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MASTER'S THESIS ON

THE IMPACT OF NATURAL AND HUMAN

INDUCED DISASTERS ON FOOD SECURITY

IN PIBOR COUNTY, JONGLEI STATE,

REPUBLIC OF SOUTH SUDAN

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April 2013; Addis Ababa, Ethiopia

DECLARATION

I hereby declare that the dissertation entitled “**THE IMPACT OF NATURAL AND HUMAN INDUCED DISASTERS ON FOOD SECURITY IN PIBOR COUNTY OF JONGLEI STATE, REPUBLIC OF SOUTH SUDAN**” submitted by me for the partial fulfilment of the MA Degree in Rural Development to Indira Gandhi National Open University (IGNOU), New Delhi is my own original work and has not been submitted earlier either to IGNOU or to any other institutions for the fulfilment of the requirement for any course of study. I also declare that no chapter of this manuscript in whole or in part is lifted and incorporated in this report from any earlier work done by me or others.

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CERTIFICATION

This is to certify that Mr. **Abiyu Mamo Ayele** student of MARD from Indira Gandhi National Open University, New Delhi was working under my supervision and guidance for his project work for the course MRDP – 001.

His project work entitled “**THE IMPACT OF NATURAL AND HUMAN INDUCED DISASTERS ON FOOD SECURITY IN PIBOR COUNTY OF JONGLEI STATE, REPUBLIC OF SOUTH SUDAN**”, which he is submitting, is genuine and original work.

Place:

Signature

Date

Name of the supervisor

Address of the Supervisor:

.....

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First and foremost, my blessings shall go to the almighty God, who gave me the courage and endurance.

My deep gratitude goes to my beloved mother, W/ro Enanu Berihun for what she has done for me throughout my life. It would have been difficult for me to reach this stage properly without her loving care and moral support for which I owe her everything in life.

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ABSTRACT

The study was conducted in Pibor County, Jonglie State of the Republic of South Sudan. Pibor Payam was particularly selected out of five Payams constituted in the county; four villages such as Manyirang and Kavachor from Gogolthin Boma and Tangajon and Bee villages from Tangajon Boma were sampled as study villages and the total sample size for household interviews was 82 households covering 10% of the total households residing in the selected villages. The research used both qualitative and quantitative methods and also both primary and secondary data.

The study area is characterized by a long duration rainy season which lasts for about seven to eight months that is from April through November. The main economic activities are Cattle rearing followed by agriculture (crop production). Most households have on average 52.1 cattle and 9.6 goats and sheep.

Out of the 82 households interviewed, 48% HHs responded that they lacked knowledge on proper farming practices; 79% lack of inputs, 80% replied security threats; 84% replied that flood partly or fully affected their production and 23% mentioned lack of agricultural extension services as production constraints in 2012. Despite huge livestock resources, 86% of the households responded that they do not have access to modern veterinary services and drugs in their surroundings.

The study indicates that more than half of all food is sourced from the market, with significant shares also contributed by food aid (16%) and social networks (borrowing & gifts, 16%). The Household Dietary Diversity Score (HDDS) for stayees, IDPs, returnees and host community is 5.2, 4.3, 4.7 and 5.6 respectively. The percentage of households with a HDDS of 5 and below was 42%, and those with HDDS 5-6 was 58%. The most common strategies employed by a majority of households involve dietary change (reliance on less preferred and less expensive foods, 78%) and increasing short-term food access (borrowing food or gifts).

The major types of disasters faced by the community under study during the last three years are ethnic conflict; RMGs, cattle raiding and floods. Flood affected 51%, 54% and 74% of the households under study in 2010, 2011 and 2012 respectively; ethnic conflict has also worsened through time with 28%, 65% and 77% of the respondents affected during 2010, 2011 and 2012 respectively. Disasters have significantly affected food security in the study areas with regards to food availability, access and utilization.

Recommendations include putting in place preparedness, prevention and mitigation schemes; construction of livestock water points along the borders of conflict areas, initiation of peace dialogues and conferences, provision of agricultural extension services, provision of veterinary services, mainstreaming of DRM into developmental and humanitarian efforts, law enforcement, participation of the community in DRM schemes and restoration of communal infrastructure such as markets and roads.

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Table of acronyms

AU – African Union

CBOs - Community Based Organizations

CPA – Comprehensive Peace Agreement

DRM – Disaster Risk Management

DRR – Disaster Risk Reduction

FAO – Food and Agriculture Organization

FGD – Focus Group Discussion

FSL – Food Security and Livelihoods

HDDS – Household Dietary and Diversity Score

HH – Household

NGO – Non Governmental Organizations

OCHA – Office for Coordination of Humanitarian Affairs

RMG – Rebel Militia Groups

RoSS – Republic of South Sudan

SRRC – State Relief and Rehabilitation Commission

UN – United Nations

UNISDR – United Nations International strategy for Disaster Reduction

UNMISS – United Nations Mission in South Sudan

WFP – World Food Program

CHAPTER ONE

1. Introduction

1.1. Background

1.1.1. Republic of South Sudan – A brief overview

After more than five decades of near continuous war, and following the six-year interim period of the Comprehensive Peace Agreement (CPA), the Republic of South Sudan (RSS) was established on 9 July 2011 and formally admitted into the United Nations General Assembly as the 193rd member state on 14 July and into the African Union (AU) as the 45th member state on 15 August 2011.

The challenges facing the world's newest state are overwhelming in both scale and complexity. State structures have only just been established, and delivery systems across all sectors are either absent or dysfunctional. Corruption impacts virtually all levels of Government, and accountability mechanisms, where they exist, have failed to deter misuse and mismanagement of public resources. As a result of decades of warfare, a heavily militarized political and bureaucratic culture continues to exist within the civilian administration. In the absence of broad-based political and social-cultural mechanisms for resolving disputes, violent conflict remains a day-to-day problem.

Emerging from war, South Sudan is struggling with the largest capacity gap in Africa. Every single ministry, every single state government and every single spending agency suffers from a debilitating lack of qualified, competent staff. Nearly half of all civil servants in South Sudan have only a primary education. Noting this, significant capacity does exist within the Diaspora and South Sudanese society which is not being adequately harnessed.

Marginalized for decades, South Sudan is entering statehood as one of the most under developed countries in the world. None of the public infrastructure required for growth is in place. The road grid is wholly inadequate. In one of the region's largest countries, there are only a handful of all-weather roads, and a single bridge links the east and west banks of the Nile. Up to 60 per cent of remote locations are inaccessible during the rainy season. The railroad serves only a few towns in one of the ten states of South Sudan. There is no electricity grid and no nationwide energy system. Airports are substandard, and there is no civil aviation capacity. Although mobile telephone coverage is improving, connectivity is already at capacity. Many areas are insecure

because they are inaccessible, and state structures, including law enforcement, have little if any capacity to access or intervene when conflict occurs.

Some of the worst social indicators globally are found in South Sudan, particularly among women. At least 80 percent of the population is income-poor, living on an equivalent of less than USD 1 per day. More than one third of the population is food insecure and even in a good year, 20% of households cannot support themselves. Less than 40% of the population has access to any form of health care. While some progress has been made in the area of immunization, the proportion of fully immunized children is only 5.8 percent. Half of all children do not attend school. 85% of the South Sudanese population is illiterate. The maternal mortality rate is the highest in the world and gender based violence and rape devastates both individuals and communities. A fifteen year old girl in South Sudan has a higher chance of dying in child birth or during pregnancy than finishing secondary school (UNMISS 2012).

The prolonged conflict between the north and South Sudan has left South Sudanese society highly militarized, fragmented and characterized by a proliferation of arms and armed groups. The conflict has undermined traditional social structures and community coping mechanisms and has had widespread psycho-social impact on affected communities. Inter-communal conflicts remain prevalent, resulting in large numbers of casualties and mass displacement, disproportionately affecting women. In 2011 alone, more than 3,000 people have died from violent conflict within South Sudan, and 350,000 people have been displaced. In the lead-up to independence, more than 300,000 Southerners who had been living in the north returned to the south, in addition to the more than two million who had already returned since 2005, often to rural communities lacking livelihoods, infrastructure, water, schools and health posts. Southerners continue to return in record numbers, exacerbating competition over scarce resources. On-going tensions between the Republic of Sudan and the Republic of South Sudan have resulted in border skirmishes and restrictions on the free movement of people and goods (FAO 2011).

Although South Sudan represents the single largest state-building challenge of our generation it is a country with impressive natural resources, oil in particular. The challenge is for the Government to tap and distribute the wealth of the country in a way that benefits the population and reverses the legacy of warfare and marginalization. While there is no question about the length and difficulty of the transition confronting South Sudan, there are very real questions about ensuring that the right kind of strategies and programmes are in place to overcome the deficits the new state is facing (UNMISS 2012).

1.1.2. External shocks, food insecurity and global hunger

Disasters and food insecurity are directly interconnected (Charlotte, 2009). Floods, hurricanes, tsunamis and other hazards destroy agricultural, livestock and fishing infrastructure, assets, inputs and production capacity. They interrupt market access, trade and food supply, reduce income, deplete savings and erode livelihoods. Drought, plant pests and diseases such as locusts and armyworms, and animal diseases like African swine fever have a direct economic impact by reducing or eliminating farm production, by adversely affecting prices and trade, and by decreasing farm income. Economic crises such as soaring food prices reduce real income, force the poor to sell their assets, decrease food consumption and reduce their dietary diversity. Disasters create poverty traps that increase the prevalence of food insecurity and malnutrition.

The alleviation of hunger and poverty is strongly correlated with disaster risk reduction (DRR). The Millennium Development Goal 1 strives to eradicate extreme poverty and hunger, and aims to halve by 2015 the proportion of people who suffer from hunger (MDG, 2000). The World Food Summit goal is to reduce, by 2015, the number of undernourished people by half. Yet these targets are compromised by natural disasters, protracted crises and armed conflicts that reverse development and poverty-reduction gains, destroy livelihoods, reduce food production and increase hunger. Worldwide, there are 925 million undernourished people, and hungry people account for 16 percent of developing countries' populations (FAO, WFP, 2010).

The incidence of food crises, which are caused by severe adverse weather conditions, natural hazards, economic shocks, conflicts, or a combination of these factors, has been rising since the early 1980s. There have been between 50 and 65 food emergencies every year since 2000, up from 25 to 45 during the 1990s (FAO, 2008).

Floods, hurricanes, conflicts and other hazards destroy agricultural infrastructure and assets, crops, inputs and production capacity. Drought alone has caused more deaths during the last century than any other physical hazard. Asia and Africa rank first among continents in the number of people directly affected, while Africa has a high concentration of deaths associated with drought (UNISDR, 2011). These natural hazards have a direct impact on agriculture and food security. They interrupt market access, trade and food supply to the cities. They reduce income, deplete savings, and erode livelihoods. They also have a negative consequence for animal production by reducing range productivity and rangeland yields, leading to food insecurity, overgrazing and degradation of ecosystems. Livestock is central to the livelihoods of the poor. It forms an integral part of mixed farming systems. It is an important source of employment, income, quality food, fuel, draught power and fertilizer (UNISDR, 2011).

1.2. Statement of the problem

Natural and human induced disasters are leading causes of hunger in the Republic of South Sudan and affect all dimensions of food security including access to food, availability and stability of supplies, and nutrition. Most food insecure people live in areas prone to natural and human induced hazards and they are the least able to cope with shocks. Due to their vulnerability and limited capacity to manage risks, poor households are often trapped in a downward spiral of food insecurity and poverty. Globally, disaster risk is increasing due to climate change, political instability and population growth and disaster frequently bring with them a food crisis (UNISDR, 2011).

South Sudan officially declared its independence on 9 July to become the United Nations 193rd member country. South Sudan has a total area of 644,329 sq. km or roughly the size of France or Afghanistan. South Sudan is divided into 10 states. They were created out of the three historic former provinces (and contemporary regions) of: Bahr el Ghazal (northwest); Equatoria (southern), and Greater Upper Nile (northeast). The Bahr el Ghazal region in northwest South Sudan includes the states of: Northern Bahr el Ghazal, Western Bahr el Ghazal, Lakes, and Warrap. The Equatoria region in southern South Sudan includes the states of: Western Equatoria, Central Equatoria, and Eastern Equatoria. The Greater Upper Nile region in northern and eastern South Sudan includes the states of: Jonglei, Unity and Upper Nile. The states are further divided into 86 Southern Sudan counties (UNMISS, 2012).

More than half of its 9.1 million population is below the age of 18 and about two thirds are under the age of 30. Approximately 80% of the people of South Sudan live in rural areas, and are largely dependent on farming and livestock. Livelihood constraints are enormous, only 4% of arable land is cultivated; labour and trade opportunities are often limited. South Sudan is endowed with natural resources which if well managed could offer the new country immense opportunities to enhance its overall economic and social well-being (FAO, WFP, 2012).

An assessment by WFP and the UN Food and Agriculture Organization (FAO) in January 2012 found that nearly 5 million out of a population of some 9 million South Sudanese will struggle to provide food for themselves this year – of these, more than a million are estimated to be severely food insecure. The joint assessment warned that an escalation in conflict, rising food prices due to reduced trade flows and increased food demands from resettling returnees could threaten the fragile food security situation in the new country.

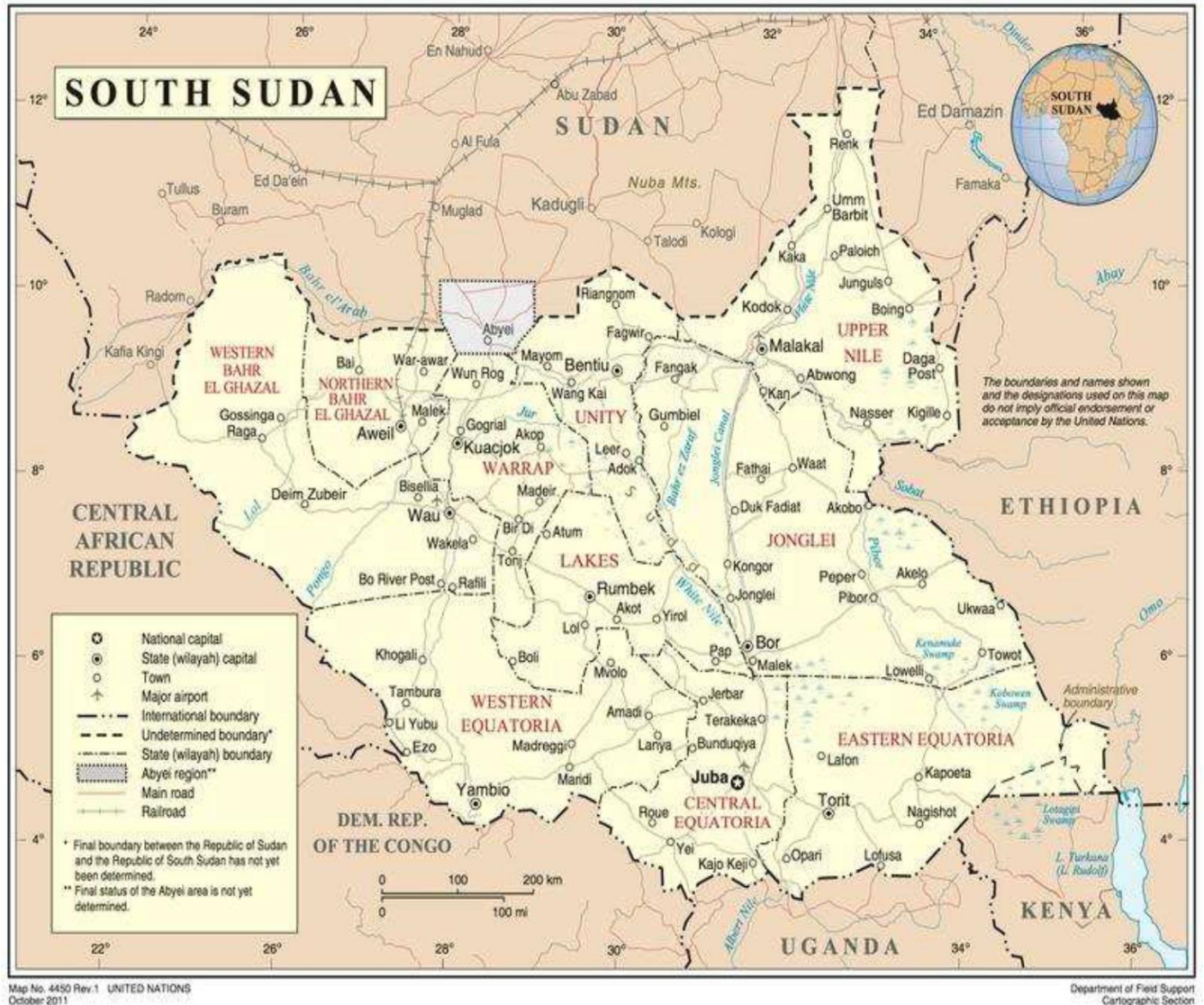


Figure 1: Map of South Sudan

This study focused on one of the administrative counties of Jonglei State. Jonglei is the largest among the ten states of South Sudan and it is the area of origin of the second Sudanese civil war that began in 1983 in Bor town started as a district under the administration of Upper Nile province in old Sudan and it was headed by a Commissioner (UNMISS, 2012). The state covers an area of 1.3 square km consisting of eleven counties. Jonglei is bordering Ethiopia in the east, Unity state at the north east, Upper Nile state north east, Kenya in the south, Eastern Equatoria in the south east, Central Equatoria in the west and Lakes state in the north. Jonglei state is inhabited by six Nilotic ethnic groups, namely Nuer, Dinka, Anyuak, Murle, Kachipo and Jieh. The population of Jonglei is 1.2 million (Sudan Population Census, 2008).

