Secure Livelihoods Research Consortium

Researching livelihoods and services affected by conflict

Surveying livelihoods, service delivery and governance: baseline evidence from South Sudan

Working Paper 21

Marco d'Errico, Karolina Kozlowska and Daniel Maxwell

August 2014

Feinstein International Center

About us

Secure Livelihoods Research Consortium (SLRC) aims to generate a stronger evidence base on how people in conflict-affected situations (CAS) make a living, access basic services like health care, education and water, and perceive and engage with governance at local and national levels. Providing better access to basic services, social protection and support to livelihoods matters for the human welfare of people affected by conflict, the achievement of development targets such as the Millennium Development Goals (MDGs) and international efforts at peace- and state-building.

At the centre of SLRC's research are three core themes, developed over the course of an intensive one-year inception phase:

- State legitimacy: experiences, perceptions and expectations of the state and local governance in conflict-affected situations
- State capacity: building effective states that deliver services and social protection in conflict-affected situations
- Livelihood trajectories and economic activity in conflict-affected situations

The Overseas Development Institute (ODI) is the lead organisation. SLRC partners include the Afghanistan Research and Evaluation Unit (AREU), the Centre for Poverty Analysis (CEPA) in Sri Lanka, Feinstein International Center (FIC, Tufts University), Focus1000 in Sierra Leone, Food and Agriculture Organization (FAO), Humanitarian Aid and Reconstruction of Wageningen University (WUR) in the Netherlands, the Nepal Centre for Contemporary Research (NCCR), and the Sustainable Development Policy Institute (SDPI) in Pakistan.

Secure Livelihoods Research Consortium
Overseas Development Institute
203 Blackfriars Road
London SE1 8NJ, UK

T +44 (0)20 7922 8221
F +44 (0)20 7922 0399
E slrc@odi.org.uk
W www.securelivelihoods.org

Contents

Tables, figures and boxes

Tables

Figures

Acknowledgements

We would like to thank the staff of FAO South Sudan for their assistance and backstopping of the fieldwork, and the staff of SLRC in London for the review and production of this report, including Rachel Slater and Kevin Watkins as peer reviewers, Maryam Mohsin and Aaron Griffiths for editorial assistance.

Preface

South Sudan is one of the eight focus countries of the Secure Livelihoods Research Consortium. There, as with the other SLRC focus countries, we are interested in learning more about whether and how service delivery can change citizens' perceptions of government and so contribute to enhancing state legitimacy. At the same time we are interesting in learning more from South Sudan about how people living in poverty attempt to rebuild their livelihoods and what international aid can do to support them. But delivering a package of research in South Sudan has proved particularly challenging over the last two years. In the other countries where SLRC is carrying out longitudinal panel survey work we are able to run research through core consortium partners. In South Sudan we have worked in a different partnership – with the Food and Agriculture Organization – in order to get access to field sites and to piggyback on their logistical capabilities. However, despite this support, and even before the output of conflict in December 2013, our research teams were struggling to get access to field sites – especially in the rainy season and in increasingly insecure situations. They often struggled to carry out survey work with the levels of in-country supervision and support to enumerator and data entry teams required to ensure the quality and robustness of the data. We should also flag that the South Sudan survey began before any of the other countries and so was used to test, refine and improve our approach elsewhere.

As a result, we do have concerns about the quality of some of the data that we have analysed and presented here. Our main concerns relate to missing values and the application of regressions across a small number of data points and the ways in which some of the questions in the survey have been posed and interpreted by enumerators. Examples include indicators showing distance to the nearest health clinic or school when our question was meant to measure distance to the nearest health clinic that was open and delivering services, or the nearest school that had teachers in attendance and children attending class.

Despite these concerns we have decided to publish the data and the analysis. There are two main reasons for this. First, the survey has generated critical data – for example showing that food insecurity appears to have been at levels that would normally trigger an emergency humanitarian response and that access to basic services was very low during our survey. When violence in Upper Nile and Jonglei ends the data will be of enormous value to government and bilateral and multilateral agencies and enable them to recognise how far food insecurity has been exacerbated by conflict (or how much of it pre-dated the fighting that broke out in December 2013) and how much of the investment in basic service delivery over recent years has survived the latest outbreak of conflict. Second, SLRC works in a number of environments in which it is particularly difficult to do research and the more we can learn about what works – and indeed what doesn't work – from our research methods and approaches, the more we can contribute to improved research in the future that generates better evidence on which governments and donors can make policy and programming decisions. We think there are critical insights from our research process that will be of use to others in our field

.

Abbreviations and acronyms

CMR	Crude Mortality Rate
CSI	Coping Strategies Index
FAO	Food and Agriculture Organization
FCS	Food Consumption Score
HDDS	Household Dietary Diversity Score
HFIAS	Household Food Insecurity Access Scale
HHS	Household Hunger Scale
rCSI	Reduced Coping Strategies Index
SFLDP	Sustainable Food Security through Community-Based Livelihood Development and Water Harvesting
SLRC	Secure Livelihoods Research Consortium

1 Introduction

In 2012 and 2013, the Secure Livelihoods Research Consortium (SLRC) designed and implemented the first round of a panel survey in six conflict-affected countries, generating cross-country data on livelihoods, access to and experience of basic services, exposure to shocks and coping strategies, and people's perceptions of governance. In early 2012, the UN Food and Agriculture Organization (FAO) with inputs from the SLRC designed and implemented the first of these surveys in South Sudan. This paper presents the findings of that survey, which was delivered to 797 households between March and April 2012. This paper constitutes the South Sudan baseline report, to be followed up later by a second round of the panel survey if possible.

With funding support from the Canadian International Development Agency, FAO is implementing the 'Sustainable Food Security Through Community-Based Livelihood Development and Water Harvesting' project (SFLDP) in two states of South Sudan, Jonglei and Upper Nile. The project aims to contribute to the reduction of conflict in the target areas as a way to further foster sustainable food security. This will be achieved through the construction of water harvesting infrastructure (hafirs), support to water user groups, implementation of Farmer Field Schools, and facilitation of access to credit schemes. As the baseline for the SFLDP project, the survey for South Sudan is somewhat different in aims and content from the other SLRC surveys, and this report reflects that difference.

This report is structured as follows. Section 2 provides background to the survey, situating the panel survey in relation to the overarching themes of SLRC's research programme, outlining the objectives of the survey, and presenting the analytical frameworks used to guide analysis of the survey data. Section 3 presents the survey methodology for South Sudan in greater detail, discussing the specific sampling methods used and describing basic characteristics of the final sample. Sections 4-6 constitute the analytical core of the paper, respectively exploring: which factors influence livelihood status; which factors influence people's access to and experience of services and social protection; and which factors influence people's perceptions of governance. Finally, section 7 offers preliminary policy implications and suggestions for additional research.

2 Background, objectives and analytical frameworks

This section is split into three parts. The first provides some background to the survey by situating it in relation to the SLRC's broader research agenda. The second outlines the objectives of carrying out a panel survey. The third describes the basic analytical frameworks used to analyse the survey data.

2.1 Situating the survey within the research programme

The cross-country panel survey is directly relevant to the first and third themes of SLRC's six-year global research programme:

1. *Legitimacy*. What are people's perceptions, expectations and experiences of the state and of local-level governance? How does the way services are delivered and livelihoods are supported affect people's views on the legitimacy of the state?
2. *Capacity*. How do international actors interact with the state and local-level governance institutions? How successful are international attempts to build state capacity to deliver social protection, basic services and support to livelihoods?
3. *Livelihood trajectories*. What do livelihood trajectories in conflict-affected situations tell us about the role of governments, aid agencies, markets and the private sector in enabling people to make a secure living?

Legitimacy: people's perceptions of governance and the role of service delivery

Establishing, building or strengthening state legitimacy is a major element of state building. The OECD (OECD, 2010), for example, notes that, 'State legitimacy matters because it provides the basis for rule by consent rather than by coercion.' Indeed, a lack of state legitimacy is seen as a major contributor to state fragility because it undermines state authority. For donors, while the steps they can take to influence state legitimacy may be few, they do have an interest in developing a clearer understanding of the following: what leads to legitimacy? What, if anything, can they do to strengthen state-society relations? What might be the (unintended) positive and negative impacts of their programming on state legitimacy if they, for example, route development funding via institutions other than the formal organs of the state?

Literature reviews carried out during SLRC's inception year found very little evidence for the frequent assertion that improving access to services and social protection in conflict-affected situations contributes to state building (see, in particular, Carpenter, Slater, & Mallett, 2012). The relationship between service delivery and state-society relations remains poorly understood. As the European Report on Development (2009: 93) notes, 'State-building efforts are bound to fail if, in strengthening institutional capacities, the legitimacy of the state is not restored'. Given the cited importance of legitimacy in state-building processes, it is both surprising and concerning that we have so little robust knowledge about what leads to state legitimacy.

Despite these gaps, state building – encompassing both legitimacy and capacity – provides the organising framework for much international engagement in conflict-affected situations. In tackling this issue, we are thus taking up the OECD's call for donors to 'seek a much better understanding – through perception surveys, research and local networking – of local people's perceptions and beliefs about what constitutes legitimate political authority and acceptable behaviour' (OECD, 2010).

Livelihood trajectories: tracking change and identifying determinants

Literature reviews carried out during SLRC's inception year identified empirical and longitudinal research on livelihoods in conflict-affected situations as a key evidence gap. Although some good in-

depth case studies can be found on livelihood strategies in particular contexts, these are usually just snapshots. Qualitative case study approaches are also insufficiently linked to quantitative survey data. The reviews also revealed a significant gap in any comparative analysis of the effectiveness and impact of interventions to support livelihoods (see, in particular, Mallett and Slater, 2012). There is some evaluation and academic literature that examines the impact of particular projects or programmes, but very little which looks at the overall significance of aid in people's livelihoods and compares the impacts of different approaches. The FAO survey reported in this document is the baseline study for a large-scale service provision project, focused on water resource development and agricultural extension. As such, this survey will help to address not only the baseline livelihoods conditions in the areas of the study, but also measure directly the impacts of service delivery.

2.2 Objectives of the panel survey

The results of survey will help us answer parts of our research questions appearing under the first and third themes of the research programme. Regarding the first theme on legitimacy, our approach is centred on documenting and analysing people's views of governance in conflict-affected situations. It should be emphasised that we are interested here not just in the state but also in a wider collection of governance actors. As such, we consider people's perceptions of both local and central government as well as of other forms of public authority including traditional leaders, who continue to play a very important role in rural South Sudan.

Under the third theme (livelihood trajectories), SLRC is undertaking rigorous, longitudinal livelihoods research. Our aim is to build a picture of how people make a living in particular contexts, track how this changes over time, and shed light on what causes change. We want to know whether people are recovering or starting to build stronger and more secure livelihoods, are stuck in poverty or are sliding into destitution, and how this is affected by the broader political, economic and security environment. Implementing a panel survey that captures both the dynamics and determinants of people's livelihoods enables this.

In addition, the FAO survey had three specific objectives (which largely overlap with SLRC objectives). These objectives include:

1. Assessment of project effectiveness in terms of food security outcomes of the beneficiary households. A detailed recording of each intervention component will allow analysis of its specific contribution to food security.
2. Analysis of good practices and lessons learned from the implemented activities and the effectiveness of the projects, to be released after the conclusion of the project, providing donors and stakeholders with knowledge for future planning.
3. Food security profiles, socio-economic conditions, agricultural production and resilience analysis will also be provided in the Final Report.

Again, while the survey reflected these objectives, it also reflected the objectives of the SLRC consortium, and this report is only about the latter. The above objectives are reported separately (FAO, 2013).

2.3 Analytical frameworks

Two basic analytical frameworks emerged from the survey design process, and are outlined below. It should be emphasised that, because this paper is based on the first round of the survey, the analysis is not geared towards identifying and explaining changes over time (hence the discussion about livelihood status as opposed to trajectory throughout the report). Rather, much of the analysis focuses on producing descriptive baseline statistics and identifying possible correlations and relationships between different sets of factors. The data collected also allows us to explain variations between South Sudanese households across a range of outcomes.

1 Livelihood status

Livelihood status is a broad concept and there is no single indicator one can use to measure it. We have chosen to analyse it in three different ways by looking at household assets (as a proxy for wealth), food security, and what might be termed livelihood activities (including sources of income, type of employment).

Variations in livelihood status can be explained by a number of different factors. These include:

1. *Household factors.* These include demographic characteristics of the household, religion/ethnicity of the household and education and migration characteristics.
2. *Contextual factors.* These include location, indicators accounting for season, occurrence of conflict, perceptions of safety in the neighbourhood and moving to work, as well as other indicators on livelihood opportunities/constraints (e.g. availability of credit).
3. *Shocks experienced by a household.* These include natural disasters and economic shocks, as well as crime and conflict.
4. *Differential access to basic services, social protection and livelihood assistances and the quality of these services/transfers.*

An aim of the quantitative analysis is to estimate whether and to what extent the above factors determine livelihood status.

2 People's perceptions of governance and the role of service delivery

The analysis of people's perceptions of governance is more complicated. The South Sudan survey was prepared and administered prior to other SLRC surveys and as such served as the trial for developing a simple index of factors that would give a simple score for respondents' perceptions of governance and services, and the link between the two. The development of the index was influenced by similar work that other members of the team had done in areas not related to perceptions of the state.

The list of factors in the final participation index included: the frequency of participation in local governance forums (e.g. community meetings, public hearings); reasons for attending; and perceptions of the impact that their participation had. Respondents were asked about their perceptions of how much local government officials listen to the population and take their views into account. Finally, respondents were asked their views on the quality of various governmental functions, including service provision but also including planning, local taxation, and whether the taxation resulted in better services. A second set of questions asked about general perceptions of performance of government and public institutions. This specifically included questions about perceptions of corruption, informal 'fees' for services, the role and influence of traditional leaders in local governance, and perceptions of local security.

Following the development of these indices, SLRC (globally) went on to propose that the following factors may determine people's perceptions of governance:

1. *Individual and household characteristics* (as discussed above).
2. *Contextual factors* (as discussed above);
3. *Shocks experienced by the household* and the coping strategies used to deal with shocks (as discussed above).
4. *Access to basic services, social protection and livelihood assistance.* We expect that access to services and social protection and livelihood assistance affect perceptions of governance. In particular, not having access is likely to affect perceptions of certain governance actors;
5. *Experience of using basic services, social protection and livelihood assistance.* We expect that experience of using/receiving services and social protection and livelihood assistance affects perceptions of governance. In particular, having a negative experience is likely to affect perceptions of certain governance actors;
6. *Implementation and performance of basic services, social protection and livelihood assistance.* Implementation and performance of services and social protection and livelihood assistance may affect perceptions of governance. Waiting time, regularity and

costs in accessing services and social protection are likely to determine how individuals perceive state governance, in particular if the transfer is government-provided.

Another aim of the quantitative analysis is to estimate if and how much the above factors – and in particular those relating to services – determine the main outcome (perceptions of governance).

3 Research methodology

This section first covers parts of the survey design process, highlighting in particular some of the challenges faced, before clarifying the sampling methods used and describing the characteristics of the final sample.

3.1 Research methodology

A generic survey schedule was developed that was then adjusted to meet the specific research priorities of FAO South Sudan and to fit the country context. The survey was designed to allow us to identify some general trends and, hopefully, to be broadly comparable with other SLRC surveys (but again, this survey preceded the development of the generic SLRC survey instrument, meaning that the South Sudan survey is probably less directly comparable to other SLRC surveys).

Household surveys are difficult to conduct in fragile and conflict-affected contexts. This survey is the baseline study for South Sudan, and another survey will be conducted later if possible.[1] These surveys will be conducted in the same target areas and with the same populations. Whilst the other SLRC survey countries will attempt a panel in the strictest sense of the word – i.e. they will interview the same individuals, in the same households, in the same villages – we anticipated high levels of attrition in our field sites in South Sudan due to conflict and seasonal migration patterns and so expected to do a village cross-section (where we resample in the same geographical locations) for the second round. The current security situation in South Sudan, however, means that even this slightly less ambitious plan is on hold.

This survey incorporates elements of both a livelihoods and a perception survey, which raises a methodological issue: while the ideal unit of analysis for the livelihoods survey is at the household level, for the perception survey it is at the individual level. Piloted in this survey, the SLRC management subsequently decided to combine them in one survey, partly due to logistical and budget considerations, and partly in an active effort to link perceptions more directly to real and measurable changes in wellbeing. We opted to sample households, but to specifically seek out a varied range of individuals within households – i.e. purposively sampling at the intra-household level – to avoid a strong bias of male household heads for the perception questions. The table below show the sex of respondent. Unfortunately, due to data entry problems, almost 8% of respondent's sex has not been reported. However, of those for who we have data, roughly one-third of primary respondents were female while the other two-thirds were male.

