Insecurity has also had a highly detrimental impact upon these activities. Cross-border trade with Kenya and Ethiopia is carried out and a mix of currencies used. There are no financial services whatsoever in this zone.

Seasonal Calendar

The livelihood pattern in the Arid Zone follows important seasonal events that allow livestock to access grazing and water, while also visiting places where there are opportunities to trade livestock for grain and other basic commodities. The specific timing of these events mean that the nomadic lifestyle is easily disrupted if natural factors or insecurity prevent these essential movements and opportunities for trade.

Figure 36: Seasonal Calendar for Arid/Pastoral Zone



Normal seasonal movements can also be disrupted by externally planned interventions. Despite this, Kapoeta town has attracted external support because of its political significance in the zone, and, on occasion, the need to temporarily support returnees and other groups who may have become accustomed to a more urban lifestyle.

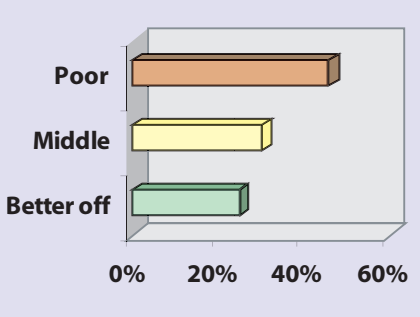
Redistribution along kin lines remains a common practice and helps to compensate for localised differences in production. Households in and around Kapoeta may share with households in the south-eastern areas. This is because many households and extended families have split to enable some members to be with cattle that move continuously during

the dry seasons. Another more recent risk reduction strategy involves sending some kin to urban centres, particularly among those groups who have less livestock. However, it appears that milk, meat and blood are nearly always available (although less so when herds move far away). It would be unusual for family members to stay in villages or urban centres if they did not have access either to some livestock that have remained with them, to ghee and dried meat from the cattle camps, or to grain through exchange or relief channels.

Wealth Breakdown

The Arid Zone livelihood is highly dependent on trading large numbers of cattle, as this is the mainstay of survival. Small stock in the form of sheep and goats are also significant.

Figure 37: Wealth Breakdown for AridZone



Group	Livestock holdings	Area cultivated
Poor	15 cattle 15-25 goats	0-1 acres
Middle	15-40 cattle 25-50 goats	0-1 acres
Better-off	>40 cattle >50 goats	0-1 acres

The number of wives a man 'owns' is another indicator of wealth. A large number of wives usually indicates a larger number of children to help with labour and care for the animals, and with this comes increasing social status and responsibility. It is important to note that this breakdown is based upon what a woman and her children (as the main household unit) have access to, even if they are part of a larger extended family with several wives.

Sources of Food

In the past many households in this zone have been reported rarely to eat grain, with the majority of their diet made up of milk, meat, blood, and wild foods. However, it is now more common to see the contribution of exchange representing 40-50% and the most important food source. This exchange mainly comprises cattle being exchanged for grain and other household items, plus livestock inputs and livestock protection/fighting tools.

Livestock and livestock products: Milk, meat, blood and exchange are the most reliable options of obtaining food throughout the year. The largest proportion of all annual food needs comes either directly or indirectly from livestock holdings. During the dry season (October to May), the cattle are taken to hills where there is grass and water. The only people who stay in permanent settlement areas during this season are women, the elderly and the very young, who rely on milk and meat from goats and sheep and their own cereal production or purchases. In general, the people of the Arid Zone would rather trade their cattle than slaughter them.

Milk from cattle is available during the wet season when the cattle are in the villages. Milk from sheep and goats is drunk during

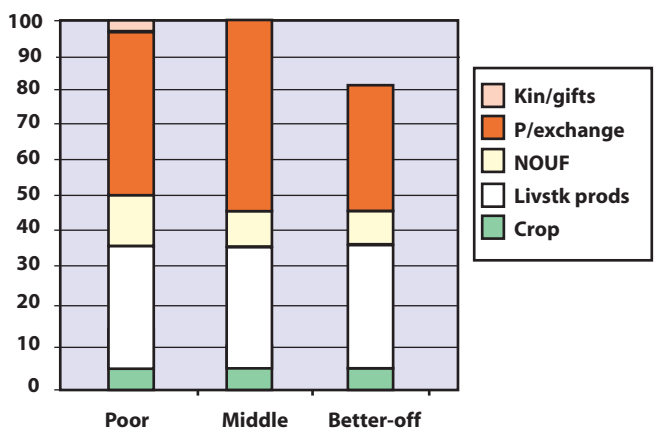
the dry season, as and when cattle migrate. Meat is primarily eaten during the dry season, with most meat coming from goats and, to a lesser extent, cattle. Bleeding of bulls takes place during the dry season and this blood is sometimes mixed with milk. The frequency of bleeding depends upon the availability of other food sources, with bulls bled less if there are other alternatives. Blood is mainly a food source during the dry months, although it can be consumed during the wet months when there is a poor harvest or insufficient milk. Blood consumption is therefore an indicator of the type of year that is being experienced in the Arid Zone. Bulls can be bled up to 12 times in a year.