The socio-economics of Jonglei state relies mainly on agro-pastoralist and fishing communities, the main livelihood activities being farming, cattle keeping, fishing, hunting and trading, among others. The state has two major seasons known as the dry and wet seasons. The dry season has a cooler and a warmer period. The average annual rainfall during the wet season, usually 7-8 months per year, is 400-110mm. In Nuer, Dinka, Murle and Kachipo cultures the communities are traditionally governed by the head of the clan, followed by elders. Jieh and Anyuak communities are headed by a king. The communities have strong cultural roots and most of their activities are dominated by traditional practices such as initiations, inter-marriage and wife inheritance when a brother passes away. For instance, in Nuer community the initiation is done through tattooing and removing of lower teeth for any boy or a girl to be qualified to adulthood, whilst in the Dinka culture, in addition to these practices, the male must kill a bull in order to be promoted from childhood to adulthood. The most dominating religions in the state are Christianity and African traditional religions. Jonglei has a minority of Muslims.

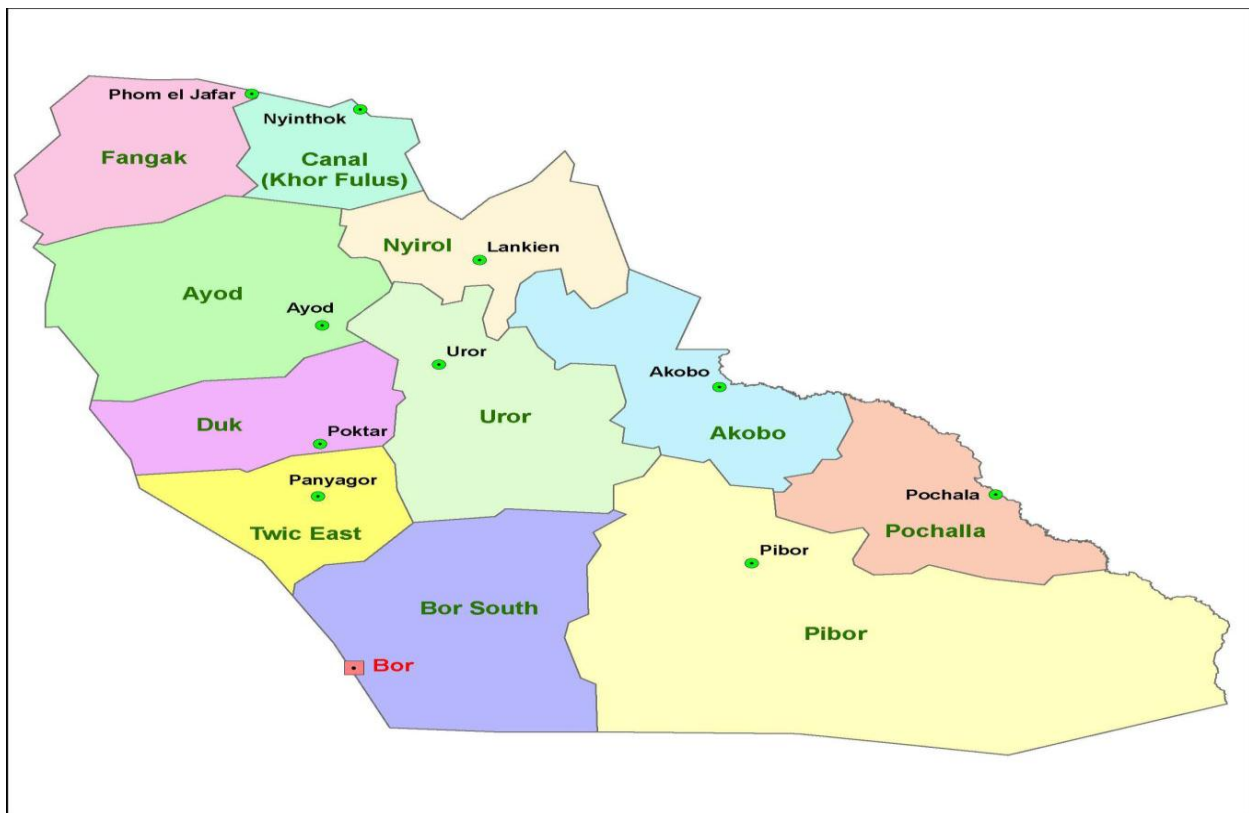


Figure 2: Map showing 11 counties of Jonglei state

Jonglei state is divided into 11 counties, namely: Bor county, Twic East county, Duk county, Ayod county, Nyirol county, Uror county, Akobo county, Fangak county, Pigi

county, Pibor county and Pochalla county. The particular focus of this study is Pibor County.

Pibor County contains five payams: Pibor, Gumuruk, Lekuangole, Verteit, and Buma. The official population figures are: Pibor/Gogolthin - 44,168; Lekuangole - 44,997; Gumuruk - 31,684; Fertet - 7,134; Total - 127,983 (excluding areas towards and around Boma) (Sudan Population Census, 2008). According to the Sudan Population Census conducted in 2008, the predominant tribe residing in Pibor County is Murle. It is evident from various studies and assessments done by humanitarian actors such as UN agencies, International and National NGOs and the state government that the population in Jonglei state in general and Pibor County in particular has been suffering from natural and human induced disasters before and after independence of Republic of South Sudan. The most prevalent natural disaster causing significant damage on the lives and livelihoods of the community in Pibor County is flood. Whereas the most common human induced disasters causing insecurity in the area are ethnic and tribal conflict, presence of Rebel Militia Groups (RMGs) and cattle raiding (OCHA, 2012).

In December 2011 and January 2012 there was an intertribal attack on Pibor. It was the largest and most violent of an escalating chain of attacks and counter attacks between the Murle and other tribes in Jonglei state. In the attack hundreds of people were killed, women and children were abducted, and thousands of cattle were raided. There was large scale destruction of property and looting within Pibor town. A further result of the intertribal violence was the deployment of additional SPLA troops to carry out disarmament of all civilians within Jonglei state. Starting in March 2012 and continuing through August 2012 SPLA troops have been disarming civilians in villages and towns all around Pibor County. There have been documented instances of violence associated with the disarmament process, including beatings, water torture, and rape. This has led to a poor relationship between SPLA and civilians. In August 2012 clashes began between the SPLA and the rebel group led by David Yau Yau (a former resident of Pibor) within Pibor County. This has further decreased the security of civilians. The civilians have evacuated Lekuangole town following a clash between the SPLA and David Yau Yau rebels on 23 August, 2012. The situation has added further complications to accessing Pibor and the surrounding areas of the county. The security situation must be daily reassessed before any movement by aid personnel around the county (UNMISS, 2012).

Another salient natural disaster that affects Pibor County is flood happening every rainy season though the scale varies. The floods have affected both the urban and rural population in the County. The main cause for flooding in the urban areas and their surrounds is poor drainage (no culvert, no bridges). In rural areas, it is a combination of various factors that include excessive rains this year, settlements that are too close to

the rivers, dwellings / schools that are situated on low ground and in water ways, excessive water in the rivers that was flowing out of river channels, and unrepaired dykes (Jonglei SRRC, 2013).

The result of these floods (and prolonged rains) has been the displacement of people from their homes to seek shelter on higher ground (neighbors' or kins' dwellings), distortion of livelihood activities causing food shortage, destruction of food stores, and a dependency on the market rather than own production because of flood effects. Coping strategies have been introduced in different households such as skipping meals (one meal a day) while trying to feed children, turning to casual labour, selling assets (livestock) and depending on kin support. It is evident that the floods have led to the destruction of crops and an increase in diseases for both humans and animals. The flood also destructs road networks (including village to farm roads), market, and other infrastructure which causes significant damages on the economic activities of the community (Jonglei SRRC, 2013).

1.3. Objectives of the study

This study aims at analysing the level of food security and the causes attributed to the food security status in the study area and with a particular focus on the impact of natural and human induced disasters on food availability, access and utilization. The specific objectives of the study are:

1. To identify major natural and human induced disasters that has happened before and after independence and explore the basic causes
2. To assess the food security situation in the study area before and after independence against standard indicators
3. To analyse the cause and effect relationships between the disasters and food security in the study area

1.4. Hypothesis

The hypotheses framed for this study are:

1. Human induced disasters affected peace and security of the people and thereby hampered the people from engaging in productive activities
2. Natural disasters affected the infrastructure and damaged productive assets of the community
3. Natural and human induced disasters affected food production, access and utilization and caused food insecurity

Important terminologies used in the study

The most important terms used are:

Disaster: A disaster is defined as a serious disruption of the functioning of society, causing widespread human, material or environmental losses, which exceed the ability of an affected society to cope using only its own resources (EEA 2006). The extent of the disaster depends on both the intensity of the hazard event and the degree of vulnerability of the society. For example a powerful earthquake in an unpopulated area is not a disaster, while a weak earthquake which hits an urban area with buildings not constructed to withstand earthquakes, can cause great misery (GTZ 2001, p. 14).

Natural Disasters: are disasters brought about by change in natural phenomenon. Natural disasters include things such as floods, volcanic eruptions, earthquakes, floods, tornadoes, landslides and hurricanes.

Human Induced Disasters: or manmade disasters are known as anthropogenic disasters and they as a result of human intent, error or as a result of failed systems. Examples are ethnic conflicts, wars, and cattle raiding.

Risk: The combination of the probability of an event and its negative consequences. The probability of harmful consequences resulting from interactions between natural or human-induced hazards and vulnerable conditions (UN ISDR)

Hazard: A dangerous phenomenon (e.g. physical event), substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage (UN ISDR).

Vulnerability: The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard. Conditions determined by physical, social and institutional, economic and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards (UN ISDR).

Adaptation: Adjustment in human and natural systems in response to actual or expected climate stimuli or their effects, which moderates harm or exploit beneficial opportunities (UNFCCC).

Adaptive capacity/Coping capacity: The ability of people, organizations and systems, using available skills and resources, to face and manage adverse conditions, emergencies or disasters (UN ISDR). Whereas adaptation implies adjustments to

changing conditions and is often long-term with the aim of maintaining the standard of living, the term coping capacity is often short-term and linked to the ability to cope with the impacts of a hazardous or extreme event.

Climate Change: Climate is changed if over an extended period (decades or longer) there is a statistically significant change in measurement of either the mean state or variability of the climate for that place or region – may be due to natural processes or persistent anthropogenic changes in atmosphere or in land use (UN ISDR).

Disaster Risk Reduction: The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment , and improved preparedness for adverse events (UN ISDR).

Mal adaptation: Business-as-usual developments which by overlooking climate change impacts, inadvertently increases exposure and/or vulnerability to climate change. Mal adaptation could also include actions undertaken to adapt to climate impacts that do not succeed in reducing vulnerability but increase it instead (OECD 2009).

Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. (FAO, 2002). Within this definition of food security, there are three components: food availability, food access and food utilization.

Food Availability refers to the quantity, quality and seasonality of the food supply in the affected area. It includes all local sources of food production including agriculture, livestock and fisheries as well as wild-collected foods. It also includes all foods imported into the area by traders. The presence of well-functioning market systems able to deliver food to the area on a consistent basis and in adequate quantity and quality is a major determinant of food availability.

Food Access refers to the capacity of a household to procure sufficient food to satisfy the nutritional needs of all its members. It is a measure of the household's ability to acquire available food during a given period through a combination of home production and stocks, purchases, barter, gifts, borrowing or food aid.

Food Utilization refers to a household's use of the food to which it has access, including food storage, processing and preparation as well as its distribution within the

household. It also refers to an individual's ability to absorb and metabolize nutrients, which can be affected by disease and malnutrition.

A livelihood comprises the capabilities, comprised of assets (including both material and social resources) and activities used by a household for means of living. A household's livelihood is secure when it can cope with and recover from stresses and shocks, and maintain or enhance its capabilities and productive asset base. (Chambers and Conway, 1992)

CHAPTER TWO

2. Literature review

2.1. Global state of food insecurity

2.1.1. Trend of food security

Globally almost 870 million people, or one in eight, were suffering from chronic undernourishment in 2010-2012, according to the new UN hunger report released by FAO in 2012. The State of Food Insecurity in the World 2012 (SOFI), jointly published by the UN Food and Agriculture Organization (FAO), the International Fund for Agricultural Development (IFAD) and the World Food Programme (WFP), presents better estimates of chronic undernourishment based on an improved methodology and data for the last two decades.

The vast majority of the hungry, 852 million live in developing countries, which is around 15% of their population, while 16 million people are undernourished in developed countries (FAO, IFAD, WFP, 2012). The global number of hungry people declined by 132 million between 1990-92 and 2010-12, or from 18.6% to 12.5% of the world's population, and from 23.2% to 14.9% in developing countries - putting the MDG target within reach if adequate, appropriate actions are taken. The number of hungry declined more sharply between 1990 and 2007 than previously believed. Since 2007-2008, however, global progress in reducing hunger has slowed and levelled off (FAO, 2012).

"In today's world of unprecedented technical and economic opportunities, we find it entirely unacceptable that more than 100 million children under five are underweight, and therefore unable to realize their full human and socio-economic potential, and that childhood malnutrition is a cause of death for more than 2.5 million children every year," say José Graziano da Silva, Kanayo F. Nwanze and Ertharin Cousin, respectively the Heads of FAO, IFAD and WFP, in a foreword to the report. "We note with particular concern that the recovery of the world economy from the recent global financial crisis remains fragile. We nonetheless appeal to the international community to make extra efforts to assist the poorest in realizing their basic human right to adequate food. The world has the knowledge and the means to eliminate all forms of food insecurity and malnutrition," they add. A "twin-track" approach is needed, based on support for broad-based economic growth (including in agriculture) and safety nets for the most vulnerable.