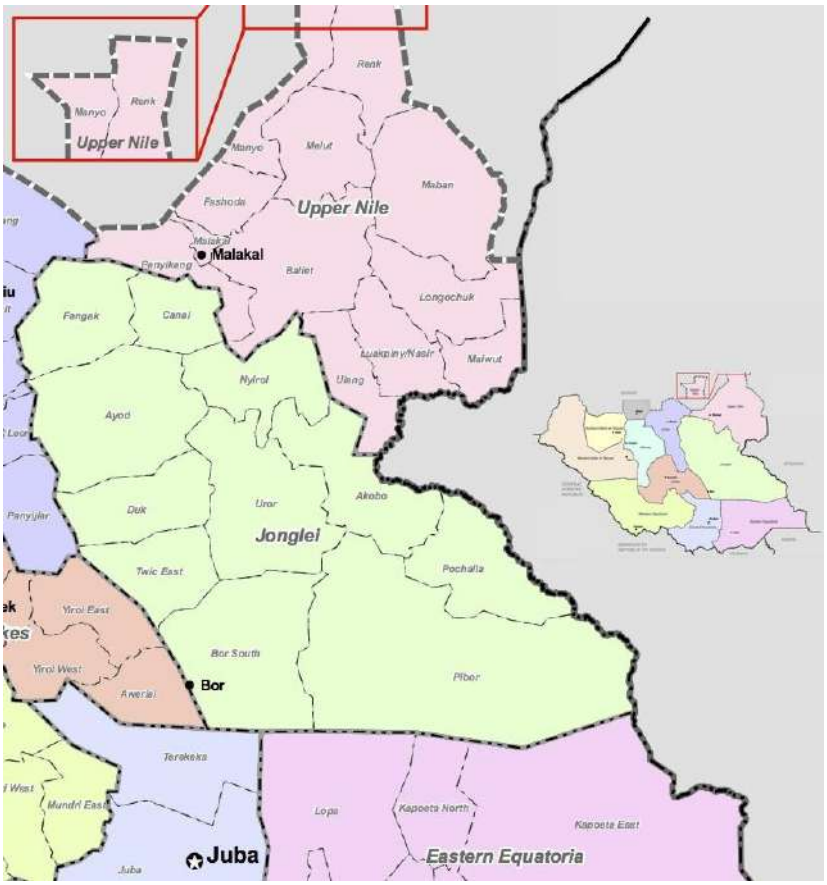
Table 1: Share of male/female survey respondents

	TOTAL	Jonglei	Upper Nile
Male	64.0	54.0	71.0
Female	28.1	33.8	24.1
Don't know	7.9	12.2	4.9

Fieldwork was conducted in March and April of 2012 in two counties in Jonglei State (Uror and Nyirol) and three counties in Upper Nile State (Panyikang, Ulang and Luakpiny (Nasir). A map of the area is in Figure 1.

[1] Renewed conflict in South Sudan from December 2013 has made the survey area inaccessible for the time being. If and when access is again possible, a second round of the survey will be completed.

Figure 1: Map of survey area



3.2 Sampling methods and description of sample

The sampling strategy was designed to select households relevant to the main research questions (i.e. for the impact evaluation of the FAO project), while also being able to draw statistically significant conclusions at the overall sample level. Given that the FAO objectives for the survey were to document baseline conditions across the survey area, but eventually to demonstrate the impact of their programme, the sample was chosen to reflect 'target' areas (areas in which the SFLDP interventions will be implemented) and control areas (areas of a similar profile in which SFLDP interventions will not be implemented). Here follows a short description of primary and secondary sampling units, a description of the indicators chosen and the final sample size.

Primary sampling unit: the *bomas* (village). The selection drew from files provided by the National Bureau of Statistics. *Payams* in each County had been selected jointly with the local authorities. Table 2 depicts the counties, *payams* and *bomas* selected.[2]

Secondary sampling unit: the basic analytical unit for the impact assessment is the **household.**[3] Within each *boma*, a random sample of households was selected, with the total sample in each village proportional to its size. Households were selected randomly from a list provided by local authorities in each *boma*.

[2] A *payam* is an administrative unit smaller than a county, similar to a division or location in other countries. A *boma* refers to a very local area – effectively a village.

[3] In this research the following definition of household will be used: 'A household is a group of people living together, sharing food from the same pot and answerable to the same household head [that is the person who is a usual resident member of the household who is the key decision maker and whose authority is acknowledged by all members of the household]'. Source: The Agricultural Household, FAO. Another useful definition of the household is provided by the International Labour Organisation: a multi-person household, that is to say, a group of two or more persons living together who make some common provision for food or other essentials for living. The persons in the group may pool their incomes and may, to a greater or lesser extent, have a common budget; they may be related or unrelated persons or a combination of both.

Sample size. In impact evaluation, the sample size is decided according to the requirements of the most demanding indicator. A number of different indicators are employed to assess the impact, and every indicator has its own data requirement (minimum sample). The required sample is determined by the indicator that requires the highest sample size. Calculations change depending on the mean, total or proportion of the indicator adopted. A correct specification of the indicators is a crucial part of impact evaluation. Given the multiple objectives of the SFLDP, a number of cases have been studied and reference has been made to other exercises (for instance Davies et al., 2012;; Davies et al., 2012; Feder et al., 2004a, Feder et al., 2004b; Gockowski et al., 2006; Godtland et al., 2003; Yamazaki and Resosudarmo, 2008; Erbaugh et al., 2006; Braun et al., 2006;; Larsen et al., 2002b; Van den berg and Jiggins, 2007). The final sample size of 797 households is not representative at state level (Jonglei and Upper Nile) but is representative at payam level. They have been selected as reported in Table 2.

Table 2: Primary sampling units and size

Payam	Jonglei	Upper Nile	Total
Jikmiir	0	74	74
Koat Kiech Kuon	0	103	103
Kuerenge Ke	0	104	104
Lankien	31	0	31
Motot	77	0	77
Nyambor	44	0	44
Pakang	0	31	31
Panyikang	0	14	14
Pathay	29	0	29
Pultruk	104	0	104
Tiam	45	0	45
Tonga	0	22	22
Ulang	0	43	43
Yomoding	0	76	76
Total	**329**	**468**	**797**

3.3 Characteristics of the sampled areas

Jonglei state is located in the eastern part of South Sudan and borders Ethiopia to the east, Upper Nile to the north-east, Unity to the north-west, Warrap and Lakes to the west, Central Equatoria to the south-west and Eastern Equatoria to the south-east. Jonglei is divided into 11 administrative counties, with the capital in Bor town. The total population of the state is estimated to be 964,353. There are six ethnic groups: Nuer, Dinka, Murle, Jie, Kachipo and Anyuak. The major livelihood systems include animal production, crop production and fishing along the Nile and Sobat rivers. Wild foods and game meat contribute to household food security (GOSS, 2009).

Upper Nile state is located just to the north of Jonglei, bordering Ethiopia to the east and Sudan to the north. The population in 2008 was 964,353. It is inhabited by Nuer, Dinka, Shilluk Maban and Koma people. The state is divided into 12 administrative counties with the capital in Malakal. Major livelihoods are similar to those in Jonglei (GOSS, 2009).

All areas have been affected by conflict, particularly during the civil war with the North (1983-2005). Local conflict continues in some areas of Upper Nile, but Jonglei (and in particular, Uror and Nyirol counties) continue to be more seriously affected. At face value, this conflict is mostly about cattle raiding – but cattle raiding in the context of inter- and intra-group tensions, the ready availability of military weapons, and commercial and political interests. The FAO pre-project assessment concluded that limited access to dry season grazing and water was also a source of conflict.

At the time of the survey, Jonglei-based rebels were engaged in a conflict with the South Sudan government. It is often difficult to separate 'traditional' inter-group raiding from raiding that is aided and abetted by the flow of arms to the Yau Yau rebellion. While the locus of the Yau Yau rebellion is in Pibor county (inhabited mostly by the Murle ethnic group, outside the study area), the study areas are affected in two ways. First, raiding by Murle youth has been rampant in the study areas of Nyirol and Uror counties (where the survey took place) throughout the study period. A major disarmament effort by the government in 2011 was more successful in Lou Nuer areas (in north-eastern Jonglei) than in Murle areas, leaving the Lou Nuer with fewer arms with which to protect themselves, and leaving the Murle relatively better armed. Second, this situation of relatively frequent raiding in Uror and Nyirol counties (as well as other areas in Jonglei) has led to retaliatory raids against the Murle, including one such major raid in December 2011 by the so-called White Army. Many of those involved in the raid came from Uror and Nyirol counties.

3.4 Limitations to the data

The survey had a number of limitations which mean that the data reported here are subject to several concerns. The first limitation concerns time – both in terms of the time required per interview, and the time window for the whole survey. A second was limited accessibility to the survey area, and therefore limitations to the supervision of field data collection. Although the enumerators and supervisors were trained prior to the fieldwork, security concerns precluded direct supervision of the field teams; as a result, there was a substantial amount of missing data. Third, there were major delays and mistakes in data entry. The combination of these issues limits our ability to draw firm conclusions from the statistics, and it also restricts some of the regression analysis to small sample sizes. The total sample size was 797 households. Where total figures are less than that, it is because missing households were not included in the analysis. A number of intended analyses were omitted because of the missing data problem.

The study had to be conducted in the dry season for logistical and access reasons. During the dry season people and livestock migrate to the cattle camps in the riverine areas, and many – if not most – are absent from their residential villages. This survey was conducted at the end of the dry season when many people had returned from the cattle camps, but there is no way to know whether the samples selected are fully representative of the primary sampling units.

It should be noted that some of the analysis of hazards refers to violent clashes or conflict. These certainly occur, but most frequently in the form of heavily armed cattle raids, which often pit armed raiders against unarmed or only lightly armed communities with little or not protection from the police or army. So it isn't exactly accurate to call these 'clashes' per se, but in the analysis of hazards, there was no separate category for raiding.

3.5 Descriptive statistics for sampled areas

The average household size in the overall sample is 6.5 persons, with the breakdown by state being higher in Upper Nile (7.2) than in Jonglei (5.4). The vast majority of the population is below 40 years old, as is true of South Sudan overall. The tables reporting age structure demonstrate that there are far fewer males than females in the 20-35 year old category. The survey data themselves offer no explanation for why this is the case. Two possible explanations are a high level of out-migration of this particular age/sex cohort in search of employment elsewhere, or a high loss of life in this age/sex cohort during the war. It is also possible that this age cohort of young men is missing because they were still in cattle camps at the time of the survey.

The ethnic composition of the population is relatively homogeneous at the level of individual locations in the study area, with nearly all respondents being Nuer with the exception of Panyikang, where a large proportion of the population is Shilluk.

Table 3 depicts the frequency of households in both states that have been displaced at some point in the past (note that the question asked was whether the household has ever been displaced; it is not specifically about current status). Overall about 30% of the sampled households have been displaced at one time or another; the vast majority of these were in Upper Nile. There is a statistically significant difference in displacement history between Jonglei and Upper Nile.[4]

Table 3: History of displacement

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
Yes	31	9.42**	208	44.44**	239	29.99
No	298	90.58	260	55.56	558	70.01
Total	**329**	**100.00**	**468**	**100.00**	**797**	**100.00**

Note: Statistically significant at p<0.05

Table 4 depicts the reported primary reason for the displacement. Of those displaced, the majority were displaced by conflict, in both Upper Nile and Jonglei, but again, most the displacement was in Upper Nile.

Table 4: Reason for displacement

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
Fighting	21	6.40	175	38.89	196	25.19
Drought	0	0.00	4	0.89	4	0.51
Problems in the community	0	0.00	7	1.56	7	0.90
Ordered by government	1	0.30	1	0.22	2	0.26
Flood	0	0.00	1	0.22	1	0.13
Other environmental shock	8	2.44	2	0.44	10	1.29
Not displaced	298	90.85	260	57.78	558	71.72
Total	**328**	**100.00**	**450**	**100.00**	**778**	**100.00**

Note: Chi-square test significant a p<0.01.

Overall about three quarters of all households were male-headed. In Jonglei 71.8% of households reported a male head. In Upper Nile 83.5% of households were male-headed.

Levels of formal education throughout the survey area are very low (Table 5). Most of those who do have a primary education are young people, suggesting that education opportunities may be increasing but it will be some time before that filters through to our data on the average level of education of adults.

[4] Some of this information might have changed shortly after the survey. The field team that visited several of these areas in 2013 found large proportions of the population displaced by cattle raiding and other violence in several of the sampled *payams* in Jonglei.

Table 5: Average education of adults

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
Nursery or kindergarten	0	0.00	6	0.51	6	0.31
Any class of primary school	17	2.21	79	6.66	96	4.91
Any class of secondary school	4	0.52	19	1.60	23	1.18
Higher than secondary school	1	0.13	5	0.42	6	0.31
No education	746	97.14	1,078	90.82	1,824	93.30
Total	**768**	**100.00**	**1,187**	**100.00**	**1,955**	**100.00**

* 1955 is the number of adults in the sample

Chi-square significant p< = 0.01.

There is little variation in the type of housing, with almost all living in the 'tukuls' – rondavel-style houses made from local materials. Similarly, the primary form of energy used for cooking is firewood, which is plentiful in most surveyed areas (in fact, cutting and selling firewood is a common economic coping strategy). Nearly 20% rely on burning grass rather than wood. Three quarters of households reported relying on paraffin lanterns for lighting (not depicted in tables). There is a similar low level of variation with regard to other household information (source of lighting, source of water, sanitation facilities, etc.).

4 Livelihood status and determinants

In this section we first give a general picture of livelihoods and then describe and analyse the livelihood status of households in our sample. In order to describe this we look at two main livelihood status outcome indicators: (1) a coping strategies index, used as a proxy for measuring household food insecurity; and (2) a weighted asset index, used as a proxy for measuring the wealth of a household.

The first of the two livelihood outcome indicators, food security, is proxied by a number of food insecurity and dietary diversity indicators. The second outcome indicator, household wealth, is proxied by the assets owned by the household using the Morris Score Index (Morris et al., 1999). The Morris Score Index is a weighted asset indicator that weights each durable asset owned by the household by the share of households owning the asset. What this essentially means is that households are considered better off when they own assets not owned by most households in the sample.

Then, in order to analyse the livelihood status of surveyed households, we test the association of the outcome or dependent variables with a range of factors (or independent variables) shown in some circumstances and contexts to have a bearing on livelihood status outcomes (see Section 4). We do this through cross tabulations, correlation analysis and regression analysis. In the section that follows, we first present correlation and regression findings on household food insecurity, before doing the same for household wealth. We end by drawing out some key conclusions on the livelihood status of households in our sample.

Existing research shows that livelihoods in both Jonglei and Upper Nile are heavily dependent on livestock – cattle in particular. The Nuer are traditionally agro-pastoralist; the Shilluk are predominantly agriculturalists. Agriculture is a supplementary source of both food and income for many households. Cattle raiding has been a significant factor in Jonglei and Upper Nile for many generations, but it has become more politicised and linked to commercial interests in recent years, and relies on modern weaponry. Due to raiding, particularly in Jonglei, livestock ownership is subject to sharp swings (Maxwell et al., 2013).

Our survey findings bear out the wider research. Table 6 depicts the livestock assets of households. Livestock encompasses all stock including cattle, goats, sheep, and camels and is expressed in terms of Tropical Livestock Units.[5] The modal number of livestock owned per household is between one and five, but 40% of households reported owning no livestock at all, but with significant differences between the two states. There is little in the way of a baseline comparison for these figures in the surveyed areas, so it is not possible to compare these figures with earlier numbers to demonstrate changes overtime.[6] In relation to cattle specifically, the number of households reporting no cattle owned is even higher (Table 12). A very limited number of households report owning relatively large herds, but almost 60% report owning no cattle.[7]

[5] FAO's Tropical Livestock Unit is based on the weight of the animal raised to the power of 0.75, compared with the equivalent figure for a 'tropical cow' of 250 kg (550 lb). For further explanation, see www.fao.org/ag/againfo/programmes/en/lead/toolbox/Mixed1/TLU.htm.
[6] Again, see the forthcoming qualitative report for people's recollections about past livestock numbers and changes over time. It is also highly likely that livestock numbers – especially cattle – are under-reported for a variety of reasons.
[7] This is a marked contrast to information collected during the qualitative fieldwork which suggested the 'norm' prior to the current round of raiding was for everyone to have at least a few cattle, and for an average household to own 20. So the implication is that there have been major shifts in livestock ownership, but we do not yet have quantitative evidence of it. See the forthcoming report on qualitative fieldwork. Note that '.' in this case is interpreted as a 'zero' answer – this was a data entry problem.