Crops: Sorghum production is limited and only attempted by a few households that reside in arable pockets of Mogos and Riwoto. Other crops grown may include sesame, pumpkin and beans. Some maize is seen in the riverine black cotton soil areas. Crop production plays a minimal role as a food source (5-10%). Those households that do cultivate would expect to obtain no more than one or two sacks of cereal in most years. The rest of the people's cereal requirements are obtained through trade or purchase. In a bad year, cereals make up a larger share of food sources as families must exchange enough cereal to compensate for reduced livestock products and wild foods.

NOUFs and game meat: The contribution from wild foods and game animals are significant and, more importantly, provide a coping strategy for all groups during times of insecurity. Desert dates are common in the zone and can be eaten, stored and traded. They are an important food to ease people through stress periods between February and April, when the rains should start and milk yields begin to pick up. Other wild foods include *komok* (shrub), *koliya* (fruit), tamarind (pod/seed), *thoto* and *kote* (palm fruits), yams and roots, and various leaves and other fruit. A total of 41 different NOUFs have been recorded in reports. Game is consumed when available during the dry months, and include hares, guinea fowl, pigeons, ant bears, warthogs, antelopes, porcupines, dik-dik, and ground squirrels.

Gifts: These are more significant for poorer groups who tend to depend on better-off relatives and friends for support. Kinship ties are strong in the zone and the reciprocation of livestock and grain is common between groups, especially when the family splits during dry seasons. Such gifts and loans provide a common means of spreading risk within groups, particularly for those who are tending livestock or planting crops away from their home areas.

Figure 38: Food Sources in Arid Zone

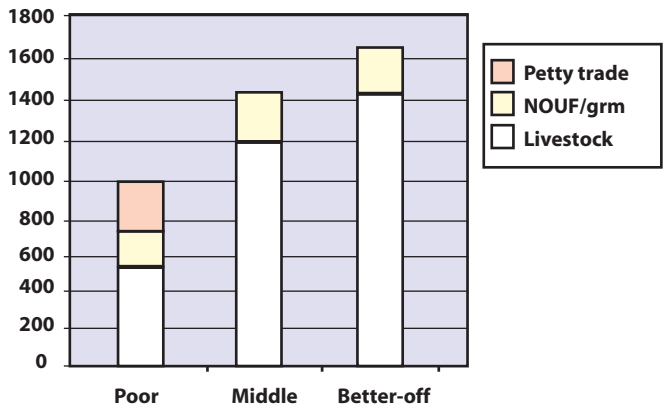


Trade and exchange: With frequent insecurity and market disruptions, exchange is essential in the Arid Zone, particularly during the dry season, when there is easier access to markets and trading partners from neighbouring regions. The poor tend to depend more on petty trade and make the effort to travel to exchange in order to sell their goods for cash or food. Trade and exchange commonly contribute up to 50% of all households' food.

Sources of Income

The poor have the capacity to access up to 11 sacks of sorghum through purchase or exchange. The middle and better-off groups can potentially access more than the poor. Game, including skins, and wild foods/NOUFs are traded in towns and markets. The main markets are to the west of the zone, where livestock trade is generally more vibrant. Petty trade is another important income source, especially for some poor groups.

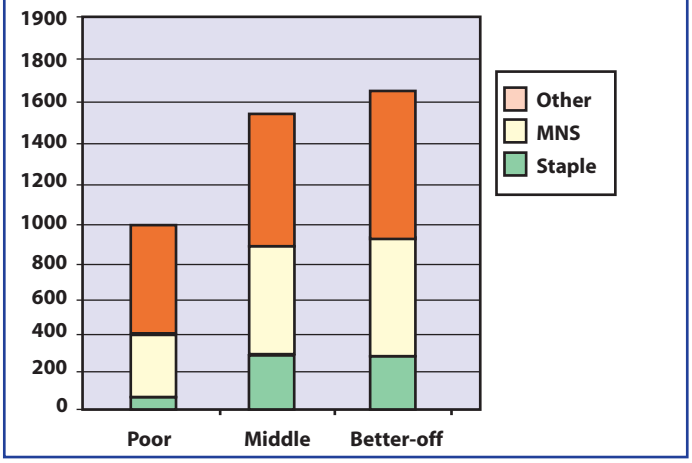
Figure 39: Income Sources in Sorghum Grain Equivalent (Kgs)



Expenditure Patterns

It is interesting to note that the people of the Arid Zone are usually perceived to be some of the poorest in southern Sudan, and yet their spending potential and assets are considerably higher than those of other livelihood zones. This is not suggesting that they can be considered well-off, but, rather, that their livelihoods might be comparatively more resilient to shocks. However, in reality, this is not necessarily the case, as their coping options are limited and they are highly susceptible to any constraints to their mobility, as well as to livestock diseases, market price changes, and other constraints to trade. As well as expenditure on staple cereals and minimum non-staples, 'other' expenditure may include veterinary products, weapons for protecting livestock, clothing, salt, sugar, soap and medicines.