2.1.2. Impact of economic crisis on food security

The new estimates suggest that the increase in hunger during 2007-2010 was less severe than previously thought. The 2008-2009 economic crisis did not cause an immediate sharp economic slowdown in many developing countries as was feared could happen; the transmission of international food prices to domestic markets was less pronounced than was assumed at the time while many governments succeeded in cushioning the shocks and protecting the most vulnerable from the effects of the price spike (SOFI, 2012).

The numbers of hunger released today are part of a revised series that go back to 1990. It uses updated information on population, food supply, food losses, dietary energy requirements and other factors. They also better estimate the distribution of food (as measured in terms of dietary energy supply) within countries. SOFI 2012 notes that the methodology does not capture the short-term effects of food price surges and other economic shocks. FAO is also working to develop a wider set of indicators to better capture dietary quality and other dimensions of food security.

2.1.3. MDG target within reach

The new UN hunger report released by FAO in 2012 suggests that if appropriate actions are taken to reverse the slowdown in 2007-08 and to feed the hungry, achieving the Millennium Development Goal (MDG) of reducing by half the share of hungry people in the developing world by 2015 is still within reach.

"If the average annual hunger reduction of the past 20 years continues through to 2015, the percentage of undernourishment in the developing countries would reach 12.5% - still above the MDG target of 11.6%, but much closer to it than previously estimated," the report says. Asia leads in number of hungry; hunger rises in Africa. Among the regions, undernourishment in the past two decades decreased nearly 30% in Asia and the Pacific, from 739 million to 563 million, largely due to socio-economic progress in many countries in the region. Despite population growth, the prevalence of undernourishment in the region decreased from 23.7% to 13.9%. Latin America and the Caribbean also made progress, falling from 65 million hungry in 1990-1992 to 49 million in 2010-2012, while the prevalence of undernourishment dipped from 14.6% to 8.3%. But the rate of progress has slowed recently (UN FAO, 2012).

Africa was the only region where the number of hungry grew over the period, from 175 million to 239 million, with nearly 20 million added in the past four years. The prevalence of hunger, although reduced over the entire period, has risen slightly over the past three years, from 22.6% to 22.9% - with nearly one in four hungry. And in sub-Saharan Africa, the modest progress achieved in recent years up to 2007 was reversed, with hunger

rising 2% per year since then. Developed regions also saw the number of hungry rise, from 13 million in 2004-2006 to 16 million in 2010-2012, reversing a steady decrease in previous years from 20 million in 1990-1992.

2.1.4. Agricultural growth to reduce hunger and malnutrition

The FAO report 2012 underlines that overall growth is necessary but not sufficient for a sustained hunger reduction. Agricultural growth is particularly effective in reducing hunger and malnutrition in poor countries since most of the poor depend on agriculture and related activities for at least part of their livelihoods. Agricultural growth involving smallholders, especially women, will be most effective in reducing extreme poverty and hunger when it generates employment for the poor. Growth must not only benefit the poor, but must also be "nutrition-sensitive" in order to reduce various forms of malnutrition. Reducing hunger is about more than just increasing the quantity of food it is also about increasing the quality of food in terms of diversity, nutrient content and safety.

For even while 870 million people remain hungry, the world is increasingly faced with a double burden of malnutrition, with chronic undernourishment and micronutrient malnutrition co-existing with obesity, overweight and related non-communicable diseases affecting more than 1.4 billion people worldwide (FAO, 2012). To date, the linkage between economic growth and better nutrition has been weak, the report says, arguing for an integrated agriculture-nutrition-health framework.

2.1.5. Social protection systems

Growth is clearly important, but it is not always sufficient, or rapid enough. Hence, social protection systems are needed to ensure that the most vulnerable are not left behind and can also participate in, contribute to and benefit from growth. Measures such as cash transfers, food vouchers or health insurance are needed for the most vulnerable who often cannot take immediate advantage of growth opportunities. Social protection can improve nutrition for young children - an investment that will pay off in the future with better educated, stronger and healthier adults. With effective social protection complementing inclusive economic growth, hunger and malnutrition can be eliminated (FAO, 2012).

2.2. Global state of disaster risk

Disaster risks and the means of reducing its effects have now become a real concern, not only to South Sudan, but to the world at large. Reports coming out from various agencies show that some 75%-85% of the world's population living in disaster prone areas has at least been affected once by earthquake, tropical cyclone, flood or drought between the years 1980 and 2005. South Sudan is one among the community of such nations exposed to intermittent flooding and human induced disasters that exasperate vulnerability of the poorer section of the population whose income is less than a dollar a day.

African States are referred to as having the highest vulnerability to various shocks. Several field assessments strongly show evidences that drought translate themselves into famine mediated by primarily armed conflict, internal displacement, HIV/AIDS, poor governance and economic crises. As natural and human induced disaster risks are intimately connected to processes of human activities, the development choices made by individuals, communities and nations do also generate new disaster risk (UNDP, 2004).

More than 1 billion people are currently undernourished, mostly in the developing world (FAO, 2009a). In Africa, more than 218 million people, or around 30 per cent of the total population, are estimated to be suffering from chronic hunger and malnutrition (FAO, 2009b). Given current trends, governments are unlikely to halve the proportion of people who suffer from hunger in Africa by 2015 (MDG 1c). A large proportion of those suffering from hunger and malnutrition depend on agriculture and livestock production for their livelihoods, which makes them vulnerable to the impacts of climate change.

Agriculture and food security are back on the political agenda. Donors are recognizing the links between agriculture, food security and climate change. Developing countries face the challenge of investing more in agriculture and ensuring food security for growing populations, securing additional funding to adapt, strengthening the resilience of their food production systems to climate variability and change, whilst also reducing emissions from agriculture. These tasks are particularly challenging in a dry land context such as the Sahel region of West Africa and in the Horn of Africa, where repeated disasters have already severely impacted people's livelihoods.

According to recent research by the International Food Policy Research Institute (IFPRI) the world food situation is being rapidly redefined (Von Braun 2007). The new driving forces, namely income growth in some countries (e.g. China), globalization, increased urbanization and migration, climate change, inadequate access to production inputs, land and water, and decreased public sector investment in agriculture and rural infrastructure in developing countries, unprecedented energy and food price increases, demand for and subsidized biofuel production, and the increasing role of the private sector in national and global food systems have the effect of drastically changing food consumption, production and market patterns (FAO, 2008; Gillespie, 2008; Von Braun, 2007).

While some of these may be viewed as temporary shocks (e.g. oil and food price increases, both of which had dropped significantly by the end of 2008, at least globally) most will be around for a long time and prices may again rise as a result of demand, scarcity or speculation. The impact of these new driving forces will be long-term and will represent a major challenge to food security (Evans, 2009), especially for the 923 million chronically hungry people worldwide (FAO, 2008). This is an increase of more than 80 million people since 1990–1992, the baseline period for the World Food Summit (WFS) and Millennium Development Goals (MDGs) hunger reduction targets.

Consequently, progress towards achieving these targets has suffered a significant setback in terms of the prevalence of hunger and the number of undernourished (FAO, 2008).

2.3. Definition and Conceptual framework of food security

2.3.1. Definitions and concepts

The term food security has originated in international development literature in the 1960s and 1970s. Public interest in global and domestic food security grew rapidly following the world oil crisis and related food crisis of 1972-74. With the African famine of 1984-85, the increase in numbers of people looking for food assistance in developed nations, as reported by churches, community centres and soup kitchens, and the growing numbers of food banks in the United States (U.S.) and Canada, the literature on food security grew rapidly. Over time a large number of different definitions have been proposed. There are approximately 200 definitions and 450 indicators of food security (Hoddinott, 1999). Maxwell and Frankenberger.s (1992) report lists 194 different studies on the concept and definition of food security and 172 studies on indicators.

Some individuals and groups have suggested alternatives to the term food security in an effort to avoid the perception of food safety or to shed the connotation of food insecurity being equated with only hunger and poverty. For the purposes of this paper, food security will be used because it is still the most commonly used term among a wide range of advocates working to meet the food needs of individuals, households and communities.

The concept of food security has evolved and expanded over time to integrate a wide range of food-related issues and to more completely reflect the complexity of the role of food in human society. Early definitions focused almost exclusively on the ability of a region or nation to assure an adequate food supply for its current and projected population. The emphasis was on secure access to food for a population, with a singular focus on the role of food as a vehicle for nutrition. However, food holds much more significance to humans than just its nutritional value. It can also have important symbolic, cultural, social and political roles. Food security, as a conceptual goal, has expanded to explicitly include more and more of these roles. The evolution of thinking reflects an attitude that society's goals should reach beyond the ability of a country to produce and import enough food. Issues related to its production, distribution, availability and acceptability have become equally important.

Several authors have explored the similarities among definitions of food security to identify its fundamental components (Maxwell & Frankenberger, 1992; Power, 1998; Koc & Dahlberg, 1999; Ganapathy et al., 2005). Maxwell and Frankenberger (1992) distilled a range of definitions of food security into the phrase .secure access at all times to enough food.. The way that the terms secure, access, time, and enough are specifically defined in definitions varies. For example, some have the perspective that

enough food means enough for survival, while others, particularly those proposing more recent definitions of food security, conceptualize it as enough food for an active and healthy lifestyle.

Power (1998) and Ganapathy et al. (2005) see the core of food security as a bivariate concept composed of anti-hunger or poverty elimination goals on the one hand and goals related to food system issues on the other. The two dimensions of the concept essentially relate to food access goals in terms of quantity and quality, respectively. An anti-hunger or anti-poverty approach argues that people should have a sufficient quantity of food and/or enough income to access a sufficient quantity. The food system approach expresses a concern with the quality of food that is available, how food is produced and the impact of its production, distribution and consumption on individuals and communities.

The conceptualization of food security goals by Koc et al. (1999) goes beyond the adequacy of food quantity and quality and extends to the four “A”s: availability, accessibility, acceptability and adequacy. Food security requires that a sufficient supply of food be available (quantity) and that it be accessible to all equally. Acceptability addresses food’s cultural and symbolic value, that the food available and accessible should respect individuals’ cultural traditions. The authors define adequacy in terms of the long-term sustainability of food systems (quality, in the broadest sense). A sustainable food system should help to satisfy basic human needs, without compromising the ability of future generations to meet their needs. If one examines different definitions of food security in terms of answers to questions about the production, distribution and consumption of food in human society, the broadest definitions essentially answer five specific questions.

Different concepts of food security differ in the way that their authors answer the following five questions:

Table 1: Concepts of food security

1. Who should get the food?	<ul style="list-style-type: none"> • Everyone/ all people (UNIVERSALITY)
2. When?	<ul style="list-style-type: none"> • At all times/ sustained access (STABILITY)
3. How?	<ul style="list-style-type: none"> • Through normal food channels/ not from emergency food assistance programs (DIGNITY)
4. How much food?	<ul style="list-style-type: none"> • Enough/ enough for a healthy active life (QUANTITY)
5. What kind of food?	<ul style="list-style-type: none"> • Safe and nutritious (QUALITY) • Culturally appropriate (QUALITY) • Produced in environmentally sustainable ways that promote strong communities (QUALITY)

The specific ways that these questions or components are addressed by different definitions can vary based on the geographic focus, conceptual starting point, programming priority or level of analysis of the author(s). The level of analysis is particularly important in understanding the use of the term food security. The term can be used with a focus on food-related issues on a number of levels, from global food security to regional, national, community, household and individual. None of these levels of analysis can be cleanly separated from the others but the issues of significance can be very different. An analysis of global food security would look at the ability of the world's food producers to meet the statistically calculated caloric needs of the Earth's six billion residents and may also concern itself with threats to the long-term sustainability and issues of genetic modification, corporate dominance of food production and threats to biodiversity. The above table provides a visual representation of the common components of a range of current definitions of food security.

The World Food Summit of 1996 defined food security as existing "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life". Commonly, the concept of food security is defined as including both physical and economic access to food that meets people's dietary needs as well as their food preferences. In many countries, health problems related to dietary excess are an ever increasing threat, In fact, malnutrition and foodborne diarrhoea are become double burden.

2.3.2. Pillars of food security

Food security is built on three pillars:

1. Food availability: sufficient quantities of food available on a consistent basis.
2. Food access: having sufficient resources to obtain appropriate foods for a nutritious diet.
3. Food use: appropriate use based on knowledge of basic nutrition and care, as well as adequate water and sanitation.

Food security is a complex sustainable development issue, linked to health through malnutrition, but also to sustainable economic development, environment, and trade. There is a great deal of debate around food security with some arguing that:

- There is enough food in the world to feed everyone adequately; the problem is distribution.
- Future food needs can - or cannot - be met by current levels of production.
- National food security is paramount - or no longer necessary because of global trade.
- Globalization may - or may not - lead to the persistence of food insecurity and poverty in rural communities.

Issues such as whether households get enough food, how it is distributed within the household and whether that food fulfils the nutrition needs of all members of the household show that food security is clearly linked to health.

Agriculture remains the largest employment sector in most developing countries and international agriculture agreements are crucial to a country's food security. Some critics argue that trade liberalization may reduce a country's food security by reducing agricultural employment levels. Concern about this has led a group of World Trade Organization (WTO) member states to recommend that current negotiations on agricultural agreements allow developing countries to re-evaluate and raise tariffs on key products to protect national food security and employment. They argue that WTO agreements, by pushing for the liberalization of crucial markets, are threatening the food security of whole communities.

2.3.3. Current thinking about food (in) security

Historically, food security started to make a serious impact on the development debate in the 1970s and has continued to do so for the last three decades. The term originated at the 1974 World Food Conference, which defined food security as:

*“[the] availability at all times of adequate world supplies of basic food stuffs...to sustain
a
steady expansion of food consumption...and to offset fluctuations in production and
prices...
(UN, 1975)”*

This definition, emphasising security in terms of food supply at international and national levels, has been revised over the last thirty years as a result of deeper understanding of the nature of the food problem and changes in thinking about food security. Three paradigm shifts regarding thinking about food security and insecurity have taken place (Devereux & Maxwell, 2003). Firstly, there was a shift from concern about global and national food security to the household and individual levels. Secondly, there was a shift from a food-first perspective to a livelihood perspective. And thirdly, there was a shift from the exclusive use of objective indicators for determining food security to the inclusion of the subjective perception of those affected. These gradual shifts coincided with changes in both global and local policy and practice. Local changes were often influenced by global changes. More recently there appears to have been a shift towards issues of governance within national and international food security strategies. These include rights to food security, social protection, appropriate and timely interventions,

and the management/mitigation of crises (see Devereux, 2009; Maunder and Wiggins, 2007; Von Braun, 2009).

2.3.4. Changing policies and practices on food security

2.3.4.1. From national to household and individual food insecurity

From the World Food Conference of 1974 up until 1980, the emphasis was on global food security, sparked off by high international food prices. During this period there was an increasing development focus on poverty and basic needs, in the tradition of Maslow, and food was considered a primary need (Maxwell, 2003). Between 1981 and 1985, the Food and Agriculture Organisation of the United Nations (FAO) developed an approach which focused on the balance between the demand for and the supply of food in the food security equation.

This subsequently led to a focus on household and individual food security, largely sparked off by the work of Amartya Sen (1981) which highlighted the effect of personal entitlements (resources used for production, labour, trade and transfers) in ensuring access to food.² During the same period World Bank structural adjustment policies had the effect of subordinating poverty reduction and basic needs to concern for better national debt management, “fiscal balance, macroeconomic stability and internal and external liberalisation” (Maxwell, 2003).

Despite improved concepts of food security and increased food needs (the latter a result of structural adjustment policies (Cornia et al., 1987) structural adjustment resulted in the diverting of the resources required for practical action towards structural adjustment programmes. These policies and programmes transformed livelihood systems (Bryceson & Bank, 2001), requiring many households to diversify livelihoods and to shift towards non-agricultural sources of income to secure the means to purchase food (Drimie et al., 2008).