Table 6: Livestock ownership

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
0-1	22	6.69	88	18.80	110	13.80
1-5	53	16.11	102	21.79	155	19.45
5-10	23	6.99	58	12.39	81	10.16
10-20	24	7.29	41	8.76	65	8.16
20-30	27	8.21	2	0.43	29	3.64
30-50	13	3.95	1	0.21	14	1.76
50+	12	3.65	6	1.28	18	2.26
None	155	47.11**	170	36.32**	325	40.78
Total	329	100.00	468	100.00	797	100.00
Mean	15.73		7.27		10.76	

Note: ** P<0.05

The ownership of cattle reflects these figures. The majority in both states own no cattle. 54.4% of respondents in Jonglei and 58.9% in Upper Nile reported owning cattle. Fewer households own sheep and goats than cattle, but livestock ownership is not all concentrated in the same households – many households that cannot afford cattle own small ruminants, but only in small numbers. Overall, the numbers of households without cattle or without any livestock highlight the livelihood constraints that face the populations of all the survey areas. While small ruminants are important livelihood assets, cattle are the major cultural asset.

The survey information do not make clear why the ownership of livestock would be so skewed in a livelihood system that has traditionally relied heavily on animals. With 40% of households reporting no livestock ownership and around a quarter reporting more than five Tropical Livestock Units, this information is a clear indication of a livelihood system in crisis. Losses to livestock disease are a major constraint to animal-based livelihoods. But beyond this, the qualitative report from the same area (Maxwell et al., 2014) addresses some of the reasons for this – particularly in the Jonglei areas of the survey, where raiding has been rampant since the disarmament drive, which may be a large part of the explanation for these numbers.

Lautze and Raven-Roberts (2006) note that in complex emergencies, livelihood assets often in effect become liabilities. In this case, ownership of cattle makes people more vulnerable to raiding. With no household baseline to refer to, it isn't possible to say how much livestock ownership has changed in the survey area in recent times. In Jonglei in particular, raiding has been rampant, and livestock losses have been high. This makes the analysis of asset ownership difficult to interpret – even in village cross sections which cannot pick up cattle moving from one household to another – but it is one example of why a panel survey could prove so valuable because we can track individual households gaining and losing livestock over time.

Table 7 depicts total land area planted in the season prior to the survey (2011). Most of the population reported planting either no land or less than one *feddan*.[8] Very few respondents reported planting more than that, and a small handful reported large-scale farming. There is no significant difference between states.

[8] A *feddan* is a measure of land equivalent to 0.42 hectares, or 1.038 acres. All the figures reported are the estimates of the respondent.

Table 7: Land area under cultivation (in feddan)

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
(0.1>	208	63.22	338	72.22	546	68.51
(1.2>	52	15.81	46	9.83	98	12.30
(2.5>	40	12.16	32	6.84	72	9.03
(5.25>	8	2.43	23	4.91	31	3.89
25+	21	6.38	29	6.20	50	6.27
Total	329	100.00	468	100.00	797	100.00
Mean	829.8		246.8		546.8	

*Note: Interval (0.1 > is left side open, right side closed: does not contain 0 but contains 1.

Most households reported growing only one crop in 2011, and the overwhelming majority of these reported growing either sorghum or maize. Extremely low usage of agricultural inputs was reported – less than 3% overall – and most of what was reported was in Upper Nile state. Food produced was overwhelmingly used for home consumption.

Table 8 depicts the extent of livelihood diversification, based on activities reported. There are two shortcomings in this data. First, where households are recorded in the table as having no livelihood activity, it is not clear how many of these reflect missing data (no answer recorded) and how many actually had no livelihood activity. Second, there was no question in the survey about natural resource extraction (collecting wild foods, cutting firewood, cutting and selling thatch grass). The qualitative fieldwork strongly suggests those reporting no activities in Table 8 would actually have been engaged in natural resource extraction activities that the survey did not capture.

Table 8: Number of livelihood activities reported

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
0	59	17.93	134	28.63	193	24.22
1	113	34.35	144	30.77	257	32.25
2	149	45.29	155	33.12	304	38.14
3	8	2.43	31	6.62	39	4.89
4	0	0.00	4	0.85	4	0.50
Total	**329**	**100.00**	**468**	**100.00**	**797**	**100.00**

Note: Chi-square test significant a $p<0.01$.

In spite of the data challenges, this adds up to a picture of very limited livelihood diversification, with only about 5% of the population reporting more than two livelihood activities in the previous year. The two that are reported here are cultivation and livestock rearing, both of which are subject to shocks: raiding and diseases in the case of livestock, and flooding during the height of the rainy season and crop pests in the case of cultivation. Other than natural resource extraction, there are few fallbacks in the event that people lose their animals or their harvest. And a high proportion of respondents report having suffered some kind of shock in the previous year.

Out of a sample of 797 households, 420 households (or about 52% of the sample) reported having experienced some kind of a shock during the previous year. Table 9 reports the most common kinds of shocks reported.

Table 9: Shocks reported in the previous 12 months

Shock	Number	Percentage affected
High food prices	265	33.2%
Drought	223	28.0%
Livestock death	176	22.0%
Crop disease	162	20.3%
Flooding	147	18.4%
'Clashes' (all categories)	157	19.6%

In common with the other SLRC survey countries, it is striking that natural disasters and livestock or crop disease tend to be reported ahead of 'clashes' (or conflict/violence/fighting in the other country questionnaires). While we must beware of suggesting that the prevalence of shocks translates into severity of shocks, this does suggest that focusing on livelihoods using only a conflict lens is likely to lead to a poor understanding of livelihoods dynamics. One weakness of the data on shocks is that we are not clear whether raiding is captured under the category of 'clashes' or not. Nevertheless, it is clear that there is limited livelihood diversification and the two main livelihood strategies are vulnerable to shocks that are fairly prevalent.

4.1 Physical and financial assets

The Morris Score Index indicator has been developed as a proxy for both household wealth and expenditures using data on asset ownership (see Morris et al., 1999). It has been shown to be a good proxy in rural Africa (ibid) and has been used in many other settings too. It is a weighted asset indicator that weighs each durable asset owned by the household by the reciprocal of the share of households owning the asset (i.e. 1/share). In South Sudan, this also includes the ownership of livestock. This means that households that own items owned by a minority of households in the sample are considered better off. Figure 2 presents the descriptive results of the Morris Score Index in the form of a histogram. Asset ownership is clearly skewed, with most of the sample reporting very low levels of asset ownership, and a few reporting quite substantial levels of asset ownership. The distribution for the Morris Score in Figure 2 includes some extreme outliers.

Figure 2: Distribution of Morris Score Index

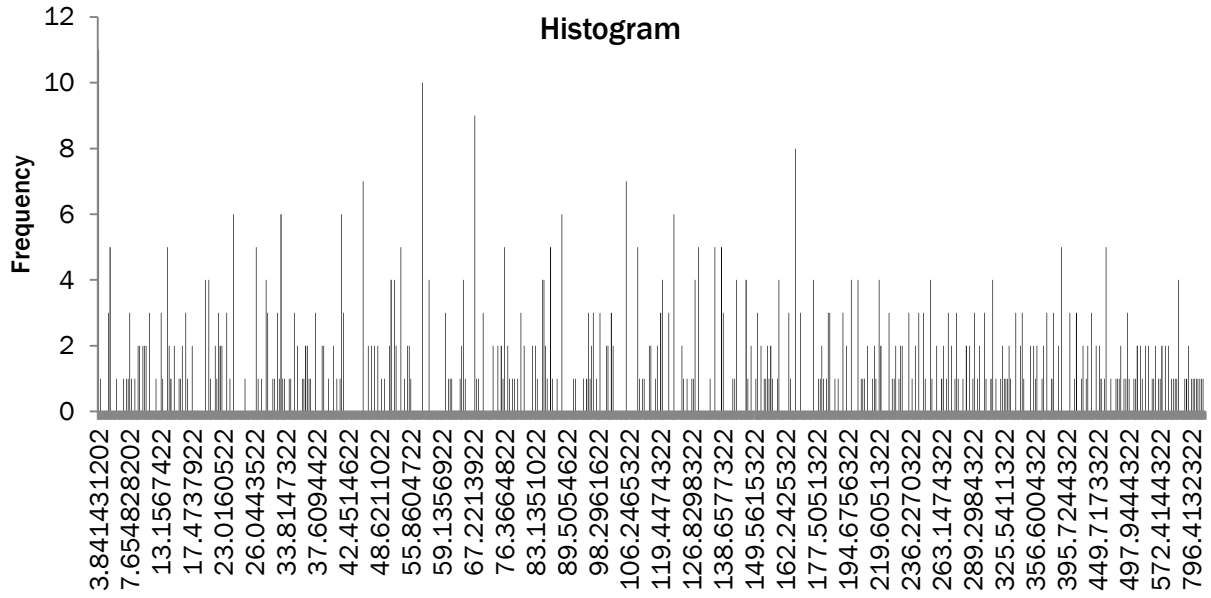


Table 10 depicts a bivariate analysis of the Morris Score Index by several household factors that usually correlate with asset ownership. The numbers in the table are mean Morris Scores.

Self-reported male-headed households have higher mean Morris Scores – meaning higher levels of assets – but the difference with female-headed households is not significant. Households with a history of having been displaced have fewer assets, but the difference is only significant at the 10% level. Livestock ownership correlates most strongly with overall asset ownership, and is significant at the 1% level. Asset ownership is not significantly correlated with whether or not a household has engaged in cultivation in the previous 12 months.

Table 10: Bivariate analysis of Morris Score Index

Variable	Average Morris Score
Head of Household	
Male HHH	230.17
Female HHH	151.14
Total	212.71
Ever Displaced?	
No	253.92*
Yes	191.72*
Total	213.36
Own Livestock?	
No	75.54***
Yes	307.14***
Total	212.7
Cultivated during past 12 months?	
No	187.63
Yes	246.06
Total	212.7
Shock	
No	154.47***
Yes	292.60***
Total	**212.7**

Note: Tests excluded missing values. T-Test: * significant at 10%; ** significant at 5%; *** significant at 1%

Surprisingly, people who report having been affected by a shock report higher levels of asset ownership. Households that experience a shock often have to sell assets in order to cope with its consequences, and would therefore generally be expected to have fewer assets. The opposite is the case here. This might reflect the fact that households with no livestock are less prone to raiding, while households with limited or no cultivation are less affected by flooding. Lautze and Raven-Roberts (2006) note that that under complex emergency circumstances, livelihood assets can become liabilities: having fewer conventional 'assets' in this case may mean being less prone to the kind of shocks that prevail. A lower Morris Score Index value in this case correlates with the experience of some types of shocks, but that *does not* mean those households are better off.

All the figures reported in Table 10 are mean Morris Scores. Because the distribution for the Morris Score Index is highly skewed with a long right tail, the mean is not a good representation of the central tendency of the distribution. Figure 1 in the Annex compares the median Morris Score for the same household factors as depicted by Table 10. The results are similar: male-headed households still have a higher score, as do those owning cattle or reporting having cultivated crops, and those experiencing a shock. The only difference is that the median score for households that have experienced displacement is higher than those that have not.

Regression analysis was conducted with the Morris Score Index as the outcome variable, using a variety of household and geographic factors as determinants. Almost none of the expected determinants proved to be statistically significant. This underlines some of the data issues noted above. It also suggests that there may be something very unpredictable or skewed about asset ownership at the time of the survey. It may also simply imply that the Morris Score Index is not well suited to measuring assets in this context. Forthcoming qualitative study results indicate that livestock ownership is undergoing significant shifts due to raiding, with previously reasonably well-off households being suddenly reduced to not having any assets. A further possibility is that assets were misreported during the survey.

4.2 Social networks and social capital

In protracted crisis situations, it is often the quality of social networks – more than the ownership of physical assets – that determines the wellbeing of vulnerable households (FAO & WFP, 2012). But social networks are difficult to capture with quantitative data. Most quantitative social network data is based on counting membership of various groups, but the results can be misleading if the groups are not well understood or if questions are not framed carefully.

Survey results for membership of various social groups are found in Table 2 in the Annex. The only groups for which people reported a high level of membership are religious in nature – some 70% of the total sample. About 30% report membership in some kind of livelihood-related network such as a farmer's group. Other groupings – whether related to services (e.g. water associations), other livelihood-related groups (e.g. business cooperatives) or asset building groups (e.g. savings associations) – have only very limited memberships: less than 10% of the sample in all cases. Surprisingly, membership in youth or age-based associations or ethnically based associations was also reported by 10% and 5% of the sample respectively. This almost certainly indicates a misinterpretation of the questions in a society where ethnicity and age-set are critical components of people's identity and social networks.

Qualitative fieldwork suggested that kinship and age-group networks are very important in this area, but there is little evidence of that from the survey data. This probably implies that the questions were not understood very well: perhaps respondents thought they referred to something 'formal' rather than something customary.

Table 11 aggregates all these memberships into a network index. Nearly 10% of individuals who responded to the question about social network membership do not belong to any of these kinds of groups or organisations, and the rest belong to only one or two, most commonly a church or religious group. While this information is somewhat at odds with qualitative information subsequently collected, the data provided from the survey imply a low level of participation in formal or informal organisations. More information will be provided on this in the forthcoming report on the qualitative fieldwork.

Table 11: Network index

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
None	30	9.93	30	7.83	60	8.76
1	108	35.76	226	59.01	334	48.76
2	101	33.44	102	26.63	203	29.64
3	47	15.56	16	4.18	63	9.20
4	9	2.98	7	1.83	16	2.34
6	1	0.33	0	0.00	1	0.15
7	1	0.33	0	0.00	1	0.15
8	1	0.33	0	0.00	1	0.15
9	4	1.32	2	0.52	6	0.88
Total	**302**	**100.00**	**383**	**100.00**	**685**	**100.00**

Chi-square significant p<0.01

4.3 Livelihood outcomes: Food security indicators

Table 12 depicts the food security conditions prevailing in the survey area at the time of the research. The survey collected information about six different indicators. Recent work (Maxwell et al., 2013: 4) categorised these indicators as follows:

- *Dietary diversity and food frequency.* This type of metric captures the number of different kinds of food or food groups that people eat and the frequency with which they eat them, and sometimes involves weighting these groups. The result is a score that represents the diversity of intake, but not necessarily the quantity, though such scores have been shown to be significantly correlated with caloric adequacy measures (IFPRI, 2006; Coates et al., 2007). The Food Consumption Score (FCS) is a specific type of dietary diversity index used primarily by the World Food Programme (WFP, 2009). The Household Dietary Diversity Score (HDDS) – similar to the FCS, but with a 24-hour recall period without frequency information or weighted categorical cut-offs – has been widely promoted by the UN Food and Agriculture Organization and USAID (FANTA, 2006; FAO, 2010).
- *Consumption behaviours.* These measures capture food security indirectly, by measuring behaviours related to food consumption. Perhaps the best known example is the Coping Strategies Index or CSI (Maxwell and Caldwell, 2008), which counts the frequency and severity of behaviours in which people engage when they do not have enough food or enough money to buy food. Recent work on the CSI has identified a more 'universal' sub-set of coping behaviours found to be relevant in 14 different context-specific CSI instruments (Maxwell, Caldwell, and Langworthy, 2008). This 'reduced CSI' (rCSI) is probably more widely used now than the original form, but tends to measure only the less-severe coping behaviours. Versions of the CSI have been widely adopted by World Food Programme's Vulnerability Analysis Mapping unit, the FAO Food Security and Nutrition Analysis Unit for Somalia, and the Global Integrated Phase Classification team, among others. The Household Hunger Scale (HHS – see below) is also essentially a behavioural measure. It tends to capture more-severe behaviours.
- *Experiential measures.* Some indicators combine behavioural with psychological measures. The Household Food Insecurity Access Scale is the best known and most widely used of these measures in international contexts (Swindale, Bilinsky and Coates, 2006). The Household Food Insecurity Access Scale (HFIAS) was designed to capture household behaviours signifying insufficient quality and quantity, as well as anxiety over insecure access. The HHS was derived from the HFIAS as a culturally-invariant subset of questions, and includes three specific questions, none of which are psychological in nature (Deitcher et al., 2010). USAID, FAO, and others have adopted and promoted the HFIAS and HHS.