Figure 40: Expenditure in Sorghum Grain Equivalent (Kgs)



Markets

The pastoralists' main markets include both formal markets such as Lokichoggio in Kenya, Nakua in Ethiopia, and Kapoeta and Pibor towns, and informal channels of exchange with the Buya, Didinga, Dinka and Nuer of the former Bieh State. As already mentioned, exchange is very often by inter-ethnic cattle raiding. In a normal year, a family may trade four or five bulls, mainly in exchange for cereal. Non-food items purchased include salt and clothes. Relief food is shared following distributions and plays an important role in exchange patterns. With Kapoeta and Torit (in the Hills and Mountains) recently becoming more accessible, more households are

expected to increase their levels of trade and exchange. Key markets include Kapoeta, Loyakali, Napotpot, Narus and Lokichoggio to the southwest, Nakua in Ethiopia to the southeast, and Boma to the north. Other markets include those in Kenya as far as Kitale, Kisi, Kisumu and Nakuru, depending on terms of trade and local hostilities that may block routes. The New Sudan Centre for Statistics and Evaluation holds some information on the main commodities traded by county, dating back to 1995.

Threats and Hazards

Any sudden or significant change in the terms of trade can pose a shock to the economy and a threat to livelihoods. Changes in traditional seasonal movements, apart from disrupting normal food access, can also lead to overgrazing and gully erosion. This may lead to the keeping of more small stock and greater settlement around urban and market centres. Changes in seasonal movements and behaviour can be the result of insecurity and its negative impact on trade. However, they can also come about as a result of improved access to permanent water points or improvements in livestock health and access to veterinary drugs.

Chronic and/or frequent hazards encountered in the Arid Zone include:

- Drought;
- Livestock raiding, both locally and cross-border;
- Other forms of insecurity.

Periodic and/or acute hazards include:

- More than one drought year in succession;
- Livestock disease outbreaks;
- Human health epidemics or disease outbreaks.

Recovery Priorities

The biggest impact of the war in this zone has been the reduction of local and cross-border trade. Peace should herald a recovery both of normal seasonal movements and lost trade. However, to achieve this, conflict mitigation and peace-building initiatives to address cattle raiding practices will need to be prioritised with the involvement of all local and neighbouring communities, including the Turkana of Kenya and Karamoja of Uganda. The improvement of road links would go a long way to sustaining such peace-building and monitoring activities, as well as the expansion of markets for livestock and grain. Other priorities should include the increased coverage of veterinary services and environmental protection initiatives.

Table 8: Seasonal Monitoring Calendar for the Arid Zone		
Expected Activities	***Quarter***	***Examples of Key Points to Monitor***
• Most livestock at distant pastures • Increased market and non-market transfers • Settling of debts from previous seasons • Wild food collection • Land preparation begins • Household member travels to town to trade, etc. • Hunting continues • Bleeding of cattle begins • Some livestock slaughter • Trade continues	January – March *Dry season*	• Wild food access • Prices of staples, and how they compare to the season norm • Terms of trade between livestock and grain • Main food sources compared to normal • Water quality and access • Levels of trade and what is being traded • Bleeding of cattle
• Onset of rains (April - July) • Land preparations, planting of sorghum and maize in key areas • Cereal prices increasing • Slaughtering of livestock continues, livestock prices declining • Bleeding livestock and mixing with milk • Wild foods start to decline but lalop still available • Hunting continues • Cattle begin to move back to home cattle camps in June • Work on crops by certain household members in key areas	April – June *Dry season ending*	• Timing and distribution of rains • Terms of trade between livestock and grain • Price changes of major commodities • Cash or barter trade; what is being traded • Size of land planted compared to the past • Who is remaining behind and where • Availability of household labour • Main food sources compared to the norm • Extent of hunting • Seasonal movements compared to the norm • Milk yields increasing from May onwards • Levels of slaughtering and bleeding
• End of rains • Milk yields remain high until October • Livestock back at home cattle camps • Sorghum harvest (August)	July – September *Wet season*	• Level of performance and consumption of early crops and the main harvest • Level of labour opportunities • Main food sources compared to the typical season • Status of support from kin • Terms of trade • Staple prices compared to the norm
• Milk yields begin to decline • Cattle begin to move further away • Livestock traded for grain and other items • Hunting begins	October – December *Early dry season*	• Livestock conditions • Terms of trade between livestock and grain • Cash income opportunities and actual earnings, including from tobacco, honey, brewing, game and skin sales.

SOUTHERN SUDAN LIVELIHOOD PROFILES

The End

Southern Sudan Centre for Census, Statistics and Evaluation (SSCCSE)

Save the Children UK

FEWS NET
USAID Famine Early Warning Systems Networks (FEWS NET)