The African famine of 1984/85 renewed global attention towards hunger and its causes. The World Bank Report on Poverty and Hunger (1986) is regarded as highly influential in promoting a focus on food security during the period 1986–1990. This is partly because hunger was used as a proxy for poverty, and because a number of World Bank, FAO and European Commission food security studies were subsequently implemented in Africa (Maxwell, 2003: 25). The 1986 report introduced the distinction between chronic and transitory food insecurity. Both refer explicitly to the temporal dimension of food insecurity, and only recently have the severity dimensions of food security been carefully examined (see Devereux, 2006).

Chronic food insecurity is long-term or persistent in that it can be considered to be an almost continuous state of affairs. It is closely related to structural deficiencies in the

local food system or economy, chronic poverty, lack of assets and low incomes which persistently curtail food availability and access over a protracted period of time (DFID 2004; FAO 2005). It is often a normal state of affairs. Transitory food insecurity, on the other hand, is usually sudden in onset, short-term or temporary and refers to short periods of extreme scarcity of food availability and access (Barrett & Sahn 2001). Such situations can be brought about by climatic shocks, natural disasters, economic crises or conflict. Experiences of transitory food insecurity may arise through smaller shocks at the household level (e.g. loss of income and crop failure). While not the normal state of affairs shocks can be severe and unpredictable.

Food insecurity has a third temporal feature. Seasonal or cyclical food insecurity may be evident when there is a recurring pattern of inadequate access to food such as prior to the harvest period (the 'hungry season') when household and national food supplies are scarce or the prices higher than during the initial post-harvest period (Devereux et al. 2008). It is generally considered to be more easily predicted than transitory food insecurity as it is a known and regular occurrence. Devereux (2006) suggests that because of its limited duration (2–3 months), it is better understood as a form of recurrent transitory food insecurity, which has important linkages to chronic food insecurity. During this seasonal period, poorer households may consume or sell their limited assets to acquire food in order to survive. The depletion of assets can result in a shift from a situation of food security to one of insecurity. For those already chronically food insecure this will worsen their situation (Devereux 2009) as the depletion of assets may make future experience of food insecurity more severe.

Except perhaps for seasonal food insecurity, which sometimes has a natural time frame, the other two definitions do not specify absolute time periods. This creates the fuzziness that prevents us from determining exactly when the transitory food insecurity ends and chronic food insecurity starts. As a means of resolving this dilemma Devereux (2006:5) suggests that rather than being distinct conceptual and empirical categories, 'they could be seen as lying at two ends of a continuum, with cyclical food insecurity in between'. But this seems to oversimplify the matter as a further problem persists in that the intensity dimension is not adequately captured in current definitions.

Understanding the intensity, rather than the duration, of food insecurity may be initially critical for correct targeting of the food insecure at the time of a shock with the most appropriate immediate intervention. A focus on intensity informs us of the magnitude of the food gap (usually measured in terms of energy intake), while a focus on the duration can tell us something about the nature of the causes and assists with long-term development planning. However, a focus on intensity is also required under normal conditions as this will tell us not only how severe the existing situation is, but what it might be like in the future if conditions gradually get worse or a shock is experienced.

Due to the gradual nature of chronic food insecurity, it is often referred to as moderate food insecurity and the implication is that it is less serious than transitory food insecurity (WFP 2005a). This suggests that less attention is likely to be given to situations that have been determined to be chronic in nature. As it results from a sudden shock, transitory food insecurity is often referred to as acute food insecurity, implying a greater food gap and greater severity (WFP 2005a; HSRC 2007).

Consequently, emergency relief measures tend to focus on the latter, while largely ignoring the former, to the further detriment of the poor (Prendiville 2003). This is despite the fact that a focus on the factors that cause gradual change in food security status might actually prevent shocks from resulting in extremely severe food insecurity. Devereux (2009) argues that the food crises in Malawi, Ethiopia and Niger, during this century, could have been prevented if attention had been paid to the gradual effect of stressors that brought about the situation prior to the shocks that triggered the crises.

The practice of considering transitory food insecurity to be more serious than chronic food insecurity is questionable. While both are associated with an inability to meet basic food consumption requirements, chronic has been linked to the persistent inability to do so and transitory only to a temporary inability (Devereux 2006). A further assumption is that transitory food security is a rapid change from a level of food security to one of food insecurity.

According to a recent World Food Programme definition (WFP 2004) 'transitory food insecurity affects households that are able to meet their minimum food needs at normal times, but are unable to do so after a shock.' More likely, being moderately chronically food insecure prior to a transitory or cyclical shock increases the risk of becoming severely food insecure. A subsequent WFP publication reports that: 'A large number of chronically food insecure households are affected by shocks' (WFP 2005b).

To clarify the lived experience of food insecurity, this state can be separated into four categories relating to the intensity and temporal dimensions. These range from long term moderate experiences to short-term severe emergencies requiring relief/humanitarian intervention, as shown in Figure 1. Such a separation corrects the perception that chronic implies moderate and transitory implies acute. Rather both chronic and transitory food insecurity can have moderate and severe intensities. The figure suggests why the usual practice of focusing on transitory food insecurity ignores those who experience severe chronic food insecurity. Without separating out the intensity dimension, chronic situations are considered moderate. Consequently, severe chronic situations may be seen as normal conditions and moderate transitory situations are understood as severe and seen as warranting emergency intervention (see

Prendiville's (2003) analysis of prevailing conditions in 2002 that saw the supply of food aid to Southern Africa but not to Somalia).

2.4. Conceptual framework of Disaster Risk and its management

As disaster is now already devastating or threatening to affect a large part of the world, there are tremendous researches and literatures probing into the issue to understand its essence, refine approaches and put up Disaster Risk Reduction (DRR) strategies. Over the years, several UN, international, regional and national entities have been working on risk identification, mapping, monitoring, data analysis and modelling to manage disaster risks. As a result, available information on methodologies, tools, approaches and definitions have emerged and expanded rapidly that the growing volume of data is ironically posing challenges against organizing systematic, coherent and meaningful information.

Hence, for better understanding of DRR, this section attempts to deal with the conceptual and theoretical frames of reference, albeit synoptically, that has guided the research. Preferably, looking into empirical data on the perception of communities and the disaster risk reduction measures they take to improve their livelihoods under different contexts would have furnished more reliable information to the study. Indeed, the stubborn recurrence of disasters and the urge to formulate viable risk reduction strategies in the Republic of South Sudan necessitates the need to probe deeper into community lives and livelihoods and decouple the issue. This could have helped us fetch plausible responses to questions like what does disaster or disaster risk reduction mean in the South Sudan/community context? What are its peculiar characteristics? Is disaster a temporary collapse of livelihoods or chronic short fall of food? Does it really have peculiar characteristic that one needs to decipher? What are the coping mechanisms and when and why are they employed?

As we can see, DRR is composed of three separate terms-Disaster, Risk and Reduction. Each of these concepts has their own conceptual complexities and implications. Each of them are, in turn, defined and understood in various ways at different contexts. Defining and understanding the implication of these words when combined as DRR is even more intimidating.

2.4.1. Disaster Risk Formula and Related Definitions

Risk is defined differently by people in different situations. Risk as understood by a politician is different from risk to a seismologist, or to an insurance company executive, or to a family living in an earthquake zone. Risk is also different to local and national governments involved with disaster management. In this text we will consider the point

of view of these local and national public policy authorities who make decisions for the well-being of the community.

For these policy makers, the *community elements at risk* include its structures, services, economic and social activities such as agriculture, commercial and service businesses, religious and professional associations and people. *Risk* is the expected losses to a community when a hazard event occurs, including lives lost, persons injured, property damaged and economic activities or livelihoods disrupted.

Although disaster risk is sometimes taken as synonymous with hazard, it has an additional implication of likelihood of a particular hazard to occur and cause damage or loss to a vulnerable community or group. The relationship of these elements can be expressed as a simple mathematical formula which illustrates the concept that the greater the potential occurrence of a hazard and the more vulnerable a population, then the greater the risk. (Ward, 1999):

$$\text{Disaster Risk} = \frac{\text{Hazard} \times \text{Vulnerability}}{\text{Manageability/Capacity}}$$

Manageability here stands for the degree to which a community can intervene and manage a hazard in order to reduce its potential impact. This implies that based on people's perception of their disaster risk, they are able to make decisions to adapt to, modify or ignore the risk. Manageability is in a way synonymous to capacity in this context that we can substitute it whenever appropriate.

The concepts of vulnerability, hazard, and risk are dynamically related. Community risk depends on the probability of occurrence and the magnitude of a hazard event, and how the particular hazard connects with the community's vulnerability.

According to definitions prompted by the UN/ISDR Secretariat (UN/ISDR 2002), the key terms are defined as follows:

Hazard: a potentially damaging physical event, phenomenon or human activity which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.

Vulnerability: a set of conditions and processes resulting from physical, social, economic and environmental factors, which increase the susceptibility of a community to the impact of hazards.

Disaster: a serious disruption of the functioning of a community or society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community/society to cope using its own resources.

2.4.2. DRR: Definitions and Model

While the availability of studies through governments, regional bodies, international organizations and NGOs is an opportunity to expand and deepen our understanding into the subject, it in a way is also posing a challenge in terms of selecting the best fit to particular and peculiar situations. We are witnessing from the present practices of Disaster Management (DM) in South Sudan that the temptation and haste to pick and apply any available model is not providing a sustainable solution towards reducing disasters. The persistence, and in many cases aggravation of disasters, calls for the need for a cautious reflection and understanding of concepts before setting out towards applications or uncritical adoption of models for implementation. Thus, for the sake of setting the conceptual scene, some competing definitions on DRR are provided below.

UNDP's 2004 Global Report defines DRR as: "The systematic development and application of policies, strategies and practices to minimize vulnerabilities, hazards and the unfolding of disaster impacts throughout a society, in the broad context of sustainable development." (UNDP, 2004).

International Institute for Rural Reconstruction on its part describes DRR as "... measures to curb disaster losses, through minimizing the hazard, reducing exposure and susceptibility and enhancing coping and adaptive capacity. Good disaster risk reduction also continues after a disaster, building resilience to future hazards." (IIRR, 2006).

Still others understand the term as activities that include projects and programs that communities may identify after assessing and analyzing the risks they face. These measures are specifically intended to reduce the current and prevent future risks in the community (ADPC, 2004).

The broad strokes of these definitions revolve around minimizing the effects of hazards, reducing vulnerabilities/risks and invoking sustainable development. However, the emphases and shades in each of the definitions differ. The first one capitalizes on policies, strategies and practices to facilitate DRR while the second definition focuses on measures to curb disaster losses and enhancing resilience and adaptive strategies. Unlike the first two, the third refers to risks, assessments and community participations.

The other grey area in the DRR realm is its relationship with the idea and practice of 'development'. Until recently the connection between disaster and development was not recognized or, at best, remained quite hazy. Disasters were only viewed as phenomena related to emergency response and not as providing an opportunity to promote or catalyze development. That was partly why 'development organizations' often tried to avoid becoming involved in disaster management. But, the unfolding of some unsettling facts during emergency responses prompted questions like, why do countries on the road to development suddenly lose momentum when afflicted with disasters? Why do development programs had to compete with reconstruction plans for available funds? Why doesn't efficient emergency response prevent disasters once and for all? And demanded solutions.

At first it was assumed that the answer is found in just supplying quick and abundant relief aid to disaster victims. However, the annual appropriations continued to rise rather than decreasing. Yet material losses and numbers of people affected continued to mount. This was because, as research findings confirmed, relief provision was made without looking at the root causes of poverty and vulnerability. The basic problem was the conceptual failure by government and aid agencies to appreciate the link between vulnerability, disaster and development. Inability to understand the concept of disaster risks and taking them as separate events requiring a rapid response proved entirely inaccurate and at times led to counterproductive results.

It is now an established fact that recognizing poverty as the primary root of vulnerability and disaster is the first step toward developing an understanding of the need for change in current response practices. If the magnitude of disasters is an outgrowth of poverty it would just be unrealistic to expect to reduce the impact with mere provision of food, blankets, tents, and the traditional forms of assistance. Neither is it possible to reduce disasters through ill studied and token 'development' works.

Poor people suffer greater losses from disaster, become poorer and more vulnerable, and therefore are at an even greater risk of another disaster. They are vulnerable in a more complete sense because they don't have the wherewithal to resist. Poverty, vulnerability and disaster are tied in reciprocal relationship. Reducing the vulnerability of the poor would thus become a development question.

Recent international debates on the issue have concluded that sustainable development will remain out of reach as long as disaster prevention and risk reduction continue to be ignored by development planners. We must take on the question of how to reduce poverty and place disaster response in the context of development if we hope to reduce suffering and make a true contribution to recovery.

DRR should therefore be linked to development and promote livelihood patterns, strengthen resilience of communities, structures and opportunities to empower disaster-prone communities and cope with hazard shocks as well as macro-economic collapse/down-turns. (CBRM, ADSaM and Oxfam GB, 2006).

The following two but related 'The Enhanced Pressure/Release Models presented by Marcus Oxley, Director of Disaster Management, Tear Fund UK (Jan. 2005), are among several varieties that attempt to capture the conceptual framework of DRR and help to understand Integrated disaster management. For this, the first framework/model show how the progression of vulnerability leads to a crises while the flip side demonstrate how positive changes in climate and various preparedness initiatives help build resilience against disaster risks.

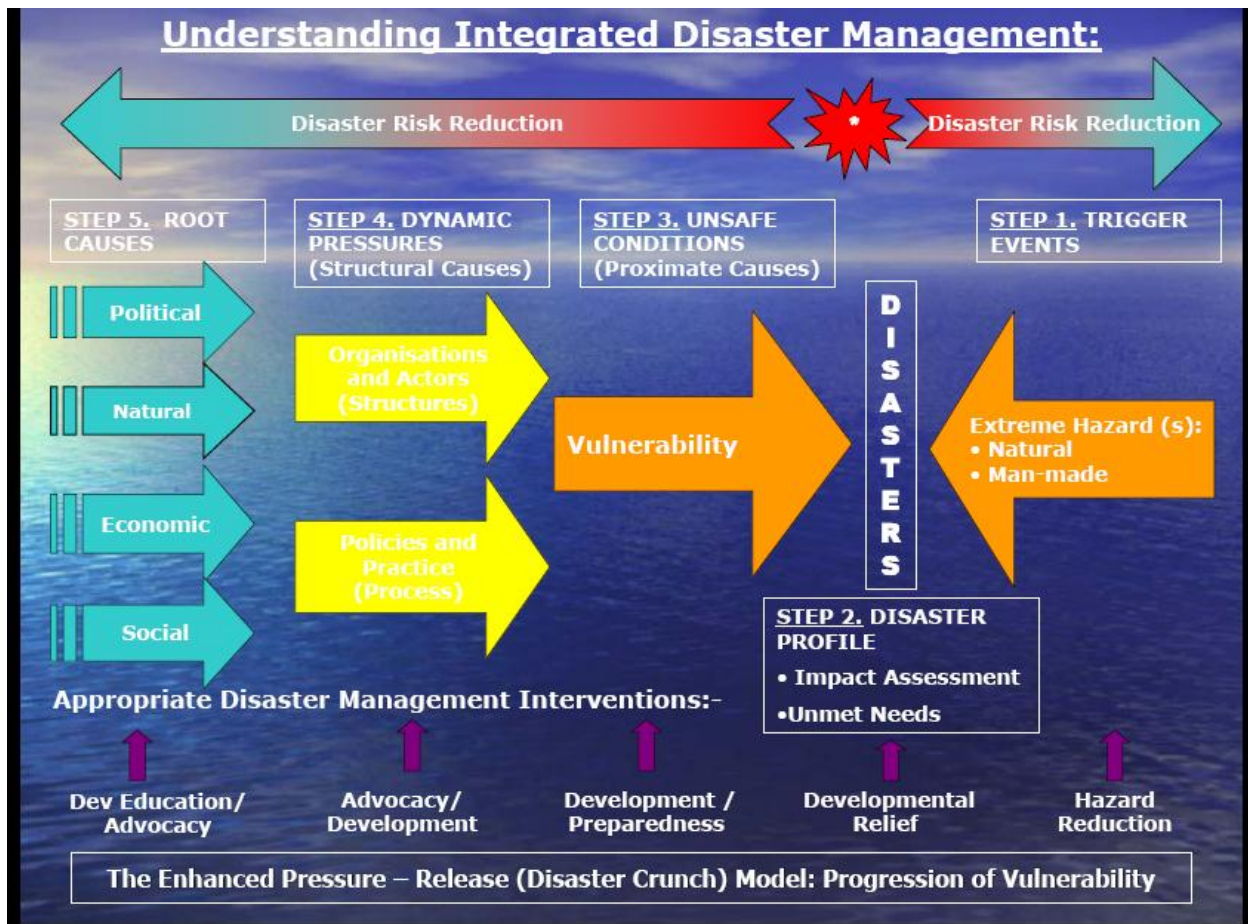


Figure 3: Understanding Integrated Disaster Management - The Enhanced Pressure - Release Model