Overall, the food security status at the time of the survey was not good. Table 12 depicts the mean scores and standard deviation (in parentheses) for each of the food security indicators.

Table 12: Mean scores for food security indicators

Indicator	Jonglei	Upper Nile	Total
HDDS	1.59	2.15	1.92
	(1.41)	(1.72)	(1.62)
FCS	15.08***	21.75***	19.00***
	(12.77)	(18.07)	(16.42)
CSI	44.98*	41.93*	43.26*
	(18.35)	(26.06)	(23.05)
rCSI	13.45	13.07	13.23
	(5.33)	(7.36)	(6.55)
HFIAS	15.05**	13.52**	14.08**
	(6.80)	(5.83)	(6.24)
HHS	3.5	3.1	3.25
	(1.09)	(1.24)	(1.20)

T-Test: * significant at 10%; ** significant at 5%; *** significant at 1%

Most of these indicators have cut-offs that depict different levels of food insecurity. Tables depicting these thresholds and the proportions of the sample falling into different categories of food insecurity are in the Data Annex. With regard to HDDS – a means of counting the different food groups consumed within the seven days prior to the survey – more than half reported having consumed only one kind of food (most reported eating only staple grains). While the HDDS indicator does not have a threshold for 'acceptable' or 'unacceptable' levels of dietary diversity, anything below three food groups over the period of a week can clearly be considered unacceptable – which in this case would be nearly 75% of the total sample. Over half the total sample report consuming only one food group in the previous seven days – mostly grain. While dietary diversity may be slightly better in Upper Nile, it is clearly below acceptable levels in both states.

Household FCS is a dietary diversity/food frequency indicator developed by the World Food Programme. Unlike HDDS, however, FCS has cut-offs to describe food secure, borderline and food insecure status. Nearly three quarters of the population are categorised as food insecure, and another 10% are categorised as borderline food insecure. Both of these indicators suggest a degree of food insecurity that is well above emergency thresholds.

The CSI and the rCSI do not prescribe a universal cut-off for food secure, borderline or food insecure classifications. The figures reported for CSI and rCSI largely reflect those for the dietary diversity indicators. Only about one-third report a CSI score of less than 40 – this result implies a very high level of reliance on behaviours that either unsustainably increase short-term access to food or which help to manage a rather severe shortfall in food access. Note that rCSI is the indicator used for the rest of the SLRC surveys (though is labelled differently).

The HFIAS often produces higher estimates of food insecurity than the food security indicators mentioned above, the results here are striking: while the data are incomplete for nearly 20% of the sample, making it impossible to calculate their status, virtually all of the remaining households are categorised as severely food insecure. The HHS records only the most extreme indicators of a household shortfall in access to food, but it still shows nearly 90% of the population facing moderate to severe hunger.

Table 13 depicts differences in three of the most commonly used food security indicators by sex of head of household, displacement status, livestock ownership, crop cultivation and experience of shocks in the previous year. Higher scores with the HDDS imply a higher level of dietary diversity – and hence better food security status; higher scores with CSI and HFIAS imply higher levels of coping and lower levels of food security, respectively. Some of the results are more or less as expected. Female-headed

households have higher scores (lower food security status) for HFIAS and CSI. However, a history of displacement is associated with better food security status – i.e. a higher HDDS and lower HFIAS and CSI, and the difference is significant in all indicators – suggesting that something about the experience of displacement in the past is a positive influence on food security outcomes.[9] While data from the survey do not explain what this is, information from the qualitative fieldwork suggests that it might be skills or agricultural practices learned while displaced that don't necessarily show up in measures of formal education. Cultivation of land was significantly correlated with food security status but in a different ways: it is associated with higher dietary diversity (HDDS) – that is, with improved food security – but also with higher levels of coping (CSI), which implies a worse food security status. There was no difference with regard to HFIAS. Ownership of livestock correlates with higher dietary diversity and lower HFIAS scores (meaning higher food security status) but shows no difference with regard to CSI. Households that experienced shocks in the past year had lower dietary diversity and higher levels of coping.

Table 13: Bivariate analysis of food security indicators

Variable	HDDS	HFIAS	CSI
Displacement history			
No	1.80***	14.96***	46.49***
Yes	2.20***	12.24***	35.54***
Total	1.92	14.08	43.26
Head of household			
Male	1.96	13.82*	41.43***
Female	1.8	14.89*	49.89***
Total	1.92	14.05	43.3
Land cultivated			
No	1.74***	13.84	40.58***
Yes	2.17***	14.4	46.54***
Total	1.92	14.08	43.26
Livestock ownership			
No	1.41***	15.02***	43.2
Yes	2.28***	13.46***	43.3
Total	1.92	14.08	43.26
Shock in past year			
Yes	1.70***	14.4	40.23***
No	2.23***	13.67	47.06***
Total	**1.92**	**14.08**	**43.26**

T-Test: * significant at 10%; ** significant at 5%; *** significant at 1%

Overall, these results paint a picture of extreme food insecurity at the time of the survey. All the indicators suggest levels of food insecurity that are above emergency thresholds, though at the time there were no emergency (or social protection) programmes ongoing in either of the study areas. The situation appears to be worse in Jonglei than in Upper Nile. It should also be noted that, given the time when these data were collected (March/April), these results do not reflect the worst season of the year, though they are clearly not reflective of the immediate post-harvest season either. The harvest would have been in November/December, and the worst part of the hunger season would be at the beginning to middle of the rainy season: July/August. So these results might be interpreted as representing an 'in-between' period of time – so perhaps a roughly 'average' time point in terms of food access over an

[9] Note that this result is similar to the median Morris Score Index values for households having a history of displacement as well.

annual cycle. There is no comparative data to confirm this. However, if true, it paints a longer-term picture of very serious food insecurity.

Though nutritional status and anthropometric measurement were not part of this survey, the limited data available on nutritional status from the same area confirm a very high prevalence of child undernutrition. A survey conducted annually by Save the Children confirms – in terms of child nutritional status – what the food security outcome data from the SLRC survey suggest. Save the Children (2013) reports a prevalence of Global Acute Malnutrition of 23.9% and 26.9% in 2012 and 2013 respectively in an anthropometric survey of Nyirol County. It should likewise be noted that these surveys were carried out in the dry season for logistical reasons. A wealth of data on South Sudan from Operation Lifeline Sudan during the civil war shows that while food insecurity tends to peak during the rainy season, malnutrition tends to peak in the period leading up to the rainy season. Save the Children (2013) report a Crude Mortality Rate (CMR) of 1.65, which is also well above an emergency threshold. However, while CMR, Global Acute Malnutrition and food security indicators all converge to highlight very serious conditions in Uror and Nyirol in 2012 and 2013, there was no emergency response taking place at the time of fieldwork, and respondents reported very little in the way of food assistance. Nutrition programmes (by Save the Children and others) were ongoing.

Regression analysis was conducted to understand the determinants of the very poor levels of food security observed in the survey sample. These results are presented in Table 9 in the Annex. It should be noted that the CSI, rCSI, HFIAS and HHS all count and aggregate behaviours or characteristics that imply a shortfall in food access, so a negative correlation with a determinant would imply a positive impact on food security. The dietary diversity indicators (FCS and HDDS) count the number of different foods or food groups, so in the case of these indicators a positive correlation would imply a positive impact on food security.

The sex of household head is a significant determinant only for the CSI indicators, with female-headed households reporting more coping (i.e. less food security). Education plays a significant role in determining only HFIAS and HHS. Access to potable water is significant for CSI and HHS. Displacement status is significant in five of the six indicators, but the results strongly show that a history of displacement leads to an improved current status regarding food security (positive coefficient for HDDS; negative coefficient for CSI, rCSI, HFIAS and HHS). This would imply that the experience of displacement in the past has actually made the household more resilient to shocks in the current time period.

Asset ownership – represented here by livestock ownership – is a significant determinant of FCS and HDDS. The Morris Score Index was tried as an indicator of asset ownership but showed regression coefficients of zero – a highly unusual outcome, both statistically and conceptually. Asset ownership is commonly very closely associated with food security outcomes. This could imply a problem with the Morris Score itself (note that few of measured factors were significant in determining the Morris Score outcome itself) or it could imply that asset ownership is in significant turmoil in the survey area given the degree of cattle raiding. Another possibility is that respondents were not reporting asset ownership accurately (also a recognised phenomenon).

Livelihood diversification was significant in determining dietary diversity (HDDS and FCS) and the HFIAS/HHS indicators, but not the coping strategy indices. The experience of shocks had a significant positive impact on the dietary diversity indicators, implying – counter-intuitively – that the experience of a shock is associated with a higher level of dietary diversity. But the data do not make clear what is driving this relationship. Market access is correlated in expected ways with nearly all the indicators – positively correlated with dietary diversity, and negatively correlated with CSI, rCSI, HFIAS and HHS.

In sum, it is difficult to generalise about the determinants of food security outcomes. Some of the expected explanations (asset ownership, livelihoods diversification) do not explain the outcomes, or at least only very partially. The geographic location variables clearly drive the relatively high R^2 in the case of the CSI and rCSI, but it isn't clear what factors are captured by these. Market access is captured separately in this analysis. A good analysis of food security outcomes will have to await further survey work in which more clearly specified causal factors can be modelled in the questionnaire.

4.4 Summary

Livelihoods in the survey area are severely constrained and not very diversified. Although cattle have historically been the backbone of local livelihoods, over half the respondents report not owning any cattle at the time of the survey. Other options are limited as well. Over half the sample reported having cultivated no land in the previous year. It is not clear from the survey data why this is the case.

Outside of livestock keeping and cultivating, there are relatively few options except natural resource extraction but unfortunately the survey didn't include detailed information about these activities. Fewer than half of the sample reported more than one livelihood activity. High food prices and drought were the two most frequently reported shocks at the household level.

These results show very high levels of household food insecurity, and other data show very high levels of child malnutrition. Several common determinants of food insecurity did not appear to be significant in the regression analysis. However, limited ownership of livestock and other assets, limited engagement in cultivation and the lack of alternative livelihood activities, the frequency of shocks, and the high prevalence of food insecurity and undernutrition all point to a livelihoods crisis of major dimensions.

There are two relationships suggested by both the bivariate and regression analyses that bear further investigation: the relationship between the experience of displacement and both assets and food security outcomes; and the relationship between the experience of shocks and assets and food security outcomes. The most plausible explanation for the observation that households with a history of displacement have higher levels of food security might suggest a 'human capital' pathway that was not captured by the survey – perhaps skills or attitudes picked up while displaced from the local area that enable a wider range of risk management or coping practices. The observation that households that experience more shocks also have more assets is perhaps explained by the suggestion that ownership of assets is what makes them susceptible to shocks. Both require further investigation.

5 Access to and experience of basic and livelihood services

In this section we look at people's access to and experience of a range of basic services, including health, education, water, public transport, social protection and livelihood support. As before, we provide information on how access and experience vary across the sample, before drawing on regression findings to try and explain what might be driving the variations.

SLRC surveys use a simple indicator of access to basic services: journey time. For health services this means the time taken in minutes to travel to the nearest health clinic, for education it means the time taken in minutes to travel to the primary school used by the household, and for water it means the time taken to travel to the water access point used by the household (if that point is located outside of the dwelling). For social protection and livelihood services, at least a single member of the household accessing the service was considered as access to the service. Note below, however, some caveats in how to interpret this measure in South Sudan. In exploring experience of services, we are particularly interested in how individuals have perceived the service, social protection or livelihoods transfer.

5.1 Access to basic social services

Overall, 42% of all households report access to improved water sources – mostly in the form of boreholes with hand pumps. The coverage of this kind of water source is much greater in Jonglei than in Upper Nile, with 78% reporting access to improved water in Jonglei, compared to only 18% in Upper Nile.[10] The Government of South Sudan has been the main provider of upgraded water sources. Almost no households reported having access to a latrine or other improved form of sanitation. This is in large part because much of the surveyed area is on a flood plain, where pits would be full of water most of the year and would collapse during the rainy season.

Table 9 in the Annex provides information about the distance to various social services in terms of the amount of time required to reach the nearest facility. While time taken to reach the site of social provision is often taken as a proxy for access, in this case qualitative fieldwork has substantially changed how this data is interpreted. Many of the structures built as schools or clinics no longer function as intended. While there may be boreholes, many of them do not work. So journey times reported below in Table 9 do not necessarily imply real access to these services.

5.2 Access to livelihood support services

Table 14 depicts information on people's access to livelihood support services – in particular agricultural extension. Only about one-fifth of households had any contact with agricultural extension programmes in the previous year, regardless of quality. Very few respondents reported feeling satisfied with the services provided, particularly in Jonglei. Almost all of this came from services provided by the government.

[10] The field study team in 2013 found boreholes and hand pumps in many of the survey locations, but a number of them were inoperable, and in fact lack of access to water was a cause of displacement from the villages in February 2013. The boreholes were often provided through project funding that provided for the drilling and initial installation of boreholes, but not necessarily maintenance and upkeep. This information was not captured by the survey.

Table 14: Access to agricultural extension services

Did you receive agricultural extension services?						
	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
Yes	73	22.2	103	22.0	176	22.08
No	256	87.8	365	88.0	621	77.92
Total	**329**	**100.0**	**468**	**100.0**	**797**	**100.00**

Note: The 'no' response includes non-responses that were not correctly coded so we may be underestimating the total number of households that received some form of agricultural extension services.

More people reported being satisfied with services in Upper Nile than in Jonglei (Table 15). Overall, about one-third of people are satisfied with service provision, while about half are not. Given the distances that people have to travel to receive services, and the limited quality or complete absence of services in many areas, this is a fairly high level of reported satisfaction. A more complete index of satisfaction with government functions across the boards is provided in Section 6 below.

Table 15: Satisfaction with service provision

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
Satisfied/very satisfied	65	20.50	199	43.45	264	34.06
Unsatisfied	190	59.94	223	48.69	413	53.29
Don't Know	62	19.56	36	7.86	98	12.65
Total	**317**	**100.00**	**458**	**100.00**	**775**	**100.00**

Chi-square significant $p<0.01$

5.3 Summary

Overall, these figures do not present a clear view of access to services or the relationship between access to services and satisfaction with services. While a higher proportion of people in Jonglei report having access to improved water sources, they are less satisfied with services overall. Households in Upper Nile report shorter distances to schools and health facilities but, as noted above, it is not clear that shorter distances can be correlated with access because this depends on the quality of service. Unfortunately, the survey did not include this information. Further discussion of the relationship between *distance* and *quality* and *access to* services – and between people's satisfaction with services and their overall view of the state – will feature in the forthcoming report of qualitative fieldwork.

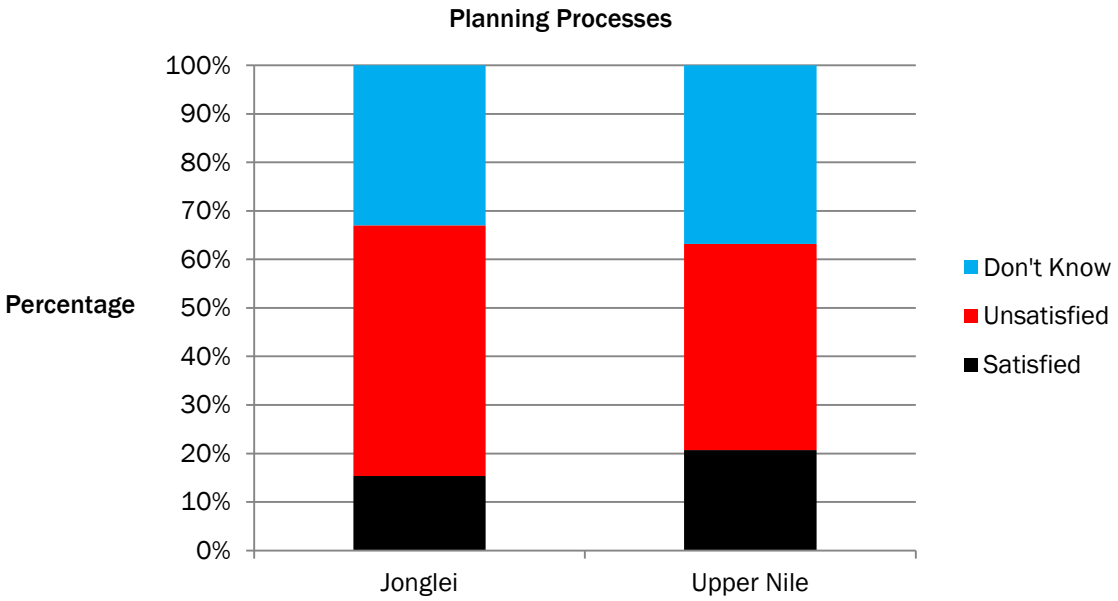
6 Participation and perceptions of governance

What do people in our sample think about governance in their area, and how strong is their public participation? Using a series of outcome indicators – including attendance at public meetings, experience with service providers, and levels of trust and confidence in both local and central government – we examine in this section people's experiences with, and perceptions of, governance.