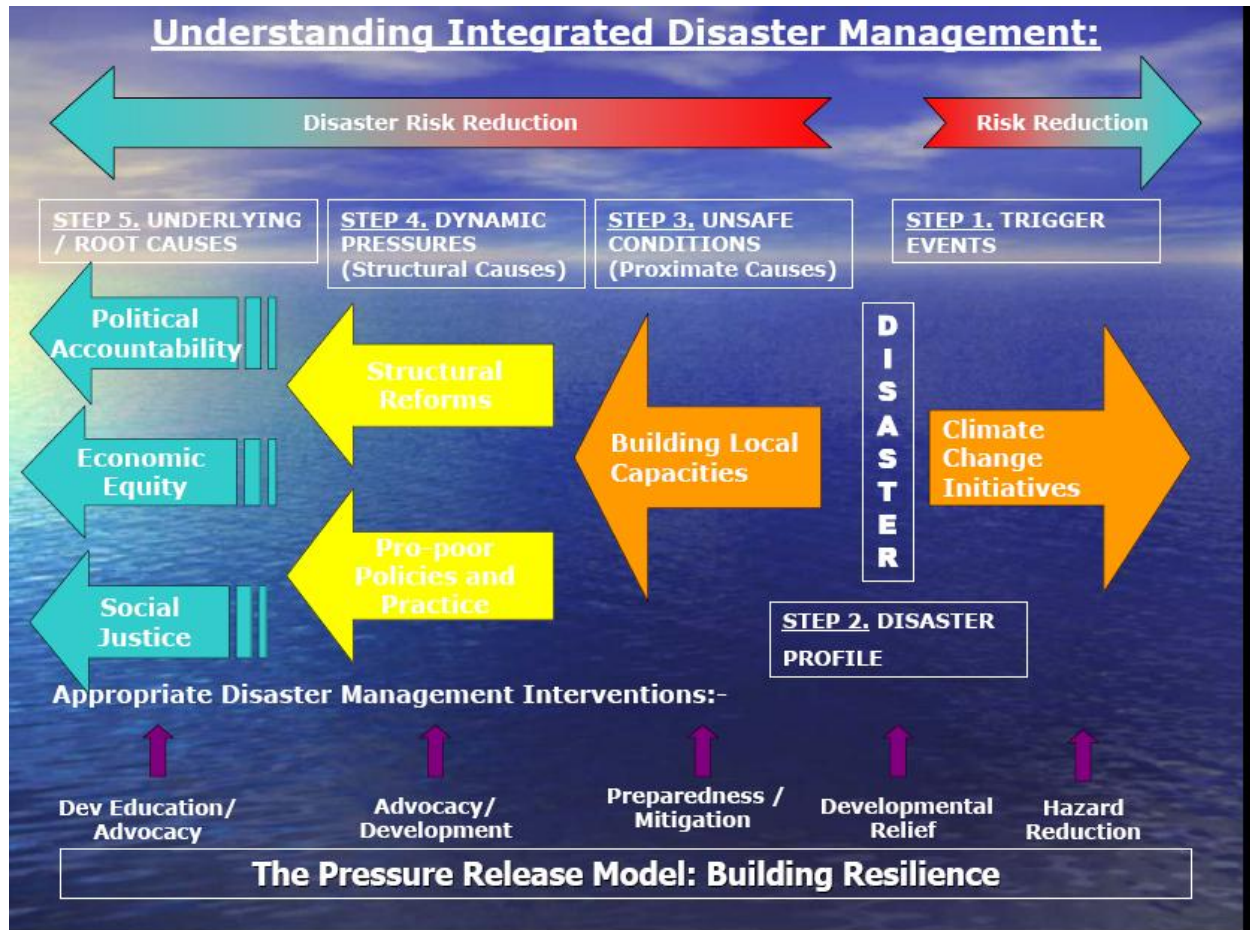


Figure 4: Understanding Integrated Disaster Management - The Pressure Release Model

In brief, the first model shows that when enhanced pressure or progression of vulnerability meets with extreme hazard phenomena it leads to disasters. As we can observe in the model, the interface between the political, natural, economic and social root causes leading to structural weakness in the form of inappropriate institutional arrangements, policies and practices leads to vulnerability or unsafe conditions. In such settings, the occurrence of extreme hazard conditions or events will, more often than not, induce to disasters.

On the other hand, the second Pressure Release/Building Resilience model demonstrates that if local capacities are enhanced, structural reforms and pro-poor policies and practices are in place coupled with political accountability, economic equity and social justice, potential risks leading to disasters could be averted or contained even if the phenomena continues to exist.

2.4.3. DRR and Development: The Link

According to the Ethiopian Disaster Risk Reduction Policy Paper (2008), the increasing number and intensity of disasters is testing the will of people and countries across the globe. It has been time and again witnessed that natural disasters result in loss of lives, serious economic damage and severe impacts on the social conditions. Even so, DRR have received little considerations in development policies, especially policies towards alleviating poverty. Of late though, the challenges of coping with disaster risks and the need to integrate DRR into poverty reduction and sustainable development planning have started to earn more attention.

The policy paper also clearly indicates that at the national level, mainstreaming disaster risk reduction with development is a key factor that deserves serious consideration. It is only reasonable that the frequency with which some countries like South Sudan experience disasters triggered by various vulnerability factors should certainly place DRR at the forefront of development planners' minds. In this, planning should differentiate between two types of disaster risk reduction. The first dimension should refer to what is called *Prospective Disaster Risk Reduction Management*. If DRR is to be successful, this phase should be understood and integrated into sustainable development planning. Development programs and projects need to review for the potential to reduce or aggravate vulnerability and hazard.

The second but equally important aspect is what is referred to as the *Compensatory Disaster Risk Reduction Management* (such as disaster preparedness and response) which stands alongside development planning and is focused on the amelioration of existing vulnerability and reduction of natural hazard that has accumulated through past development pathways. Compensatory policy is necessary to reduce contemporary risk, but prospective policy is required for medium-to long-term disaster risk reduction.

However, it is worthwhile to note that bringing about development is fraught with problems and dilemmas. There are many examples that show the drive for economic growth and social improvement generating new disaster risks. For instance, rural livelihoods are put at risk by the local impacts of global climate change or environmental degradation and undermining of the coping capacity by the need to compete in a global economy, which at present rewards productive specializations and intensifications over diversity and sustainability (DRR:UNDP, 2004).

Several variables, particularly in urbanization and rural livelihoods, are also enmeshed with disaster risk reduction and development. A host of important development pressures and critical dynamics like violence and armed conflict, the changing epidemiology of diseases like HIV/AIDS, governance and social capital are factors that play a part in the development DRR equation.

The disaster reduction-development linkage theory states that disasters could create positive options for development if concerted efforts are made to prevent them before becoming disastrous. This thinking is based on the understanding that disasters are linked with development in two ways. First, hazard turns into disasters where there is low level physical and social development. Second, development of such infrastructures can itself be causes of disasters unless otherwise it is preceded by disaster risk assessment profiles and robust preparedness.

Further, good/democratic governance remains an important factor in DRR and the vice versa. To achieve a safer world for the poor and excluded people, disaster reduction must be underpinned by people centred governance. Governance that denies local communities empowerment and their traditional rights or access to resources (natural or otherwise) will ultimately result in alienating them. This is undesirable for it, more often than not, leads communities to abandon their responsibilities for ecological management and paves the way for environmental degradation-a recipe for further disaster.

Therefore, effective disaster risk reduction interventions will hold results when the community in general and people at risk in particular directly participate and add their ideas, interests, and options in the envisaged DRR planning process. That is why it is often stressed that the foundation of successful disaster risk reduction is community-based disaster management. While the community undertakes the broad range of disaster management activities, including emergency response as necessary, the emphasis will logically be on reducing disaster risks and vulnerabilities.

In order to ensure that vulnerable people participate in accountability and decision making process, one needs to clearly identify main groups within the community. These groups can be divided by Identity (religion etc...), Ability (economic and physical status...), Gender and Generation (children, middle aged, elderliness...). This differential will enable to draw ideas representing every segment of the community.

2.5. The Sustainable Livelihoods Framework (SLF)

The Sustainable Livelihoods Framework (SLF) forms the core of the Sustainable Livelihoods Approach and serves as an instrument for the investigation of poor people's livelihoods, whilst visualising the main factors of influence. Like all models, the SLF is a

simplification and does not represent the full diversity and richness of livelihoods, which can only be understood by qualitative and participatory analysis at the local level.

In its simplest form, the framework depicts stakeholders as operating in a **Context of Vulnerability**, within which they have access to certain **Assets**. These gain their meaning and value through the prevailing social, institutional and organizational environment (**Transforming Structures and Processes**). This context decisively influences the **Livelihood Strategies** that are open to people in pursuit of their self-defined beneficial **Livelihood Outcomes** (see Figure below).

In other words, the framework provides a checklist of important issues and sketches out the way these link to each other, while it draws special attention to core influences and processes and their multiple interactions in association to livelihoods.

In the following, the core ideas represented in the SLF are explained and defined in the way they should be understood in this context.

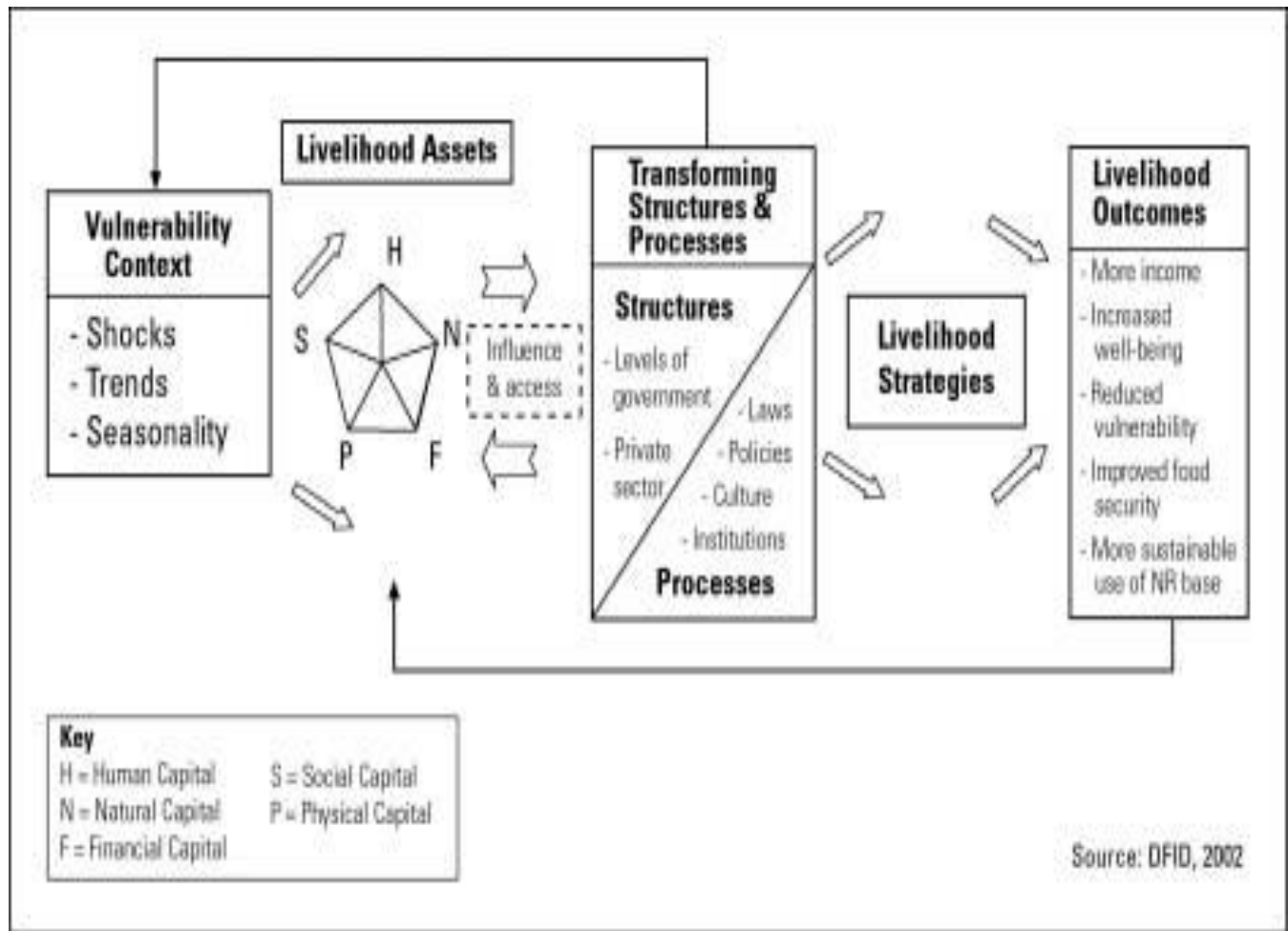


Figure 5: The Sustainable Livelihoods Framework (SLF)

2.5.1. Vulnerability Context

The Vulnerability Context forms the external environment in which people exist and gain importance through direct impacts upon people's asset status (Devereux, 2001). It comprises **Trends** (i.e. demographic trends; resource trends; trends in governance), **Shocks** (i.e. human, livestock or crop health shocks; natural hazards, like floods or earthquakes; economic shocks; conflicts in form of national or international wars) and **Seasonality** (i.e. seasonality of prices, products or employment opportunities) and represents the part of the framework that lies furthest outside stakeholder's control.

Not all trends and seasonality must be considered as negative; they can move in favorable directions, too. Trends in new technologies or seasonality of prices could be used as opportunities to secure livelihoods.

2.5.2. Livelihood Assets

The livelihoods approach is concerned first and foremost with people. So an accurate and realistic understanding of people's strengths (here called "assets" or "capital") is crucial to analyse how they endeavor to convert their assets into positive livelihood outcomes (Bebbington, 1999). People require a range of assets to achieve their self-defined goals, whereas no single capital endowment is sufficient to yield the desired outcomes on its own. Since the importance of the single categories varies in association to the local context, the asset pentagon (see Figure 2) offers a tool to visualize these settings and to demonstrate dynamical changes over time through constantly shifting shapes of the pentagon.

Assets are of special interest for empirical research in order to ascertain, if those, who were able to escape from poverty, started off with a particular combination of capital, and if such a combination would be transferable to other livelihood settings. Furthermore, it would be interesting to evaluate the potential for substitution between different capitals, for instance a replacement of a lack of financial capital – as is often the case in the reality of poor stakeholders – through a better endowment with social capital.

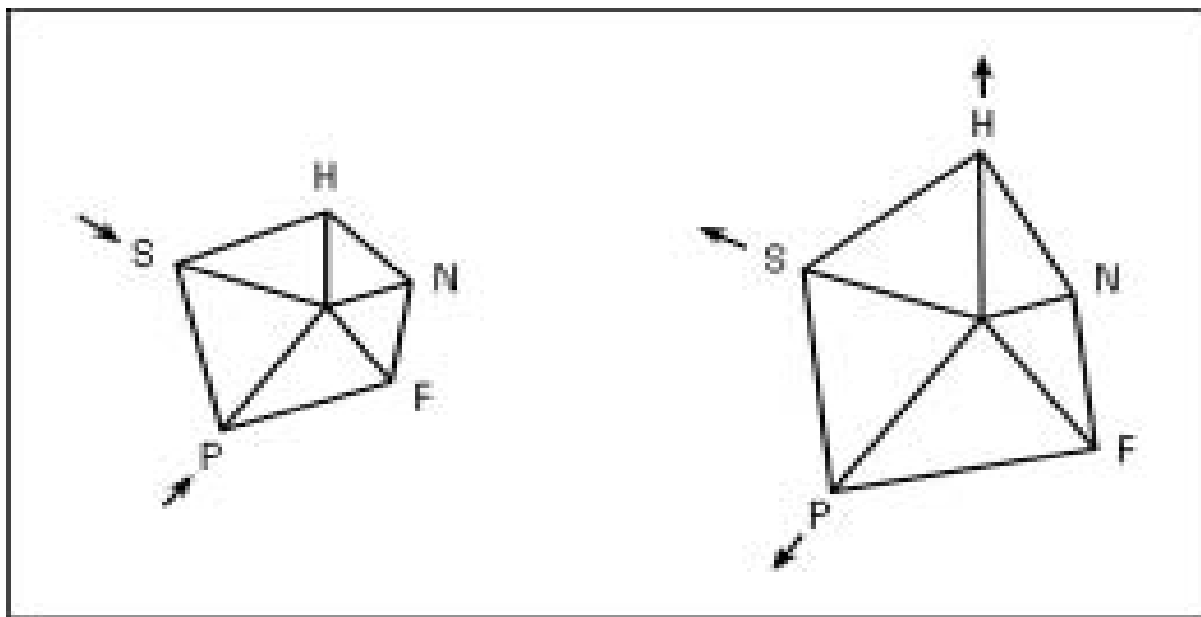


Figure 6: Different Shaped Asset Pentagons and changes in access to assets

2.5.2.1. Human Capital

In the field of development studies, "human capital" is a very wide used term with various meanings. However, in the context of the SLF it is defined as follows: "Human capital represents the **skills, knowledge, ability to labour** and **good health** that together enable people to pursue different livelihood strategies and achieve their

livelihood objectives" (DFID, 2000). At the household level it varies according to household size, skill levels, leadership potential, health status, etc. and appears to be a decisive factor - besides being intrinsically valuable - in order to make use of any other type of assets. Therefore, changes in human capital have to be seen not only as isolated effects, but as well as a supportive factor for the other assets.

Since an exact measurement of the diverse indicators of human capital causes difficulties at the local level (i.e. how to assess indigenous knowledge appropriately), it may be sometimes more suitable to investigate variations and their reasons.

2.5.2.2. Social Capital

There is much debate about what exactly is meant by the term "social capital" and the aspects it comprises. In the context of the SLA it is taken to mean the social resources upon which people draw in seeking for their livelihood outcomes, such **as networks and connectedness**, that increase people's trust and ability to cooperate or **membership in more formalised groups** and their systems of rules, norms and sanctions.

Quite often access and amount of social capital is determined through birth, age, gender or caste and may even differ within a household. Obviously and often parallel to positive impacts social capital also may cause effects, which are restrictive for development. For instance the membership in groups always entails excluding other stakeholders; or the social affiliation to a certain caste may be positive or negative depending on the person's hierarchical position within the system. Still, it is important through its direct impact on other capitals, by improving the efficiency of economic relations or by reducing the 'free rider' problems associated to public goods through the mutual trust and obligations it poses onto the community. And for the most deprived, social capital often represents a place of refuge in mitigating the effects of shocks or lacks in other capitals through informal networks.

2.5.2.3. Natural Capital

Natural capital is the term used for the **natural resource stocks** from which **resource flows and services** (such as land, water, forests, air quality, erosion protection, biodiversity degree and rate of change, etc.) useful for livelihoods are derived. It is of special importance for those who derive all or part of their livelihoods from natural resource-based activities, as it is often the case for the poor stakeholders, but also in more general terms, since a good air and water quality represents a basis for good health and other aspects of a livelihood. Within the framework a particularly close relationship exists between natural capital and the vulnerability context and many of the devastating shocks for the livelihoods are natural processes that destroy natural capital (e.g. fires, floods, earthquakes).

2.5.2.4. Physical Capital

Physical capital comprises the **basic infrastructure and producer goods** needed to support livelihoods, such as affordable transport, secure shelter and buildings, adequate water supply and sanitation, clean, affordable energy and access to information. Its influence on the sustainability of a livelihood system is best fit for representation through the notion of opportunity costs or 'trade-offs', as a poor infrastructure can preclude education, access to health services and income generation. For example, without irrigation facilities long periods are spent in non-productive activities, such as the collection of water – needing extra labour force that could be of use somewhere (or would be a time resource to go to school). Since infrastructure can be very expensive, not only its physical presence is important, but as well the pricing and secure disposition for the poorest groups of society must be considered.

2.5.2.5. Financial Capital

“Financial capital” denotes the financial resources that people use to achieve their livelihood objectives and it comprises the important availability of cash or equivalent, that enables people to adopt different livelihood strategies. Two main sources of financial capital can be identified:

- ! **Available stocks** comprising cash, bank deposits or liquid assets such as livestock and jewelry, not having liabilities attached and usually independent on third parties.
- ! **Regular inflows of money** comprising labor income, pensions, or other transfers from the state, and remittances, which are mostly dependent on others and need to be reliable.

Among the five categories of assets financial capital is probably the most versatile as it can be converted into other types of capital or it can be used for direct achievement of livelihood outcomes (e.g. purchasing of food to reduce food insecurity). However, it tends to be the asset the least available for the poor, what makes other capitals important as substitutes.

2.5.3. Transforming Structures and Processes

Transforming Structures and Processes represent **the institutions, organisations, policies and legislation** that shape livelihoods. They are of central importance as they operate at all levels (see chapter 1.1) and effectively determine access, terms of exchange between different types of capital, and returns to any given livelihood strategy (Shankland, 2000; Keeley, 2001).

Structures can be described as the hardware (private and public organisations) "that set and implement policy and legislation, deliver services, purchase, trade and perform all manner of other functions that affect livelihoods" (DFID, 2000). An absence of well working structures often constitutes an obstacle to sustainable development and makes simple asset creation difficult in case of adverse structures impeding access to apply a certain livelihood strategy. In contrast to other approaches, where scarcity and underdevelopment was thought to be a problem of people not having enough due to lacking capital endowments, the SLA analyses it as a problem of access and the possibility to control the available resources, that are often sufficiently at disposition (compare Sen, 1981).

Complementary to structures, **processes** constitute the "software" determining the way in which structures and individuals operate and interact. There are many types of overlapping and conflicting processes operating at a variety of levels – and like software, they are crucial and complex!. Important processes for livelihoods are for instance policies, legislation and institutions, but also culture and power relations. They may serve as incentives for people to make choices, they may be responsible for access to assets or they may enable stakeholders to transform and substitute one type of asset through another.

Transforming structures and processes occupy a central position in the framework and directly feedback to the vulnerability context, while influencing and determining ecological or economic trends through political structures, while mitigating or enforcing effects of shocks or keeping seasonality under control through working market structures; or they can restrict people's choice of livelihood strategies (e.g. caste system) and may thus be a direct impact on livelihood outcomes.

2.5.4. Livelihood Strategies

Livelihood Strategies comprise the **range and combination of activities and choices that people undertake in order to achieve their livelihood goals**. They have to be understood as a dynamic process (see 1.1) in which people combine activities to meet their various needs at different times and on different geographical or economical levels, whereas they may even differ within a household. Their direct dependence on asset status and transforming structures and processes becomes clear through the position they occupy within the framework. A changing asset status may further or hinder other strategies depending on the policies and institutions at work.

When considering livelihood strategies and issues connected to the SLA in general it is important to recognize that people compete (for jobs, markets, natural resources, etc.), which makes it difficult for everyone to achieve simultaneous improvements in their livelihoods. The poor are themselves a very heterogeneous group, placing different priorities in a finite and therefore highly disputed environment. Compromises are often indispensable. An application of the SLA offers the advantage to be sensitive for such issues in a differentiated manner.

2.5.5. Livelihood Outcomes

Livelihood outcomes are the achievements of livelihood strategies, such as **more income** (e.g. cash), **increased well-being** (e.g. non material goods, like self-esteem, health status, access to services, sense of inclusion), **reduced vulnerability** (e.g. better resilience through increase in asset status), **improved food security** (e.g. increase in financial capital in order to buy food) and a **more sustainable use of natural resources** (e.g. appropriate property rights). Outcomes help us to understand the 'output' of the current configuration of factors within the livelihood framework; they demonstrate what motivates stakeholders to act as they do and what their priorities are. They might give us an idea of how people are likely to respond to new opportunities and which performance indicators should be used to assess support activity. Livelihood Outcomes directly influence the assets and change dynamically their level - the form of the pentagon-, offering a new starting point for other strategies and outcomes.

2.5.6. Applications and Restrictions of the Sustainable Livelihoods Approach

The potential for applications of the SLA are manifold and not restricted to livelihood thinking only, as the approach includes ideas of other recent theoretical approaches. Its flexible design and openness to changes makes it adaptable to diverse local settings, where it can be applied to different extents associated to the development research or project objectives.

Prior to any development activity the SLA might serve as an analytical tool for the identification of development priorities and new activities in order to understand the way a socially constructed environment works and to find potential beneficiaries or partners in practice. A study made by Ellis (2000) in three Tanzanian villages stresses the importance of a detailed livelihood analysis for successful development cooperation: In a region commonly known as famous for its coffee production, a detailed livelihood analysis was successful to demonstrate that coffee production contributed to the household income only with 1% - a striking fact that might have been overlooked without a detailed livelihood analysis. A similar result was yielded by Calow (2001), who analysed water supply systems in Ethiopia, for which conventional inquiries highlighted scarcity in water availability as the most hindering factor. Carlow used a broader

perspective in order to find out which stakeholders have access, how much water they use and how these factor changes associated to household and region.

Further the SLA might be applied in the form of a livelihood analysis to assess how development activities 'fit' with the livelihoods of the poor, whilst the SLF might be of use as a checklist or means of structuring ideas. Ashley (2000) explored in Namibia and Kenya how rural livelihoods affect and is affected by natural resource management initiatives and what this implies for these programs. As lessons to learn, she mentioned for instance the potential of SLA for the reshaping of a programme to enhance the 'fit' with livelihoods, for impact assessment and as a focus for participatory planning with communities.

Within projects or programmes SLA can be used to sharpen the focus of monitoring and evaluation systems, as it was done by Nicol (2000), who adopted SLA to water projects in order to analyse, monitor and evaluate their efficiency. Similarly Gibbon (1999) tried to use the approach in order to refocus existing projects to better address poverty elimination applied to the Nepal-UK Community Forestry Project.

The uses of the SLA are diverse and flexibly adaptable to many settings, but it does not represent a magic tool being able to eliminate problems of poverty with a single sign, nor is it a complete new idea that will be revolutionary for development research and cooperation. Still, the SLF delivers a good tool to structure development research and increase efficiency of development projects.

Rooted within the strengths of the approach quite often its weaknesses can be found too: On the one hand a differentiated livelihood analysis requires enormous financial, time and personal resources often lacking in practical projects. Moreover, the claim to be holistic leads to a consideration of very many aspects, what inevitably delivers a flood of information hardly possible to cope with. The decision about what to consider with priority leads us to a normative dilemma.

Further problems may arise with the analysis of the livelihood assets, as for example the difficulties to measure and to compare social capital. Additionally, the asset status of a person is highly associated with the amount of dependence from a certain resource, varying according to the local context, as for instance some actors might be able to satisfy their needs with a low level of financial capital, whereas others with more financial capital show by far less ability to do so.

In order to learn more about the strengths and weaknesses of the approach, IP6 of the NCCR is applying it in a number of studies. IP6 is also interested to receive feedback from other researchers on this subject.

2.6. Core food security indicators

Specific indicators are used to assess food availability, food access and food utilisation – the three pillars of food security – as well as livelihoods assets and strategies, the vulnerability context and institutional and policy environment – the basic elements of the Livelihoods Analytic Framework. Different types of indicators each contribute different information about the overall food and livelihood security picture. A single indicator or several indicators of a single type (e.g. food availability) is akin to having only one piece of the puzzle. At best one has only a partial picture. For example, knowing that there is plenty of food available says little about food accessibility or utilisation. The more pieces of the puzzles that are put together the more clearly one can identify the complete picture.¹

Essential indicators to be included in all food security and livelihoods assessment and studies are listed in the table below. This core set of indicators is considered to represent the minimum package to be applied across all contexts and assessment types without which the basic FSL analysis will be incomplete. Meanwhile methods for gathering information on each indicator will vary according to the context, assessment timeframe and depth of analysis that is required. A much larger dynamic range of indicators exists for assessing the many dimensions of a population's food insecurity and risks to livelihoods.

¹ ACF food security and livelihoods assessment guideline

Table 2: Core food security and livelihoods indicators

	Indicator	description
Livelihoods	1. Institutional and policy environment	Socio-political context, past crises and conflict, ethnicity, social organization
	2. Vulnerability context	Climate; geography; physical infrastructure; Hazards
	3. Livelihood assets	Access to capitals; land tenure, fishery and pasture access arrangements
Availability	4. Food stocks	Sufficiency and diversity of food products in markets and households
	5. Food imports	Origin, diversity and availability of food in markets
	6. Market prices	Prices of staple food and basic commodities; variation and trends
Access	7. Food sources	Diversity and seasonality of food sources; changes
	8. Income sources	Diversity and seasonality of income sources; labour migration; debt; changes
	9. Coping strategies	Range of food consumption strategies (adaptive, coping, crisis, survival)
Utilization	10. Dietary diversity	Diversity of foods consumed over a 24 hour period; meal frequency
	11. Malnutrition prevalence	GAM/SAM rates, MUAC screenings, aggravating factors and contextual elements
	12. Water access & availability	Sources, quality, quantity and cost of water
	13. Public health	Incidence and severity of outbreaks; changes in access to health care
	14. Care practices	Prevalence of and changes in breastfeeding; food-sharing practices

A brief description of the most common food availability, access, utilization and livelihoods indicators follows.

2.6.1. Food availability indicators

Food production, reserves, stocks, imports and exports along with resources necessary for production, such as field and pasture conditions, and opportunities for gathering wild foods provide information about the quantity and quality of the food supply. The

existence of well-functioning market systems from the international to the local level also influences the food supply and therefore food availability. Food availability indicators are useful for assessing population level food security status.

2.6.2. Food access indicators

Potential and actual income, expenditures, loan and remittance mechanisms as well as trade and market systems provide information about the way food is obtained. Market factors, the price of food and purchasing power related to employment and livelihood opportunities influence the ability to obtain food. In addition, coping strategies can be an important mechanism to meet food needs. Food access indicators are useful for assessing household or individual level food security status.

2.6.3. Food utilization indicators

Food consumption, sanitation conditions, and nutritional status, morbidity and mortality provide information about the use of food within the household. Behaviors such as intra-household food distribution, infant and young child feeding practices, food storage and preparation provide information about food utilization. Food utilization indicators are useful for assessing household or individual level food security status.

2.6.4. Livelihood indicators

Household assets, sources of income and livelihoods, diversification of income and livelihoods, expenditure and expenditure ratios provide information about livelihoods. Livelihood indicators often provide information about food access and are closely linked to coping strategies.