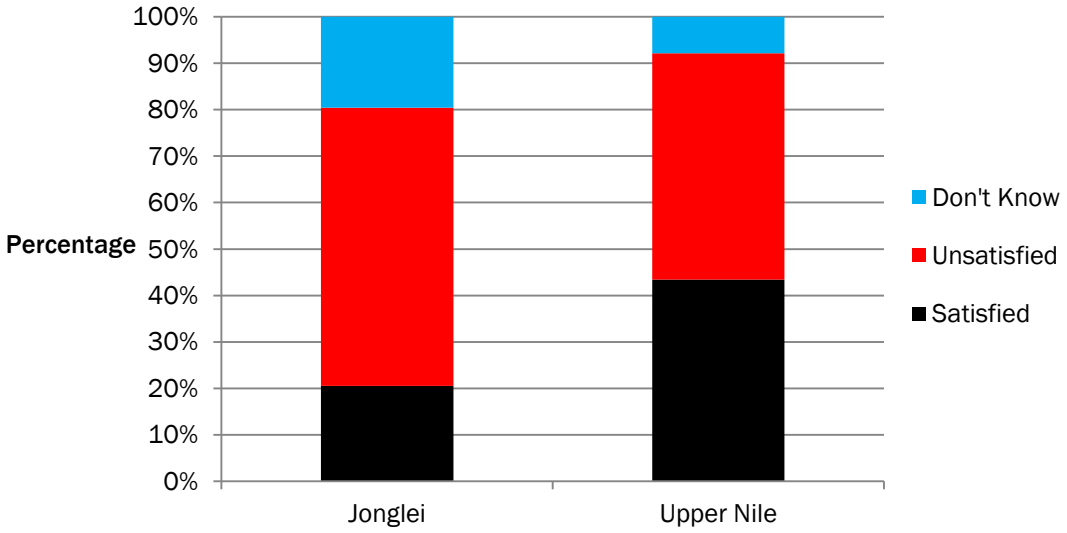
6.1 Perceptions of the quality of governance functions

Figure 3 presents the general level of satisfaction with a number of local governance functions, including planning processes, service provision, budgeting and public accounting processes, the issuing of licenses and other documents, tax collection, making work plans known, providing a mechanisms for complaints or feedback, and preventing corruption. We also examine people's participation in local public meetings and decision-making processes. We then focus on respondents' attitudes towards local government, and draw on regression analysis to suggest what might be driving negative or positive perceptions. The focus in all this analysis is on local government. National government is not particularly present in these areas except in the form of occasional security or disarmament operations.

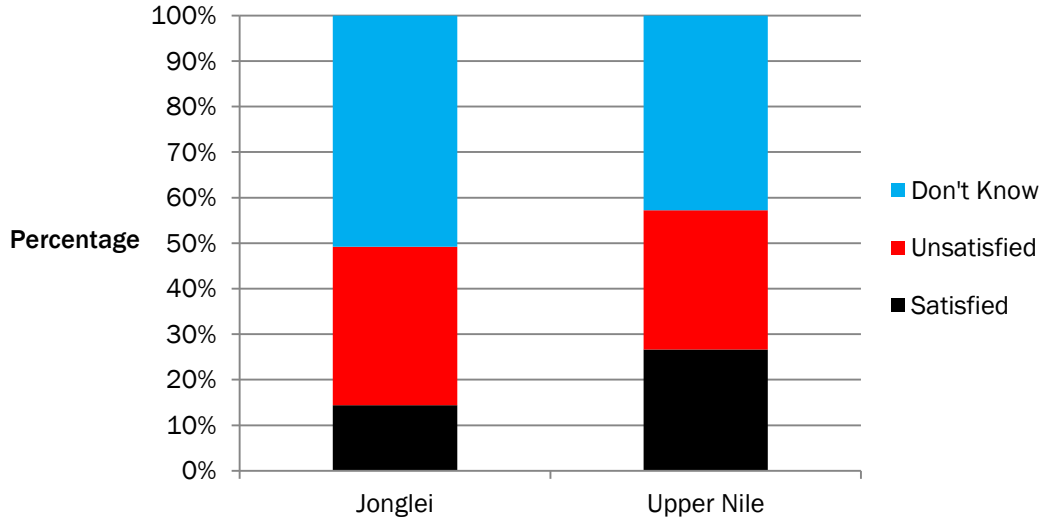
Figure 3: Satisfaction with local government functions



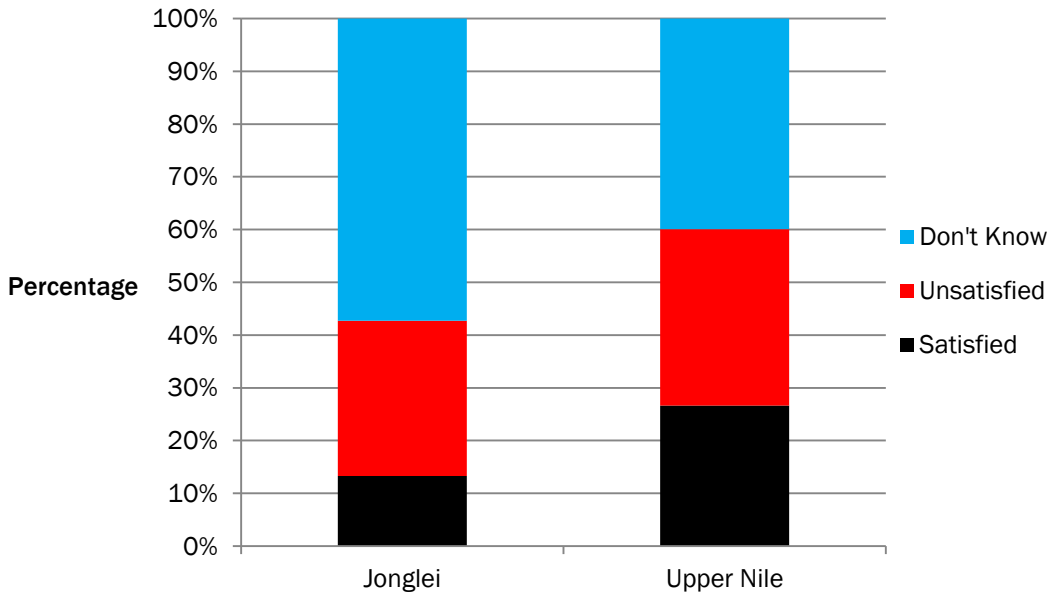
Provision of Services such as Health, Education and Potable Water

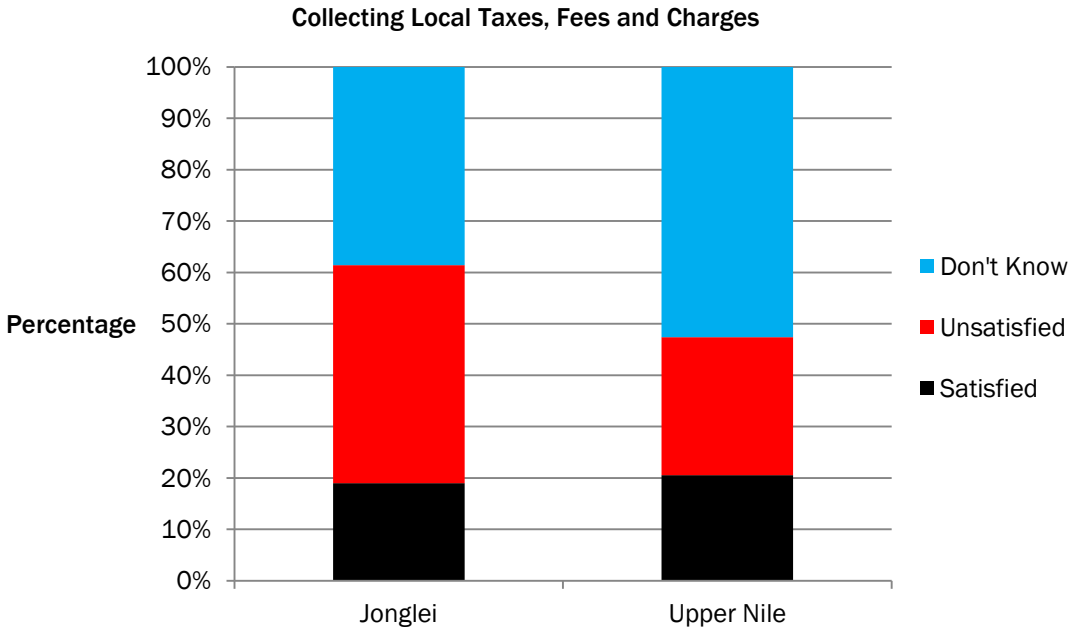


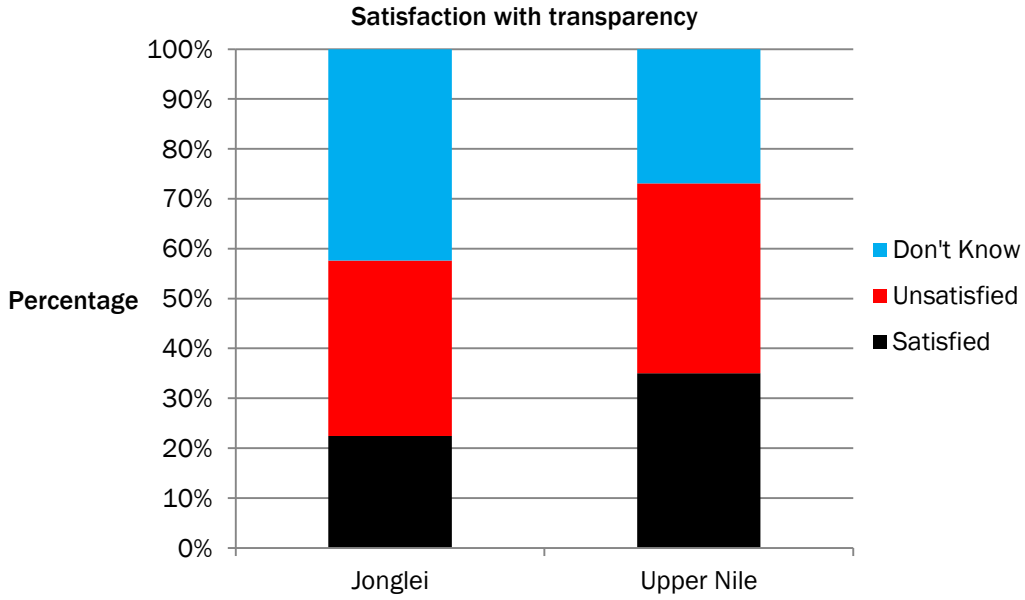
Budgeting Processes

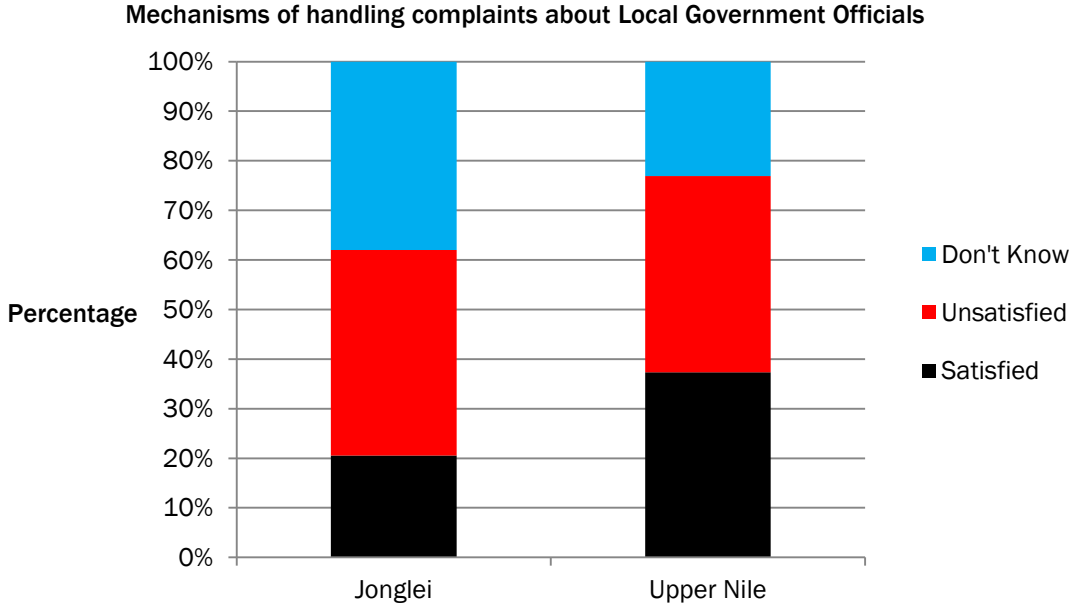


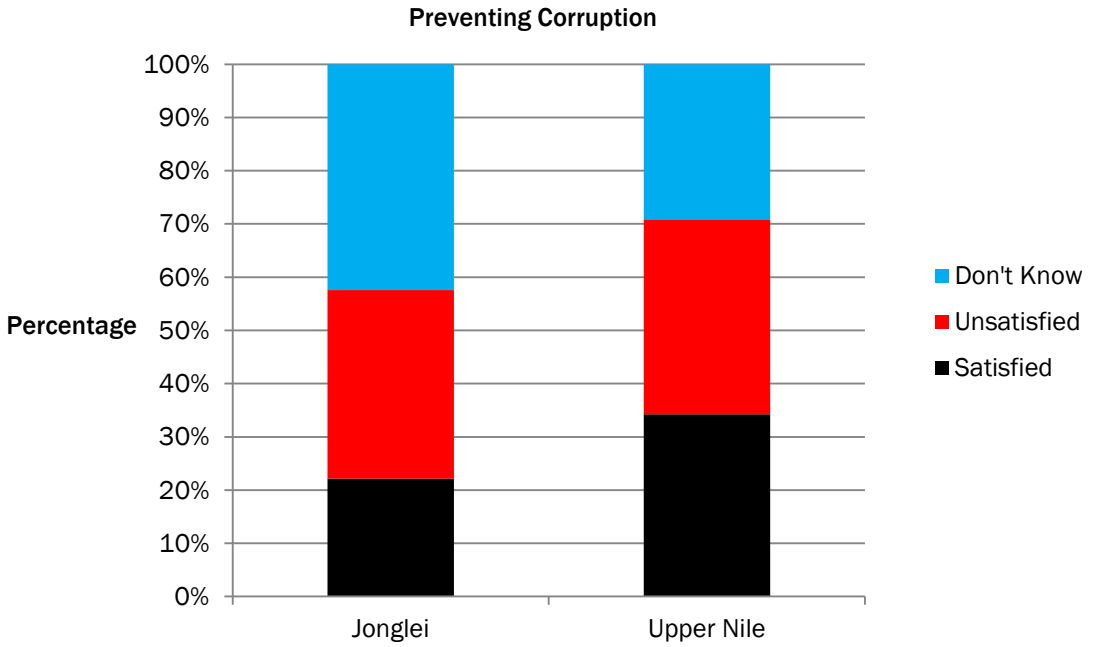
Issuing Licenses and other Documents




Collecting Local Taxes, Fees and Charges
Percentage
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Jonglei
Upper Nile
Don't Know
Unsatisfied
Satisfied


Satisfaction with transparency
Percentage
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Jonglei
Upper Nile
Don't Know
Unsatisfied
Satisfied


Mechanisms of handling complaints about Local Government Officials
Percentage
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Jonglei
Upper Nile
Don't Know
Unsatisfied
Satisfied



The results show a high degree of dissatisfaction, but they also reflect the degree to which people simply do not know what to expect: between a quarter and a half of the respondents to the questions in Figure 3 did not have a view on whether or not governance functions are meeting their expectations. Some concepts such as service provision are better known to the respondents and therefore feature lower levels of 'don't know' responses than, for instance, documentation or budgeting. Comparing different states, it is striking that approximately 50% of the respondents in Upper Nile and 40% in Jonglei declared having no knowledge about taxes. That said, again the quantitative data does not illustrate whether the respondents do not know about taxes in general or whether they do not know how taxes are used and therefore cannot make any judgements.