CHAPTER THREE

3. Research Methodology

3.1. Description of the study area

Pibor Payam is located in Pibor County, Jonglei State, in eastern South Sudan, near the border with Ethiopia. It lies approximately 342 kilometres, by road, northeast of Juba, the capital and largest city of the country. Pibor town which is located adjacent to Pibor Payam serves as the headquarters of Pibor County, one of the constituent counties of Jonglei State. The Pibor River, formed by the confluence of several smaller streams, begins its journey at Pibor. The river then flows north, receiving the Akobo River near Akobo. Eventually, after receiving the Gillo River and the Bela River, it joins the Baro River to form the Sobat River.

A major gravel road leads north to Akobo at the border with Ethiopia. Another major gravel road leads southwest out of Pibor to the town of Bor, the capital of Jonglei State. The town is also served by Pibor Airport. As of July 2011, it is estimated that the population of Pibor Post is 1,000 people or fewer. Boma National Park, which is the largest national park in South Sudan, lies about 65 kilometres by road east of Pibor Post.

The study was conducted in Pibor Payam of Pibor County in Jonglei State, Republic of South Sudan. Pibor County is one of the 11 counties of Jonglei State and is situated in the Southern part of the state bordering Central Equatoria in the south and Easter Equatoria at the East. Pibor further shares borders with Akobo County to the East, Pochalla County to the North East, Urol County to the east, and Duk, Twic East and Bor County to the West.

Pibor has a surface area of 50,000 km² and has an estimated population of approximately 80,000 people, most of who is Murle with few members of Jie and Kachipo tribes. The main economic activity is cattle rearing followed by crop production.

3.2. Administrative Structure

Republic of South Sudan is administratively divided into 10 states. The states are further divided into Counties and each County is divided into Payams and Payams are further divided into Bomas and each Boma Constitutes villages. The county is headed by the County Commissioner who is assisted by administrators, chiefs, executive chiefs,

sub-chiefs and headmen. Pibor County is composed of 5 Payams: Pibor, Gumuruk, Lekuangole, Verteit, and Buma Payams.

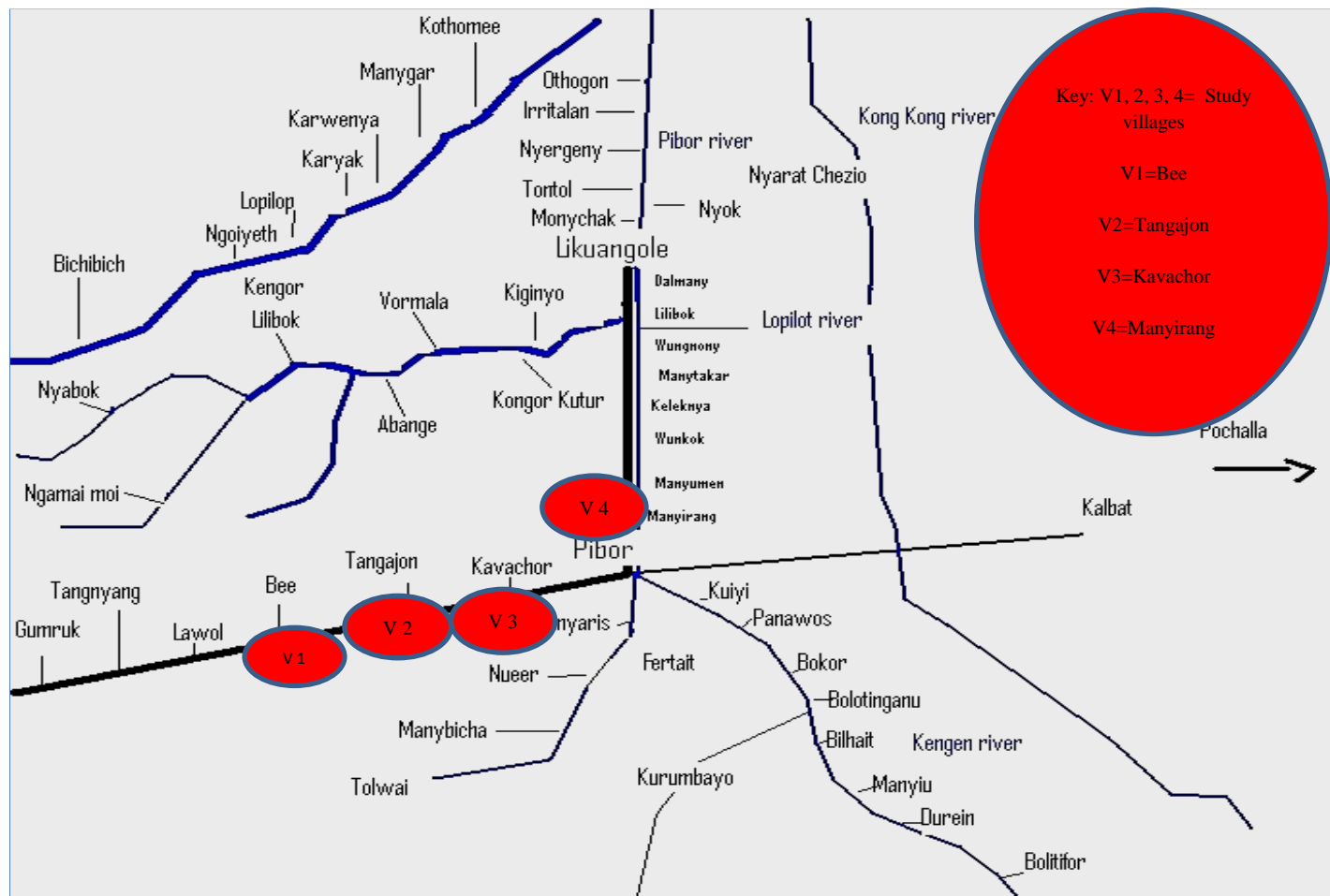


Figure 7: Map of Pibor County and selected study villages

3.3. Method of data collection and tools

The research used both qualitative and quantitative methods and also both primary and secondary data. In generating the primary data, structured questionnaires, focus group discussions and key informants interviews were employed as tools. The secondary data was gathered from a desk review of different relevant literature, internet sites and different organizations' documents.

Stratified sampling procedure was adopted for selection of study villages. In the first stage, two out of five Bomas in Pibor Payam were randomly selected, namely Gogolthin and Tangajon Bomas. In the second stage, from selected study Bomas, 4 villages were randomly selected namely, Manyirang and Kavachor villages in Gogolthin Boma and Tangajon and Bee Villages in Tangajon Boma. In the third stage, 10 per cent of the

households from each study village that is a total of 82 households (18 HHs from Tangajong village, 21 HHs from Bee village, 23 HHs from Kavachor village and 20 households from Manyirang village) were randomly selected. Although data was collected from various groups of respondents including the local administration, elders, women and youth, village population formed the most important source of information.

A County is equivalent to a district or zone which is managed by a county commissioner; Payam is equivalent to Sub – County (Woreda), managed by a Payam Administrator; Boma corresponds to Sub – Payam (Sub Woreda) managed by Boma Chief or Boma administrator. The Bomas are composed of a number of villages, the smallest unit of local government. Villages can best be regarded as a neighbourhood, a localized and delimited group of people or ward (Wikipedia: Village). Village in this context is defined as sub division of Boma administration that is equivalent to the peasant association.

A combination of both primary and secondary data sources were used for the study. In any type of study, it is advisable to assess the availability of secondary data before embarking upon the collection of primary data. Secondary data related to impacts of natural and human induced disasters on food security of the community was collected from various reports and publication, thesis paper, online and electronic data bases and reports of various organizations. The methods employed for primary data collection were household surveys, key informant interviews (formal and informal), observation method and focus group discussion.

Ten percent of the households were randomly selected from the list of residents of each selected village which were obtained from the respective Bomas. The main criteria for selection of sample respondents were that they were residents of these villages, age and gender. The total sample size was 82. The household was considered as a unit of analysis because disaster risk and food security were the concerns of the entire household.

In order to achieve the objectives of the study, a pre-tested semi-structured questionnaire was administered to the sample households. The survey questions were carefully designed and oriented to the data collectors prior to the pre-testing process.

The questionnaire included questions about the respondent profile (family, gender, age, religion, marital status and main activities), land holding status, livelihoods assets, income, consumption and expenditure, disaster history, vulnerability and others that deemed to have been appropriate for the study. Information was verified using cross check questions.

Table 3: List of selected Bomas and villages for the study

S.N.	Name of study Boma	Name of study village	Total number of HHs per selected village	Number of sample HHs (10% of total HHs per selected village)	Percentage out of the sample HHs
1	Tangajon	Tangajon	180	18	21.9
2		Bee	210	21	25.7
3	Gogolthin	Kavachor	230	23	28.0
4		Manyirang	201	20	24.4
	Total	4	821	82	100.0

Source: Own survey

In addition to the questionnaire, focus groups discussions (FGD) were arranged to obtain relevant information about the disaster and food security situation. FGD Participants include elders, paramount chiefs, Youth, women representatives, Internally Displaced People (IDPs), refugees and host community. Key Informant Interviews (KIIs) were also other important sources of information. Key informants included Director for State Relief and Rehabilitation Commission (SRRC), County RRC coordinator, County agriculture expert, relevant NGOs workers, Payam administrators, paramount chiefs, UN agencies and local community based organizations (CBOs). KIIs were also done with actors in the local markets such as wholesalers, retailers, processors, local handicrafts and artisans.

3.3.1. Household survey

Data about the main sources of income, food production, access and consumption trends, type of disasters and its effect on food security situation were collected from 82 sample households in four villages of two Bomas using household survey questionnaires. A multi stage sampling technique was used for data collection as follows:

A. First stage: Selection of Payam and Bomas

Out of the five Payams in Pibor County, namely, Pibor, Gumuruk, Lekuangole, Verteit, and Buma Payams, Pibor county was purposively selected as people from the rest of the Payams Payams have been displaced and migrated out of these areas as a result of presence of Rebel Militia Groups (RMGs) and the on-going government forces (officially called SPLA) military operations against the RMGs since January 2013. Stratified sampling method was used for the selection of Bomas. Two out of six Bomas in Pibor Payam were selected based on representativeness and its disaster history.

B. Second stage: Selection of villages and households

Pibor Payam is divided into six Bomas and two Bomas namely Gogolthin and Tangajon were randomly selected for the study. Four villages, namely Manyirang and Kavachor from Gogolthin Boma and Tangajon and Bee from Tangajon Boma were randomly selected. In order to conduct the household survey, the list of households living in the selected villages was obtained from the Boma Administration with the help of village

elders. The households' selection within a given village was carried out by using random sampling method. Ten percent of the total households from each village were sampled and taken for the survey.

Four interviewers with prior experiences of the socio-cultural & economic situation of the rural communities and who speaks the local language were selected, trained and conducted the interviews. One day training was given to the interviewers by the researcher on the various procedures followed in the selection of respondents and on how to conduct the interview. Prior to commencement of actual data collection, pre-testing was carried out with the support of the researcher to check whether the questionnaire for household surveying was workable or not at the existing context. Adjustments to questionnaires were accordingly made as per the feedback from the field and made the instruments more appropriate.

3.3.2. Focus group discussion

So as to get in-depth qualitative information that was necessary to understand the causes and consequences of the natural and human induced disasters that have occurred in the study area and to analyse the impact of the disasters in the community, eight focus group discussions were conducted (2 FGDs per village) with community representatives, elders, agricultural workers, youth and other relevant bodies and was been able to gather group opinions as to supplement quantitative data, which enabled deeper understanding and aided for better interpretation of the parameters considered in this impact assessment. In addition, some of the information obtained through focus group discussions were used to cross check the data collected from the household interviews.

3.3.3. Field Observation:

Field observation and informal discussion with the communities were used as a supportive or supplementary technique to collect data that helped to complement or set in perspective data obtained by other means. It was employed to observe and record the damages caused on the communal assets and infrastructure.

3.3.4. Key Informant Interview

Key Informant Interview was used to collect basic information on institutional set up, existing disaster mitigation and coping mechanisms. The interviews were conducted with selected individuals who are believed to have good knowledge about the area and the community. The key informant interviewees were village elders, technical experts and concerned office heads from State, County, Payam and Boma offices and other NGOs' working on food security and disaster risk management. The questionnaires were mainly open ended and designed so that the questions could flow from the previously reply of the respondent.

Observation of the local market was also another useful source of information for the study. During the focus group discussions conducted with the community representatives including youth, elders, paramount chiefs, administrators, and women Participatory Rural Appraisal (PRA) tools such as Community Mapping, Mobility

Mapping, Income and Expenditure Ranking, Venn Diagramming, Wealth Ranking, Trend Lines Analysis, Historical Profiling, Seasonal Calendar, Gender Daily Calendar, and Conflict Analysis tools were intensively used.

3.4. Data processing and analysis

After data collection the information was organized, analysed and interpreted. The data collected through household survey was analysed by using Microsoft excel and SPSS version 19 software program. Frequencies, tables, and graphs were used to summarize the results. Similarly, qualitative data from focus group discussion, key informant interview and informal discussions were interpreted, analysed and synthesized.

3.4.1. Method of data analysis

Descriptive statistics based on percentages was used to analyse findings. Qualitative data collected from households, technical staff members and community representatives using structured questionnaire, interviews and discussions was organized and entered into Statistical Package for Social Sciences (SPSS) version 19 for obtaining descriptive statistics.

In the village each respondent was coded with numbers so that the situations in each village for the different questions in the questionnaire were analysed. Questions in the questionnaires were identified by a variable name and within variables there were values and value labels for identification of responses from the respondents. After coding the information from the questionnaires, template for entering data in the computer program was created. The coded data was then entered in the SPSS version 19 computer programs where frequencies, multiple responses, mean, standard deviations and cross tabulations was computed during the analysis.

CHAPTER FOUR

4. Results and Discussions

The study findings were drawn from five sets of data: 1) Household questionnaires 2) Focus group discussions 3) Observations 4) Key informant interviews and 5) Secondary data sources.

4.1. Household size and characteristics

4.1.1. Respondents' profile

Eighty two households were taken as samples from four villages, located in two Bomas. Among these 70.7% of the respondents were male and the rest 29.3% female. Out of the total respondents, 70.7% of them are family head, 22.5% spouses and 7.3% other family members. The majority of the respondents were Protestants 65.9% and 34.1% were Catholics. With regards to age, 87.8% of them were between 18-60 years old and 12.2 % were above 60 years. 70.7% of the total heads of households surveyed were married, 20.7% widowed and 8.5% single. (Table 3)

Table 3: Respondents' demography

Respondent type	No.	%	Gender	No	%.	Age	No.	%	Religion	No.	%	Marital status	No	%
Family head	58	70.7%	Male	58	70.7%	<18	0	0.0%	catholic	28	34.1%	Single	7	8.5%
Spouse	18	22.0%	Female	24	29.3%	18-60	72	87.8%	Protestant	54	65.9%	Married	58	70.7%
Others	6	7.3%	Total	82	100.0%	>60	10	12.2%	Orthodox	0	0.0%	Widow	17	20.7%
Total	82	100.0%				Total	82	100.0%	Muslim	0	0.0%	Total	82	100.0%
									Total	82	100.0%			

4.1.2. Household size, age and gender composition of respondents

There were a total of 508 persons dwelling in 126 survey households in four study villages. Thus, mean household size in the four villages is 6.2 persons, which is approximately close to the national average which is 6. Male constitute 46% and female 54% of the study area. Children 1-5 years of age constitute 15% of the surveyed population, children 6-18 years 29%, 18-64 years 47% and 64 years and above 10% of the study population.