Table 16 depicts the wide variability of perceptions about the overall satisfaction with governance functions. It simply aggregates answers to previous questions and notes the overall level of satisfaction. The index takes values from 0 to 8, and the index score can be interpreted as a number of government functions with which an individual is satisfied (satisfied or very satisfied). Score 0 means that an individual is unsatisfied with all government functions asked in the questionnaire.[11]

While the largest group (around 40%) is not satisfied with any of the services provided, the rest are satisfied with *something,* and varying groups are satisfied with quite a lot.

[11] The index is calculated as a sum of answers to question T1: coding answers: 0 = unsatisfied, 1 = satisfied or very satisfied.

Table 16: Satisfaction index: Perceptions of quality of governance functions

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
0	169	59.30	126	28.57	295	40.63
1	33	11.58	66	14.97	99	13.64
2	20	7.02	41	9.30	61	8.40
3	3	1.05	44	9.98	47	6.47
4	15	5.26	43	9.75	58	7.99
5	8	2.81	75	17.01	83	11.43
6	3	1.05	36	8.16	39	5.37
7	6	2.11	7	1.59	13	1.79
8	28	9.82	3	0.68	31	4.27
Total	**285**	**100.00**	**441**	**100.00**	**726**	**100.00**

Chi-square significant p<0.01

Table 17: Local government cares about my opinions

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
Never	175	66.79	223	54.13	398	59.05
Almost Never	33	12.60	46	11.17	79	11.72
Only in some areas	45	17.18	109	26.46	154	22.85
To a large extent	3	1.15	23	5.58	26	3.86
Completely	6	2.29	11	2.67	17	2.52
Total	**262**	**100.00**	**412**	**100.00**	**674**	**100.00**

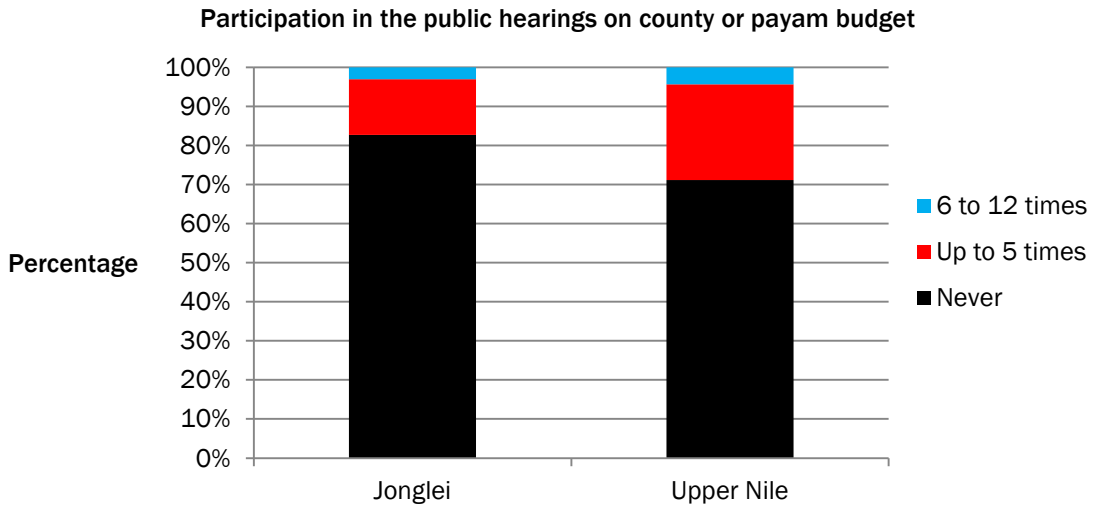
Chi-squares significant p<0.01.

There is a widely shared perception that local government does not care about people's opinions, and does not consult about decisions taken that affect people's lives – though a sizable minority believes that local government is responsive in at least some areas.

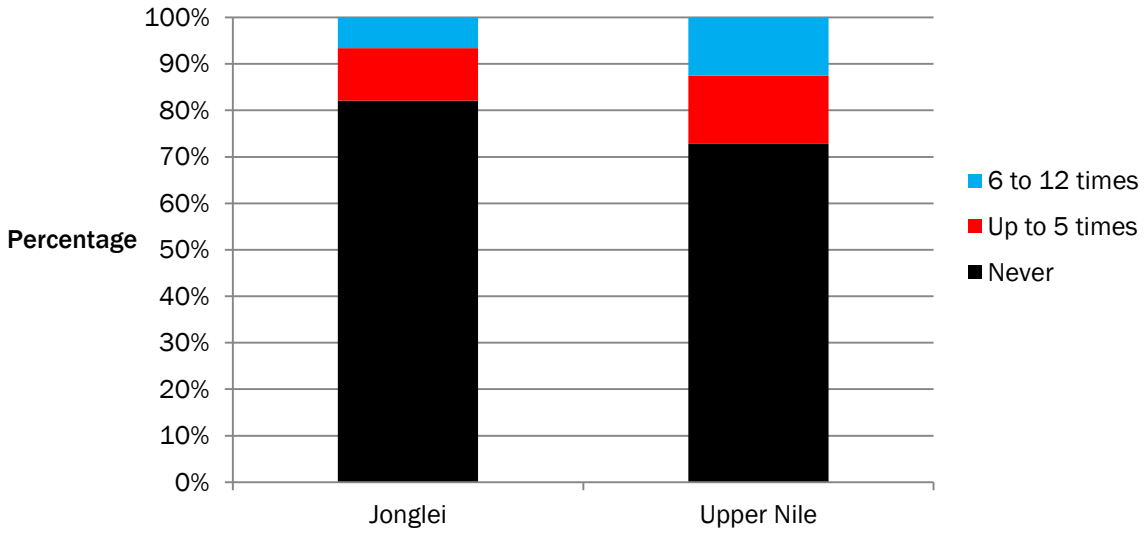
6.2 Participation

To measure civic engagement, respondents were asked how frequently they participate in public events. Figure 4 reports these results.

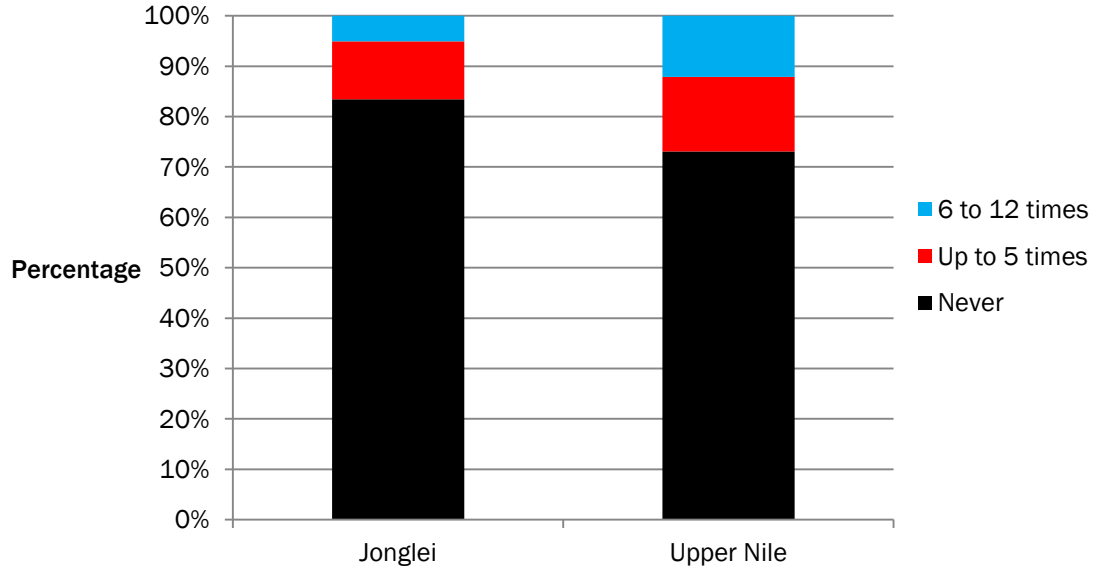
Figure 4: Participation in public events



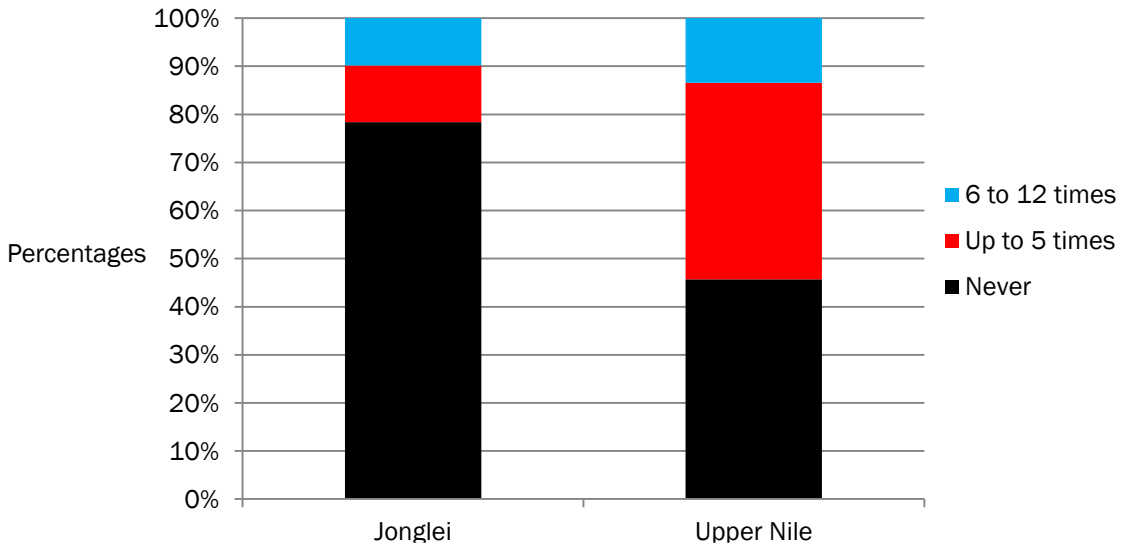
Participation in public hearings other than on county or payam budget



Participated in county executive meetings



Participates in communal meetings



A high proportion (30%) did not answer questions about participation, implying that they did not know what it was about, and over 60% of those who responded said they never participate. There is a small proportion who indicated participation in some events. At the very local level, there is higher participation in community meetings. The proportion that engage in unpaid community labour projects is higher, but the qualitative fieldwork indicates that this is often a requirement (i.e. not participation is not voluntary).

Table 18 combines information from all the individual questions above into an overall participation index.

Table 18: Participation index

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
Never	187	70.0	175	40.6	362	51.8
Low	52	19.5	190	44.1	242	34.7
Moderate/High	28	10.5	66	15.3	94	13.5
Total	**267**	**100.0**	**431**	**100.0**	**698**	**100.0**

Chi-square significance p<0.01

The index is constructed as a sum of responses to the question 'How many times have you participated in the last 12 months in the following occasions?' (six events listed). Individuals who have not participated in any of the listed activities are reported in the category 'Never.' Those who have reported participating in any of the occasions listed at least once but no more than four times are classified under the 'low' category. Those reporting having participated in 5-8 activities are classified 'moderate' and those reporting having participated in 9-12 activities are classified 'high.' The last two categories are combined in the table.

Nearly half reported not having participated in any activities. When asked why levels of participation were not higher, most (approximately 50%) claimed to be uninformed about the existence or timing of community and civic events, around 20% stated that they did not attend because the government 'does not take us seriously', and a small group were not interested. In the case of some female respondents, they said that women should not attend such meetings. Slightly more than 20% of the sample did not answer the question.

To understand respondents' perceptions of governance and their low participation in governance-related activities, they were asked about the main challenges in governance and the public sector. The non-response rate was again high, but the majority saw human resource constraints as the central governance challenge. A smaller group believed corruption or the diversion of financial resources was the main problem. The lack of financial resources was not widely perceived to be the problem.

Regression analysis of the determinants of people's participation (as represented by the index in Table 18) proved unfruitful – another indication that there may well be a problem with some of the data on variables related to the determinants.[12]

Other factors affect people's perception of governance. Some people believed that they would receive better services if they were able to pay for them (even though the services are meant to be free). About 40% of the total sample believed that they would at least sometimes be offered better service if they paid for it informally.

[12] Note that the regression analysis for food security status appeared to contain some odd results, and the regression for the Morris Score Index and the Satisfaction Index for the most part did not explain very much. All these analyses used many of the same explanatory variables.

6.3 Perceptions about governance

People were asked about their perception of the power and influence of traditional chiefs. A wide range of perceptions on the matter was found. Although the non-response rate was high for this question, there is a relatively clear sense among those who did respond that chiefs and traditional leaders retain a moderate to high degree of authority in most of the surveyed areas. Chiefs seem to retain greater influence in Jonglei, where nearly half of all respondents suggested that chiefs retain a great deal of influence or some, compared to about one third who gave an equivalent response in Upper Nile.

Overall, the biggest single demand for government action is not service provision or participatory mechanisms in local governance, but rather security (SLRC, forthcoming). Nearly half reported that the security situation was poor in their area, but over 20% of the responses were missing. Overall, people's perceptions of the security situation are not good, but this varies by location. In Jonglei, the places where people report feeling more secure are well inside the more populated areas of Uror and Nyirol counties (Lankien, Nyambor and Pultruk). Locations on the edges of the populated areas, which raiders can reach the more easily (Motot, Pathay and Tiam), report high levels of insecurity.

Table 14, in the Annex, is an analysis of the determinants of people's perceptions of the quality of governance. The Index of the determinants of people's perceptions of the quality of governance - the outcome variable being analysed in Table 14 (see Annex) - is composed from people's perceived satisfaction with local government procedures for planning, service provision, budgeting, documentation, tax collection, public works, complaints mechanisms and anti-corruption measures. The table shows a multinomial response regression estimated with Ordinary Least Squares. The outcome variable takes nine values from 0 to 8. The descriptive statistics for the outcome variable 'Satisfaction index' are depicted in Table 16 above. Table 14 (see Annex) depicts two different regressions. The first has fewer variables but preserves a larger sample size (528 observations). The second regression includes three more variables, potentially important determinants of satisfaction: 'payment for services,' 'perceived security' and 'influence of traditional leaders.' However, due to the relatively high prevalence of missing observations for these three variables the sample size decreases to 264 observations.

Geographic location does not appear to be an explanatory factor, implying that there isn't much difference in satisfaction across different locations. There are, however, divergent findings from the qualitative fieldwork, which found real differences in both service provision and the functioning of local government in different locations (Maxwell, 2014).

A higher level of social engagement (the network index) is significantly correlated with higher satisfaction with government service. The belief that better services would be received if a fee were paid was correlated with a higher level of satisfaction (however, it should be noted that this question was about perceptions, not necessarily actual practices). Overall, Table 14 (see Annex) does not explain the reasons for people's overall level of satisfaction with governance processes very well.

7 Conclusions

Despite limitations in the data, several conclusions can be drawn from this survey data. The statistical data enable conclusions to be drawn in seven areas relevant to research themes 1 and 3 from the SLRC research strategy: demographics, livelihoods, food security status, access to services, governance, participation and perceptions of the state.

7.1 Important differences between Jonglei and Upper Nile

Demographic characteristics of the studied areas are quite similar across the two states except that an average household is bigger in Upper Nile than Jonglei and the 'missing cohort' phenomenon appears to be stronger in Jonglei than in Upper Nile. Upper Nile's population appears to be more prone to displacement. Access to improved water sources differs notably between the two states, with a better situation in Jonglei. Educational attainments and literacy ability appear to be better in Upper Nile, which also has smaller average distances to the nearest school, among other services. Food insecurity is more severe in Jonglei. Finally, while participation in public events tends to be higher in Upper Nile than in Jonglei, awareness of and satisfaction with local government functions are also higher in Upper Nile.

7.2 Demographics

Overall, the population in the sample is very young. There seems to be a 'missing' population cohort of males in the 20-40 year-old group. It is not clear whether this is an impact of the war, the result of labour out-migration from the survey area to seek economic opportunities in other parts of the country, or simply a result of the timing of the survey. Overall, household size is fairly typical for rural sub-Saharan Africa with a modal size of approximately six people. The proportion of female-headed households overall is about 21% of the sample.

Education levels are very low, with only a small proportion of the sample reporting having received any formal education. Household heads (many of whom would have been school-aged during the civil war) report a very low level of formal education.

There is some history of displacement in the survey area – more in Upper Nile than in Jonglei. The current displacement status of households in the survey is not clear. A currently displaced household would only have been included in the sample if it were displaced *into* one of the survey areas. Most displaced households move to towns unless they have relatives who can help them in rural areas. In any case, the questionnaire did not distinguish between current and past displacement.

7.3 Livelihoods

Livelihoods in the survey area are severely constrained, with limited options for expansion or diversification. Livestock – and specifically cattle – have been the traditional mainstay of livelihoods in much of the survey area, defining not only access to milk and food and economic status generally, but also social status and the ability to marry. However, a very high proportion (>50%) of the population now report owning no cattle, and other livestock have not, for the most part, taken the place of cattle. While the survey data do not address this question directly, there is evidence of substantial shifts in livestock ownership in very recent times due to cattle raiding (at least in Jonglei), so until more detailed survey information is available, it is difficult to determine exactly how livestock ownership has shifted and how much this affects livelihood change. The forthcoming qualitative analysis will shed some light on this question.

Apart from livestock, people face limited options. Well over half the households surveyed reported having no cultivation in the year prior to the survey, and a quarter reported cultivating less than one feddan. Those who report some agricultural activities mostly reported having cultivated only one kind of

crop in the previous season – generally either sorghum or maize. The constraints to farming are not entirely clear from the survey data: the constraint is not lack of access to land but may well be access to land that is not flood-prone.

Asset ownership other than livestock is generally low, and the data on asset ownership present a mixed picture. The Morris Score Index shows that most households own very limited assets while a few own a lot. The regression analysis of the Morris Score Index was inconclusive, with few significant determinants and a very low R^2. It is clear that ownership of the major asset in the survey area – cattle – is undergoing significant changes, and livestock assets may be very different now from how they were just a few years ago. But in the absence of a baseline against which to make comparisons, it is impossible to say whether this is actually the case or not.

Though not reported here, there are relatively few opportunities for wage labour or self-employment, and only little petty trading in the rural areas where the survey focused. Unfortunately, the survey data has no information about natural resource extraction (firewood cutting, charcoal burning, collecting and selling thatch grass, etc.). This is a major coping strategy and a common activity for many households at certain times of the year.

Low levels of livelihood diversification are reported in this study, with far fewer than half the households reporting more than one form of livelihood activity, and almost none reporting more than two (again this does not include natural resource extraction). The survey also reports a fairly high number of shocks experienced. High food prices and drought were the two most frequently reported shocks at the household level.

For all of the above reasons, the survey results demonstrate very high levels of household food insecurity. The survey included six different indicators of food insecurity, and while each tells a slightly different story, the overall picture is one in which food insecurity is well above humanitarian emergency thresholds. The nutritional status of children under five years of age corroborates this finding. However, the regression analysis of the determinants of food security was inconclusive. Several commonly occurring determining factors of food insecurity did not appear to be significant in this case. Those that were significant in the regression analysis seem to be partly about geographic location, but known factors about the locations did not help to explain the food security outcomes. Limited ownership of livestock and other assets, limited engagement in cultivation, the lack of alternative livelihood activities, the frequency of shocks, and the high prevalence of food insecurity and undernutrition all point to a livelihoods crisis of major dimensions.

7.4 Access to and experience of services

The survey data about access to services are based on the assumption that distance to the nearest place where services exist is a good proxy measure for access. The survey results suggest that access to services is limited, but the issue of access is more constrained than even these data make it appear. Some of the 'infrastructure' for services is present and is not too distant from the surveyed communities. However, the survey data explain very little about the quality (or even existence) of the actual services available in those locations. In many cases, a school building may exist, but classes have not been taught there for some time because the teachers were not paid or fled insecurity. A health clinic may exist but lack staff or supplies. There are many villages with boreholes, but many do not have working pumps or are inadequate in number to serve the community. Ultimately, the survey data are of limited utility in explaining access to services. The low level of satisfaction with services is indication that people do not in fact have access to basic services.

7.5 Participation

Participation in religious groups and farmers' groups is high, but most other forms of social network showed low levels of participation. Overall, few respondents reported belonging to more than two

groups or networks. Participation in public affairs – participating in community meetings or other functions – was equally low. When asked why they did not participate, most people indicated that they were not informed about when such activities took place, or else thought the activities were of limited usefulness. The level of participation is not significantly related to people's perceptions of the quality of governance functions.

7.6 Governance and perceptions of government

Overall views about the quality of governance and about the state were more positive than answers about livelihoods, access to services, or participation in governance functions might suggest. Questions about the level of satisfaction with a range of governance functions showed that less than half of the respondents were dissatisfied with those functions (though in some case many did not know, and therefore had few strong opinions). The majority of people said they did not think the government particularly cares about their opinions, although a minority believed rather strongly that the government does care about their views – and it should be noted that given the mostly mono-ethnic character of the survey sample, this response is not related to a dominant or minority ethnic status. Given the extent to which governance questions about South Sudan are often dominated by narratives about ethnicity, this finding is of note.

When asked about the constraints on governance and the services that the government can provide, the majority attributed lack of government capacity to human resource constraints. Less than 20% thought it was because of corruption (less than half the respondents thought they would receive any better service, for example, if they paid an informal fee or bribe for services that were meant to be provided free of charge), and only a few believed it was because of budgetary problems.

Overall, the survey data offer little in the way of a demonstrable link between access to services and perceptions of the state. Access to services is not good, but this is not significantly correlated (with a few exceptions) with perceptions of the state. The survey did not ask many questions about perceptions of security, which appear from initial qualitative fieldwork to be significant in determining satisfaction with the state (again, the forthcoming qualitative analysis will delve into this question in much greater detail). There was just one question on security, but the perception of the level of insecurity did not particularly correlate with the overall satisfaction level with other governance functions.

7.7 Lessons about methods and approaches to survey research in fragile or conflict-affected situations

Looking at the experiences of delivering the SLRC South Sudan survey compared to other SLRC survey countries helps us to identify some important lessons about doing research in fragile and conflict-affected countries. Some of these lessons are about process but others are about the appropriateness or validity of some of the concepts, theories and indicators that we bring into our research.

In terms of process, our single most important lesson relates to levels of support and supervision for enumerators in the field and for the data entry process. Difficult logistics and the security procedures required for foreign nationals limited the extent to which we were able to directly support our field team. Costs limited the support and supervision we could provide to the data entry team in South Sudan. As a result, some questions were asked in the wrong way, some questions were not asked at all, and there are inconsistencies and gaps in the data entered.

In terms of concepts, theories and indicators, our experience in South Sudan draws out a number of challenges to orthodox or established concepts in our research. First, measuring assets is usually seen as a better way to establish wellbeing or wealth in households than measuring income or expenditure or consumption – because assets are viewed as more durable and less fungible – but our experience in South Sudan makes us unsure, especially where cattle raiding is a problem. Second, diversification is usually viewed as an overwhelmingly positive thing (in rural development in particular), but our findings

in South Sudan suggest that the diversification options in Jonglei and Upper Nile are exceptionally risky. Third, when trying to understand respondents' perceptions of services and governance, expectations matter, yet we do not have robust ways of measuring expectations through surveys. Finally, some of the questions we asked were of a very sensitive nature and it will always be difficult to get high response rates and honest responses. It is likely that some of the non-response and missing values are likely depend on a clear unwillingness to disclose information on assets, income, etc. This is the case in most surveys, but is common in a protracted crisis context like South Sudan

8 References

Braun, A., Jiggins, J., Röling, N., van den Berg, H. and Snijders, P. (2006) A global survey and review of farmer field school experiences. Report prepared for the International Livestock Research Institute (ILRI). Final Report.

Carpenter, S., Slater, R. and Mallett, R. (2012) Social protection and basic services in fragile and conflict-affected situations. Working paper 8. London: Secure Livelihoods Research Consortium.

Davies, K., Nkonya, E., Kato, E., Mekonnen, D., Odendo, M. and Mirro, R. (2012) 'Impact of farmer field schools on agricultural productivity and poverty in East Africa', World Development 40(2): 402-413.

European Report on Development (2009) Overcoming fragility in Africa. San Domenico di Fiesole: Robert Schuman Centre for Advanced Studies.

Erbaugh, J., Donnermeyer, J. and Amujal, M. (2006) 'Assessing the impact of farmer field school participation on IPM adoption in Uganda', Journal of International Agricultural and Extension Education 17(3).

FAO (2010) FAO livestock population census 2004-2009. Food and Agricultural Organization.

FAO & WFP (2012) Crop and Food Assessment Mission to South Sudan Report. Rome: Food and Agriculture Organization and World Food Programme.

FAO (2013) "Sustainable Food Security Through Community-Based Livelihood development and Water Harvesting", Baseline Report for the Impact Evaluation.

Feder, G., Murgai, R. and Quinzon, J. (2004a) 'Sending farmers back to school: The impact of Farmer Field Schools in Indonesia', Review of Agricultural Economics 26(1): 45-62.

Feder, G., Murgai, R. and Quinzon, J. (2004b) 'The acquisition and diffusion of knowledge: The case of pest management training in farmer field schools, Indonesia', Journal of Agricultural Economics 55(2): 217-239 .

Gockowski, J., Asamoha, C., David, S., Nkamleu, G.B., Gyamfi, I., Agordorku, S., et al. (2006) An evaluation of farmer field school training on the livelihoods of cocoa farmers in Atwima District, Ashanti Region, Ghana. The Sustainable Tree Crops Program Working Paper 1. Accra: International Institute of Tropical Agriculture.

Godtland, E., Sadoulet, A., Janvry, D. and Murgai, R. (2003) The impact of farmer-field-schools on knowledge and productivity: A study of potato farmers in the Peruvian Andes. CUDARE Working Paper 963. Berkeley: University of California, Berkeley.

GOSS (2009) Sudan 5th population and housing census results. Juba: National Bureau of Statistics, Government of Southern Sudan.

Lautze, S. and Raven-Roberts, A. (2006) 'Violence and complex humanitarian emergencies: Implications for livelihoods models', Disasters (30)4: 383-401.

Mallett, R. and Slater, R. (2012) Growth and livelihoods in fragile and conflict-affected situations. Working Paper 9. London: Secure Livelihoods Research Consortium.

Maxwell, D., Vaitla, B. and Coates, J. (2013) Capturing the 'Access' Element of Food Security: Comparing Different Indicators. Presentation, 18 January. Feinstein International Center. Medford MA: Tufts University.

OECD (2010) The state's legitimacy in fragile situations: Unpacking complexity. Paris: Organisation for Economic Cooperation and Development.

Van den berg, H. and Jiggins, J. (2007) 'Investing in farmers – The impacts of farmer field schools in relation to integrated pest management', World Development 35(4): 663-686.

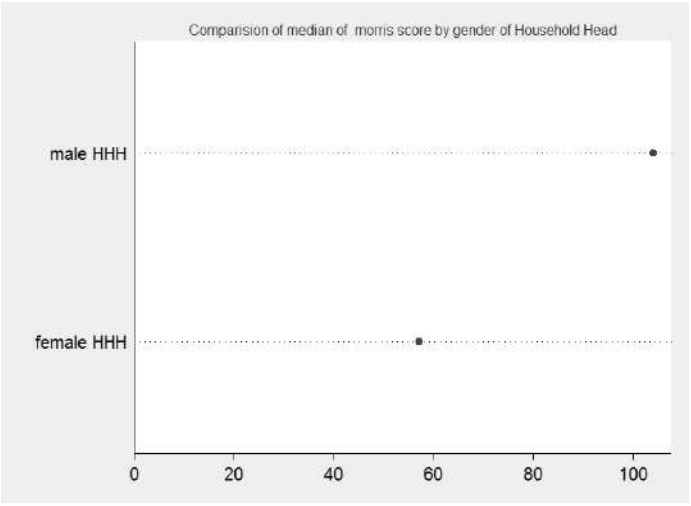
Annex: Additional tables and figures

Table 1: Male and female age distribution

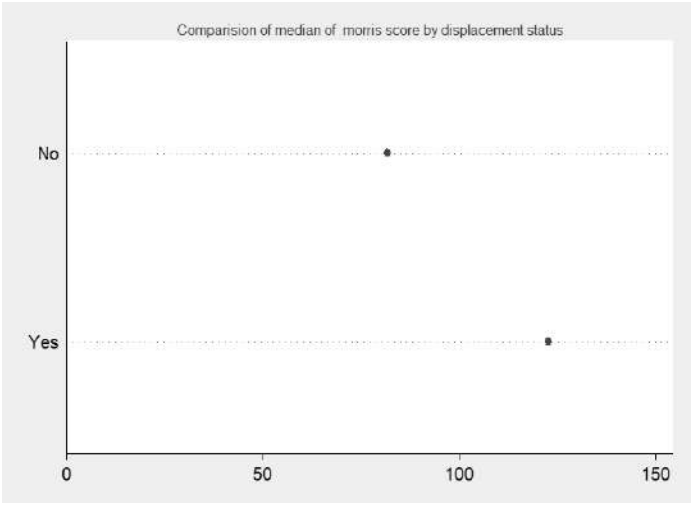
MALE AGE CATEGORY						
	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
0-4	89	13.32	227	17.89	316	16.31
5-9	129	19.31	250	19.70	379	19.57
10-14	115	17.22	191	15.05	306	15.80
15-19	82	12.28	143	11.27	225	11.62
20-24	37	5.54	71	5.59	108	5.58
25-29	30	4.49	52	4.10	82	4.23
30-34	24	3.59	60	4.73	84	4.34
35-39	38	5.69	82	6.46	120	6.20
40-44	37	5.54	53	4.18	90	4.65
45-49	47	7.04	45	3.55	92	4.75
50-54	26	3.89	27	2.13	53	2.74
55-59	6	0.90	18	1.42	24	1.24
60-64	5	0.75	23	1.81	28	1.45
65-69	0	0.00	11	0.87	11	0.57
70-74	2	0.30	9	0.71	11	0.57
75-79	0	0.00	4	0.32	4	0.21
80+	1	0.15	3	0.24	4	0.21
Total	**668**	**100.00**	**1,269**	**100.00**	**1,937**	**100.00**

FEMALE AGE CATEGORY						
	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
0-4	69	9.75	227	16.02	296	13.93
5-9	114	16.10	258	18.21	372	17.51
10-14	117	16.53	208	14.68	325	15.29
15-19	64	9.04	113	7.97	177	8.33
20-24	65	9.18	106	7.48	171	8.05
25-29	75	10.59	129	9.10	204	9.60
30-34	74	10.45	94	6.63	168	7.91
35-39	33	4.66	84	5.93	117	5.51
40-44	35	4.94	62	4.38	97	4.56
45-49	35	4.94	36	2.54	71	3.34
50-54	12	1.69	37	2.61	49	2.31
55-59	7	0.99	18	1.27	25	1.18
60-64	6	0.85	22	1.55	28	1.32
65-69	0	0.00	14	0.99	14	0.66
70-74	1	0.14	5	0.35	6	0.28
75-79	1	0.14	1	0.07	2	0.09
80+	0	0.00	3	0.21	3	0.14
Total	**708**	**100.00**	**1,417**	**100.00**	**2,125**	**100.00**

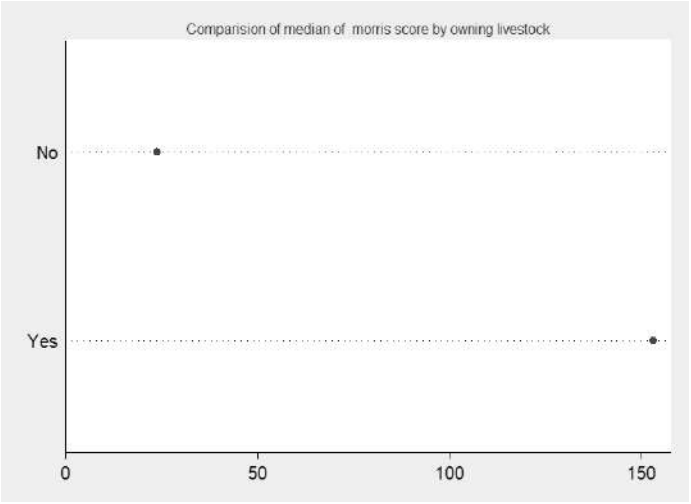
Figure 1: Morris Score Index – Bivariate comparison of median scores



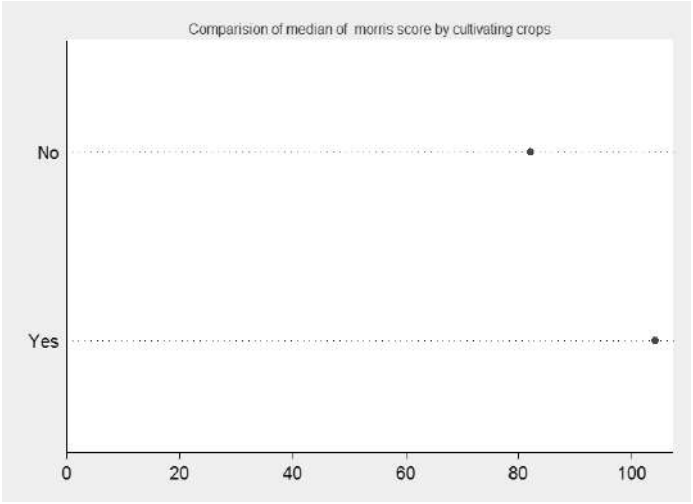
Sex of household head



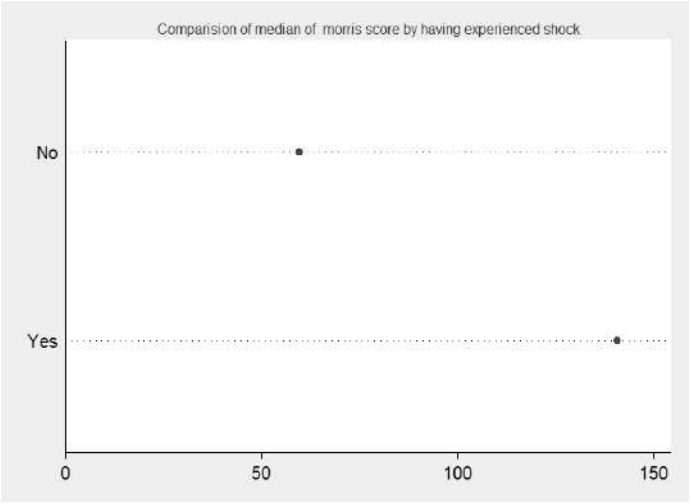
Displacement history



Ownership of livestock



Cultivation of crops



Experience of shock

Table 2: Membership in social networks

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
RELIGIOUS	254	77.20	310	66.24	564	70.77
WATER ASSOCIATION	15	4.56	9	1.92	24	3.01
FARMERS GROUP	134	40.73	101	21.58	235	29.49
BUSINESS COOPERATIVE	6	1.82	13	2.78	19	2.38
WOMAN'S SAVING GROUP	50	15.20	21	4.49	71	8.91
UNION	9	2.74	5	1.07	14	1.76
YOUTH ASSOCIATION	39	11.85	41	8.76	80	10.04
KINSHIP NETWORKS	26	7.90	12	2.56	38	4.77
OTHER	11	8.21	12	11.88	23	2.89

* Participation in groups is not mutually exclusive, thus the percentage do not sum up to 100.

Table 3: Household Dietary Diversity Score

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
1	189	64.73	214	49.31	403	55.51
2	40	13.70	64	14.75	104	14.33
3	31	10.62	56	12.90	87	11.98
4	11	3.77	45	10.37	56	7.71
5	11	3.77	23	5.30	34	4.68
6	6	2.05	23	5.30	29	3.99
7	4	1.37	7	1.61	11	1.52
8	0	0.00	2	0.46	2	0.28
Total	**292**	**100.00**	**434**	**100.00**	**726**	**100.00**

Table 4: Food consumption score

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
0-21	277	85.23	295	63.03	572	72.13
21,5-35	23	7.08	59	12.61	82	10.34
>35	25	7.69	114	24.36	139	17.53
Total	**325**	**100.00**	**468**	**100.00**	**793**	**100.00**

Table 5: The Coping Strategies Index

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
0-20	31	10.03	110	27.50	141	19.89
21-40	82	26.54	89	22.25	171	24.12
41-60	144	46.60	100	25.00	244	34.41
61-80	50	16.18	66	16.50	116	16.36
81-105	2	0.65	35	8.75	37	5.22
Total	**309**	**100.00**	**400**	**100.00**	**709**	**100.00**

Table 6: Reduced Coping Strategies Index (rCSI)

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
0-7	46	24.25	97	24.25	143	20.11
8-14	128	34.25	137	34.25	265	37.27
15-21	123	23.00	92	23.00	215	30.24
22-28	14	18.50	74	18.50	88	12.38
Total	**311**	**100.00**	**400**	**100.00**	**711**	**100.00**

Table 7: Household Food Insecurity and Access Scale (HFIAS)

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
Food Secure	13	5.56	6	1.45	19	2.93
Mildly food insecure access	4	1.71	1	0.24	5	0.77
Moderately food insecure access	2	0.85	34	8.19	36	5.55
Severely food insecure access	215	91.88	374	90.12	589	90.76
Total	**234**	**100.00**	**415**	**100.00**	**649**	**100.00**

Table 8: Household Hunger Score

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
Little to no hunger in the HH	6	2.83	40	11.08	46	8.03
Moderate hunger in the HH	129	60.85	215	59.56	344	60.03
Severe hunger in the HH	77	36.32	106	29.36	183	31.94
Total	**212**	**100.00**	**361**	**100.00**	**573**	**100.00**

Table 9: Regression analysis: Six indicators of food security

	FCS	HDDS	CSI	rCSI	HFIAS	HHS
Sex HH head	-1.226	-0.001	6.439	1.317	0.588	-0.043
	(1.343)	(0.135)	(1.679)**	(0.483)**	(0.588)	(0.111)
Education HH head	-0.215	-0.017	-1.933	-0.542	-0.688	-0.227
	(0.764)	(0.077)	(0.967)*	(0.278)	(0.334)*	(0.064)**
Potable water	1.071	0.041	-4.611	-0.385	-0.171	-0.503
	(1.431)	(0.144)	(1.819)*	(0.524)	(0.659)	(0.131)**
Displaced history	0.520	0.275	-9.102	-2.815	-2.511	-0.550
	(1.309)	(0.132)*	(1.658)**	(0.478)**	(0.557)**	(0.109)**
Own livestock	5.242	0.571	-2.679	-0.159	-0.284	-0.072
	(1.385)**	(0.139)**	(1.742)	(0.502)	(0.605)	(0.116)
LH diversification	0.822	0.083	-1.242	-0.200	-0.808	-0.191
	(0.779)	(0.078)	(0.983)	(0.283)	(0.341)*	(0.067)**
Experienced shock	3.324	0.329	0.567	-0.018	-0.486	0.036
	(1.304)*	(0.131)*	(1.635)	(0.470)	(0.567)	(0.111)
Market access	0.035	0.001	-0.093	-0.029	-0.018	-0.003
	(0.012)**	(0.001)	(0.015)**	(0.004)**	(0.006)**	(0.001)*
Jikmiir	-0.432	-0.366	29.014	8.435	3.700	-0.139
	(3.788)	(0.381)	(5.571)**	(1.605)**	(2.174)	(0.324)
Koat Kiech	-5.961	-0.276	23.350	6.707	2.909	-0.555
	(3.645)	(0.366)	(5.408)**	(1.558)**	(2.125)	(0.312)
Kuerenge	1.497	0.329	42.106	12.050	4.425	-1.055
	(3.653)	(0.367)	(5.437)**	(1.566)**	(2.138)*	(0.319)**
Lankien	-3.151	0.223	37.167	9.236	7.489	0.631

	(4.400)	(0.442)	(6.209)**	(1.789)**	(2.431)**	(0.359)
Motot	-9.169	-0.571	11.464	3.184	3.639	-0.246
	(3.891)*	(0.391)	(5.652)*	(1.629)	(2.219)	(0.310)
Nyambor	-14.295	-0.979	41.453	10.722	6.679	0.372
	(4.288)**	(0.431)*	(6.223)**	(1.793)**	(2.500)**	(0.361)
Pakang	2.323	0.113	-7.843	-1.550	2.020	-1.154
	(4.434)	(0.446)	(6.131)	(1.767)	(2.375)	(0.394)**
Panyikang	3.771	1.160				-0.856
	(5.389)	(0.542)*				(0.634)
Pathay	-13.161	-0.845	14.409	3.572	4.136	
	(4.477)**	(0.450)	(6.404)*	(1.845)	(2.540)	
Pultruk	-7.927	-0.461	35.452	9.322	5.864	-0.215
	(3.810)*	(0.383)	(5.712)**	(1.645)**	(2.255)**	(0.301)
Tiam	-13.017	-0.784	13.841	1.986	0.912	-0.503
	(4.168)**	(0.419)	(6.062)*	(1.742)	(2.406)	(0.350)
Tonga	-8.370	-0.806	15.070	7.241	8.423	-0.303
	(4.133)*	(0.415)	(5.844)*	(1.684)**	(2.254)**	(0.346)
Ulang	-7.269	-0.204	28.646	7.029	4.985	-0.577
	(3.835)	(0.385)	(5.555)**	(1.601)**	(2.143)*	(0.317)
Yomoding			-8.476	-4.629	1.917	-0.865
			(6.655)	(1.917)*	(2.465)	(0.403)*
Constant	19.291	1.523	20.542	6.958	11.774	4.464
	(3.913)**	(0.393)**	(5.715)**	(1.647)**	(2.260)**	(0.340)**
R2	0.19	0.16	0.42	0.40	0.18	0.24
N	783	783	697	699	607	566

* $p<0.05$; ** $p<0.01$; The reference payam varies by regression, but it represented by the blank

Table 10: Distance to water source, schools, transportation, health facilities and markets

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
1-15 mins	95	28.88	309	66.03	404	50.69
16-30 mins	76	23.10	57	12.18	133	16.69
31-60 mins	62	18.84	26	5.56	88	11.04
61 mins-2hrs	2	0.61	3	0.64	5	0.63
more than 2 hrs	94	28.57	73	15.60	167	20.95
Total	**329**	**100.00**	**468**	**100.00**	**797**	**100.00**

Table 11: Distance to the nearest primary school

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
1-15 mins	62	18.84	260	55.56	322	40.40
16-30 mins	69	20.97	80	17.09	149	18.70
31-60 mins	74	22.49	47	10.04	121	15.18
61 mins-2hrs	3	0.91	7	1.50	10	1.25
more than 2 hrs	121	36.78	74	15.81	195	24.47
Total	**329**	**100.00**	**468**	**100.00**	**797**	**100.00**

Table 12: Distance to the nearest bus stop

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
1-15 mins	6	1.82	36	7.69	42	5.27
16-30 mins	21	6.38	7	1.50	28	3.51
31-60 mins	26	7.90	28	5.98	54	6.78
61 mins-2hrs	38	11.55	45	9.62	83	10.41
more than 2 hrs	238	72.34	352	75.21	590	74.03
Total	**329**	**100.00**	**468**	**100.00**	**797**	**100.00**

Table 13: Distance to the nearest health facility

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
1-15 mins	34	10.33	173	36.97	207	25.97
16-30 mins	35	10.64	29	6.20	64	8.03
31-60 mins	27	8.21	43	9.19	70	8.78
61 mins-2hrs	39	11.85	102	21.79	141	17.69
more than 2 hrs	194	58.97	121	25.85	315	39.52
Total	**329**	**100.00**	**468**	**100.00**	**797**	**100.00**

Table 14: Determinants of perceptions of the quality of governance

	Satisfaction	Satisfaction
Jikmiir	2.227	1.486
	(0.509)**	(0.840)
Koat Kiech	1.824	0.679
	(0.490)**	(0.773)
Kuerenge	0.925	-1.104
	(0.500)	(0.771)
Lankien	-0.621	-1.225
	(0.632)	(0.933)
Motot	0.170	1.320
	(0.584)	(0.837)
Nyambor	-0.144	-1.133
	(0.640)	(0.934)
Panyikang	-0.799	-1.280
	(0.717)	(1.169)
Pathay	0.877	0.686
	(0.765)	(0.968)
Pultruk	-0.138	-1.135
	(0.565)	(0.840)
Tiam	0.720	0.757
	(0.653)	(0.956)
Tonga	0.584	-1.422
	(0.703)	(0.921)
Ulang	-0.431	-1.275
	(0.578)	(0.910)
Yomding	2.017	0.735
	(0.548)**	(0.845)

Household was previously displaced	0.205	-0.194
	(0.206)	(0.268)
Household has access to potable water	0.104	-0.457
	(0.314)	(0.405)
Distance to water	0.001	-0.003
	(0.003)	(0.003)
Government is water provider	-0.749	-1.009
	(0.279)**	(0.361)**
Experienced shock in past year	-1.147	-0.196
	(0.193)**	(0.269)
Network Index score	0.249	0.471
	(0.084)**	(0.099)**
Household received agricultural extension	0.603	0.648
	(0.228)**	(0.274)*
Morris Score Index	0.000	-0.001
	(0.000)	(0.000)
Distance to market	-0.001	-0.001
	(0.002)	(0.003)
Payment of informal fee for services		1.236
		(0.331)**
Security[1]		0.388
		(0.317)
Influence of local leader[2]		0.176
		(0.240)
Constant	1.415	0.400
	(0.469)**	(0.773)
R^2	0.33	0.50
N	528	264

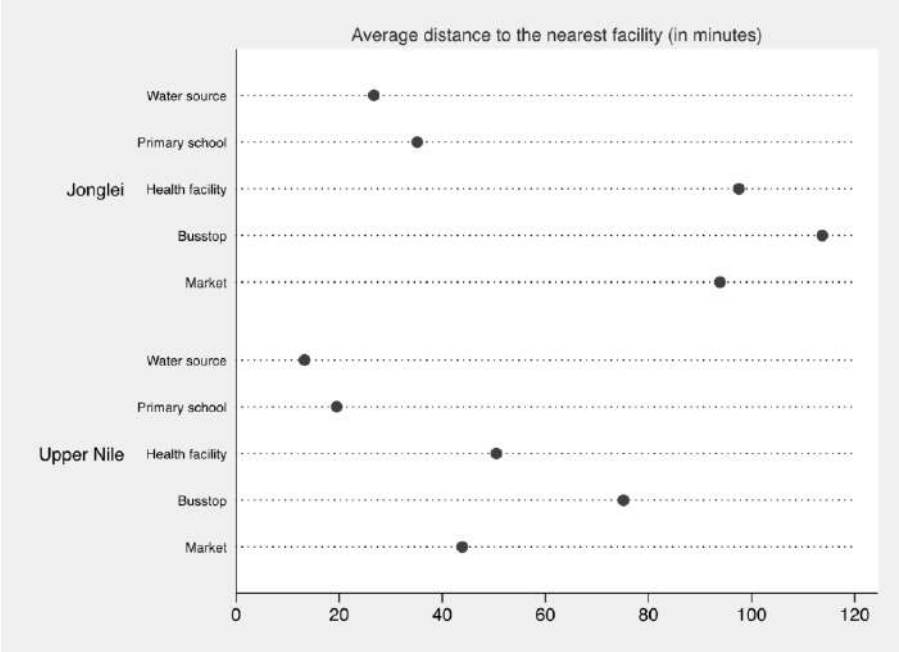
p<0.05; ** *p*<0.01 ; The reference payam is Pakang

Table 15: Distance to the nearest market

	JONGLEI		UPPER NILE		TOTAL	
	Freq	%	Freq	%	Freq	%
1-15 mins	247	75.08	411	87.82	658	82.56
16-30 mins	20	6.08	6	1.28	26	3.26
31-60 mins	35	10.64	14	2.99	49	6.15
61 mins-2hrs	7	2.13	29	6.20	36	4.52
more than 2 hrs	20	6.08	8	1.71	28	3.51
Total	**329**	**100.00**	**468**	**100.00**	**797**	**100.00**

[1] This is a dummy variable taking values 1 for answers 'excellent' and 'good' and 0 for answers 'fair' and 'poor'.
[2] This is a binary variable taking values 1 for 'a great deal' and 'some', and 0 for 'a small amount' or 'none'.

Figure 2: Average distance to the nearest facility



Secure Livelihoods Research Consortium

SLRC Working Papers present research questions, methods, analysis and discussion of research results (from case studies or desk-based research) on issues relating to livelihoods, basic services and social protection in conflict-affected situations. They are intended to stimulate debate on policy implications of research findings.

This and other SLRC reports are available from **www.securelivelihoods.org.** Funded by DFID, the EC and Irish Aid.

Secure Livelihoods Research Consortium (SLRC)
Overseas Development Institute (ODI)
203 Blackfriars Road
London SE1 8NJ
United Kingdom

T +44 (0)20 7922 8249
F +44 (0)20 7922 0399
E slrc@odi.org.uk
www.securelivelihoods.org

ODI
AREU Research for a Better Afghanistan
cepa centre for poverty analysis
Focus 1000
Feinstein International Center
SDPI Sustainable Development Policy Institute
NCCR Nepal Center for Contemporary Research
WAGENINGEN UNIVERSITY WAGENINGEN UR