Table 4: Household size, age and gender composition of respondents

Age group	Male	%	Female	%	Total	%
1 – 5 years	34	15%	40	15%	74	15%
6 – 18 years	69	29%	78	28%	147	29%
18 – 64 years	110	47%	128	47%	238	47%
64 and above	21	9%	28	10%	49	10%
Total	234	100%	275	100%	508	100%

Gender is usually described in terms of sex ratio, which is calculated by taking the number of males in a population and dividing it by the number of females in the same population. It is expressed as the number of males per 100 females. The survey results in Table 4 shows that the overall sex ratio in the four villages was 0.85:1 or there were 85 males for every 100 females. This ratio was lower than the national average which is 1:1.

Dependency ratio is defined as the number of persons in a population who are not economically active for every 100 economically active persons in the population. In most cases age group between 0 -18 years (young ages) and age group more than 64 years (old ages) are dependent groups which depend on the age group of 18-64 years (work force or Middle Ages). But in reality, as revealed by this survey, all persons in the working ages do not actually participate in economic activities and all persons outside this age may not be dependent. However, the ratio of persons in the dependent age groups to those of the working ages provides a useful approximation to population dependency burden. Children under 18 years of age account for 44% of the surveyed population, that is 15% are between 1-5 years of age and 29% of them are between 5 - 18 years and 10% of the surveyed community are above 64 years.

4.2. Livelihood systems

4.2.1. General background of the livelihoods system

Pibor County is one of the 11 counties of Jonglei State and is characterized by a long duration rainy season which lasts for about seven to eight months that is from April through November. The main economic activities are Cattle rearing followed by agriculture (crop production). Through a participatory mapping exercise with FGD, the participants identified conflict and insecurity as well as food insecurity issues in their community. Livestock plays the leading and most important role in the local economies of the study area, supporting household nutrition by providing often the only source of high quality food in the local diet as well as generating supplemental income and serving as a savings bank. Most households have on average 52.1 cattle and 9.6 goats and sheep.

Participants also identified the types of foods grown in different payams as well as the factors for and hindering food production. Findings show that almost all Payams in Pibor produce similar types of food. These include Sorghum, Maize, okrah, ground nuts, tomatoes, sweet potatoes, beans, pumpkins, water melon (konde), kicumba, egg plant and paw paw. In addition to the above food, majority youth are engaged in fishing as well as cattle and goat keeping. The participants observed that the soils are good for the above mentioned crops. Despite the favorable soil and sufficient rainfall and other water sources, crop production is not widely practiced in the area as the people are inclined to cattle rearing and it has only been during the last few years that the community started crop production practices in the farming system. Hence, participants said that the area suffered from shortage of food and dependent on imported food items from adjacent states namely Eastern Equatoria and neighbouring countries such as Uganda, Kenya and Ethiopia.

4.2.2. Seasonal calendar of the study area

The seasonal calendar was done with the community through FGDs and cross verified by key informant interviews and secondary data sources. The seasonal calendar visualized occurrences during dry and rainy season thereby demonstrating the correlation between the presence or absence of rain and insecurity and the effect all pose on food security. This allowed for analysis of causes and effects of food insecurity, conflict issues and deliberation of possible solutions to solve increase food production so as to maximize the impact of food insecurity as well as of community conflict and insecurity.

FGD Participants were taken through seasonal patterns of the year basically described in their own local dialect and local materials were employed to signify rainfall, months, main crops produced by the community using agreed scale and related conflicts both in dry and wet season. During this process participants in their groups of women, men and youth were able to draw conflict issues and how they affect food security. The following issues were drawn.

- In Pibor county rains begin in May all through to November/December. During this period various types of crops are grown and harvested in December; mainly sorghum and maize.
- During dry season which starts in late December cattle raiding, tribal fights and competition over water and grazing were identified as rampant. This is because there is easy movement of both people and animals (especially cows), limited pasture and water. Communities in the study area were adversely affected by such tribal conflict between Lou Nuer and Murle in December 2011 and January

2012 as well as activities of Rebel Militia Group in 2012 which extends until this research was done on the ground (that is March 2013).

- Conflicts slightly reduce throughout rainy season. This is the time that is characterised by heavy floods and mud which hinders easy movement of people. However, it was noticed that in this same period there is rampant mosquitoes, Tsetse flies and dirty water which threaten health security of community members. This period is characterised by a lot of diseases and sicknesses among people.
- Food shortages gaps is always closed by depending on wild fruits especially during dry seasons (community coping mechanisms). However this expose them to dangers of wild animals like snakes.

Table 5: Seasonal calendar of Pibor County

	Rainfall	Maize	Sorghum	Conflict Issues	Periods of food shortage	Disease incidences (malaria and diarrhoea)	Cattle outmigration in search of water and pasture
Jan	-			Cattle raiding			
Feb	-			Competition over water, grazing area			00
Mar	-						000
Apr	00						000
May	0000	00	00		00	00	00
June	000	000	0000		000	000	
July	00000	0000	0000		0000	0000	
Aug	00000000 0	0000 0	00000		000	000	
Sept	00000		000000		0	000	
Oct	000		0000000 0			000	
Nov	00			Inter clan fights, cattle raiding, child and women abduction etc.		00	
Dec	-						

- Note: the seasonal calendar exercise was done during the FGD with different groups of the community in all the study villages through a PRA exercise; locally available materials were used to do the mapping, in this case, stones were used to signify the intensity or severity of the activity in a particular time/s. More “Os” means the event happened more frequently than less “Os”.
- Also note that seasonal activities, timing and duration of rains and seasonal incidence of disease do not vary widely across the study villages. The timings represented here reflect the primary data collected from communities during this study.

4.2.3. Trend Lines of the study area

The trend lines exercise done during the four FGDs (one per village) revealed the food insecurity patterns and the correlation between food insecurity and insecurity/conflict as they have evolved since 2009. Insecurity has greatly affected food productions in Pibor as well as continuously high level of cattle raiding and revenge attacks. This has got a bigger effect of internally displacing of people while others have fled the county to neighboring counties such as Bor. Since the attack of December 2011- January 2012, many people have abandoned their homes as well as their farms to either settle in Pibor County headquarter or move out of the county. This greatly affected food production negatively.

The community members related food production to key events that took place from 2009 – 2012. Participant revealed that food security have been affected by chain of insecurity at different period of times. They realized changes in food production as result of conflicts and peace situations. The following came up during the Trend Lines exercises in the FGDs.

In the year 2009- food production was high because community stabilized as result of peace dividend, because it was interim period from the signing of CPA to election and referendum between Sudan and the new state (Republic of South Sudan which was then the same territory with Sudan). This year there was no significant form of rebellion and communities were united toward one cause of Independence of South Sudan. While in 2010 after the election, the election results were disputed causing a rebellion that started in Jonglei state. The rebellion displaced many people, thus home and farms were abandoned. This created a sharp reduction in food production thus hunger. In the year 2011- Rebel Militia Group of General George Athor increased their activities and food production drastically dropped. In 2012 - Conflict in Pibor is said to be at the peak as fighting between Lou Nuer (the ethnic groups residing in the neighboring Counties called Akobo, Uror and Nyirol) and Murle (the majority of ethnics groups in the study area) intensified leading to death, killing and abduction of children and women. This is

attributed to Luo Nuer's attack of Pibor in January 2012 as well as presence of David Yau Yau rebel group; whose activities has caused death and misery of people in Pibor.

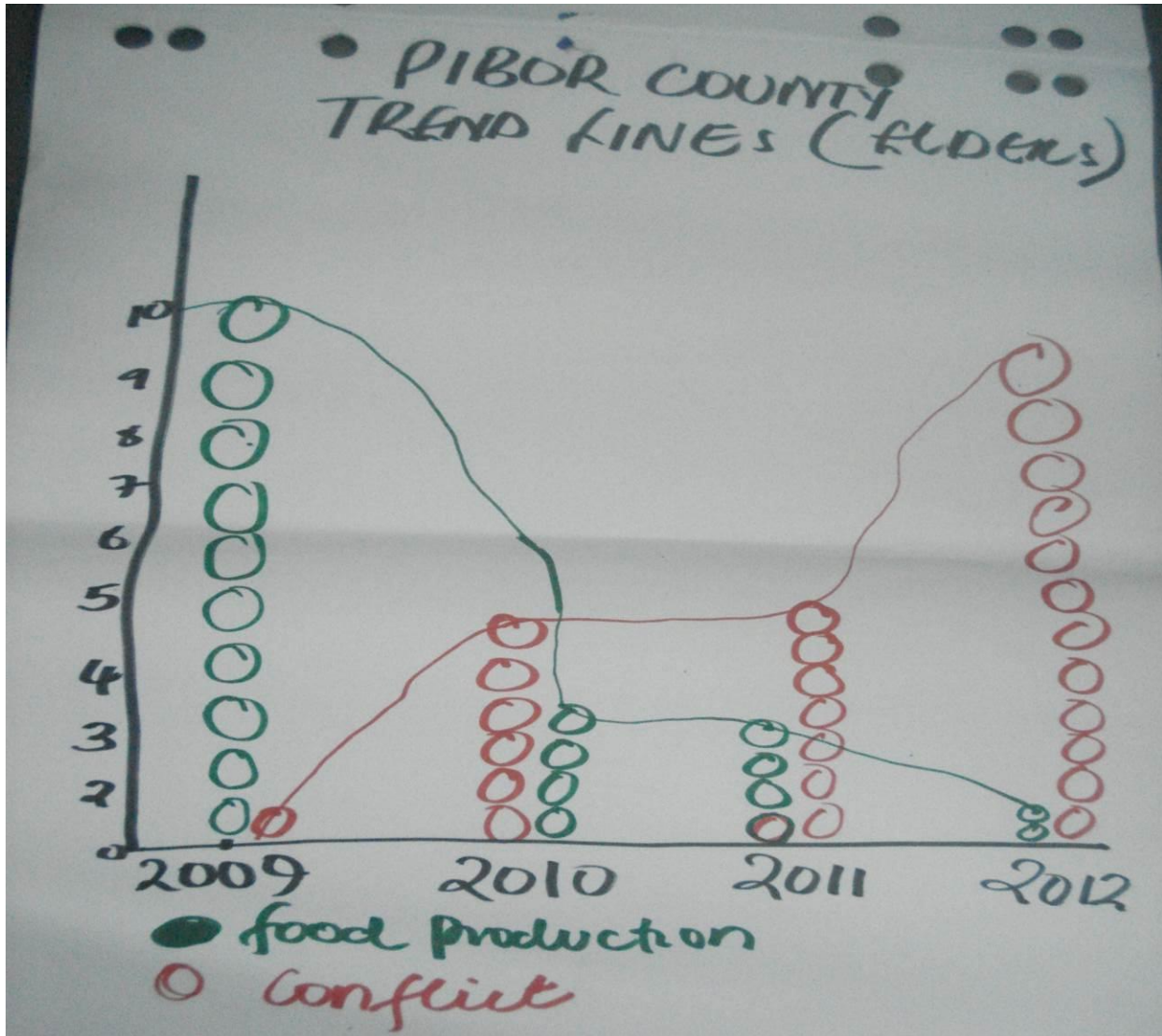


Figure 8: Pibor County Elders Trend Lines during the FGD PRA exercise

From the above figure, it is indicated that when conflict and insecurity are at the peak, food production is at its lowest. This means that conflict/insecurity causes food shortage and therefore hunger.

4.2.4. Gender Daily Calendars

During four FGDs conducted in the four study villages, gender daily calendar was done by splitting the FGDs participants into elders, women and youth. The daily calendar explored the activities, which women, men and youth, respectively, are engaged in

during a typical day. The objective of the tool was to outline the different roles the different segments of the community play in the community and to add depth to the analysis of how the different genders and age groups roles may affect food production as well as affected by incidences of insecurity and conflict.

Table 6: Women's daily calendar in the dry season

Time	Activity	Duration
06:00 am	Wake up, Clean the compound smoking cow danger	30Mins
06:30 am	Taking Cattle out & cleaning barns	1 hr
07:30 am	Milking	30 min
08:30 am	Feeding children	1 hr
09:00 pm	Collecting wild fruits from bushes	3 hrs
12:00 pm	Boiling, peeling, mixing and drying the fruit	1 hrs
01:00 pm	Resting	3 hrs
04:00 pm	Cleaning compound	1 hr
05:00 pm	Receiving calves and goats	1 hr
06:00 pm	Milking	30 min
07:00 pm	Bathing, feeding & bedding the children, Feeding and preparing bed for men	2 hr
09:00 pm	Retire to sleep	9 Hrs

Table 7 Women's daily calendar rainy season

Time	Activity	Duration
06:00 am	Wake up, Clean the compound smoking cow danger	30Mins
06:30 am	Taking Cattle out & cleaning barns	30 mins
07:00 am	Milking and breast feeding	1 hr
08:00 am	Feeding children and food preparation	2 hr
10:00 am	Cutting trees and grass to prepare shelter & build houses	8 hrs
06:00pm	Shelter building (<i>not a daily activity</i>)	2 hrs
06:00 pm	Food preparation (cheese/Gual)	1 hrs
07:00 pm	Taking the cows inside barns and smoking of cow dung	3 hrs
08:00 pm	Preparing food for next year	2 hrs
10:00 pm	Sleep	8 hrs

Analysis

- Women have heavy work load during rains because they combine both cattle related work and tilling their farms
- They sleep for 9 hours in dry season and 8 hours in rainy season. This is because during dry season cattle are moved by youth to look for green pasture and water thus reduced work load on women.
- During dry season they spend 3 hrs in the bushes to collect fruits for their family food. This exposes them to the dangers of abduction, rape, snakes, and any other wild animals.

Table 8 Youth daily calendar

Time	Activity	Duration
06:00 am	Wake up	40Mins
06:40 am	Taking Tea	20 mins
07:00 am	Going to School or looking after cattle	1 hr
08:00 am	Farming, fishing, making charcoal or looking after cows or schooling	2 hr
10:00 am	Come home for lunch/looking after cattle	1 hr
11:00 am	School & Cattle keeping/ business/fishing	5 hrs
04:00 pm	Back from school	1 hrs
06:00 pm	Bring the cows home	1 hr
07:00 pm	Sports/games/watching movies	1 hr
08:00 pm	Makara/dancing	1 hr
09:00 pm	Dinner and engagement	2 hrs
11:00 pm	Back Home	40 mins
11:40	Sleep	5 hrs

Analysis

- Cattle related work takes most of the youth's time that is 10 hours
- Rest/leisure time 5 hours

4.3. Markets

4.3.1. The market system

Seven traders across 5 different classes (Artisans, Manufacturers, Retailers, Service providers and Wholesalers) were interviewed using a structured questionnaire, representing a broad range of businesses operating in rural and urban areas in the main market of the study villages namely Pibor Market.

Overall the main market is observed to be not fully functional as a result of roads blockage connecting the local (Pibor) market to main supply markets such as Juba and Bor markets during the long rainy season. This was further exacerbated by the presence of Rebel Militia Groups (named after the rebel leader called David Yau Yau Rebel Militia Groups(RMGs)) within and around the study villages beginning from June 2012 up until this study was done in March 2013 which is believed to have caused constraints in the proper functioning of the local market. The situation is worsened by launching of government troops military operations (which is officially called Southern People's Liberation Movement (SPLM)) against the David Yau Yau RMGs at the heart and peripheries of the study areas. These altogether affected proper functioning of the local markets which is basically dependent on supplies from markets outside of the county and the state. Not all major commodities are available in the local market as a result of the aforementioned security and road related challenges.

Food commodity supply chain carried out using information collected in the course of this study showed that new actors have entered the market: notably humanitarian agencies distributing food aid, in direct competition with local food dealers who supply the same items. Similarly, trade flows and credit availability for the export of livestock from the local market to wholesale markets in Bor and Kapoeta are completely or nearly completely destroyed. Some types of business continue to face challenges as supplier sources of credit has contracted somewhat, transport and fuel prices have increased, and low demand from consumers is limiting sales and turnover.

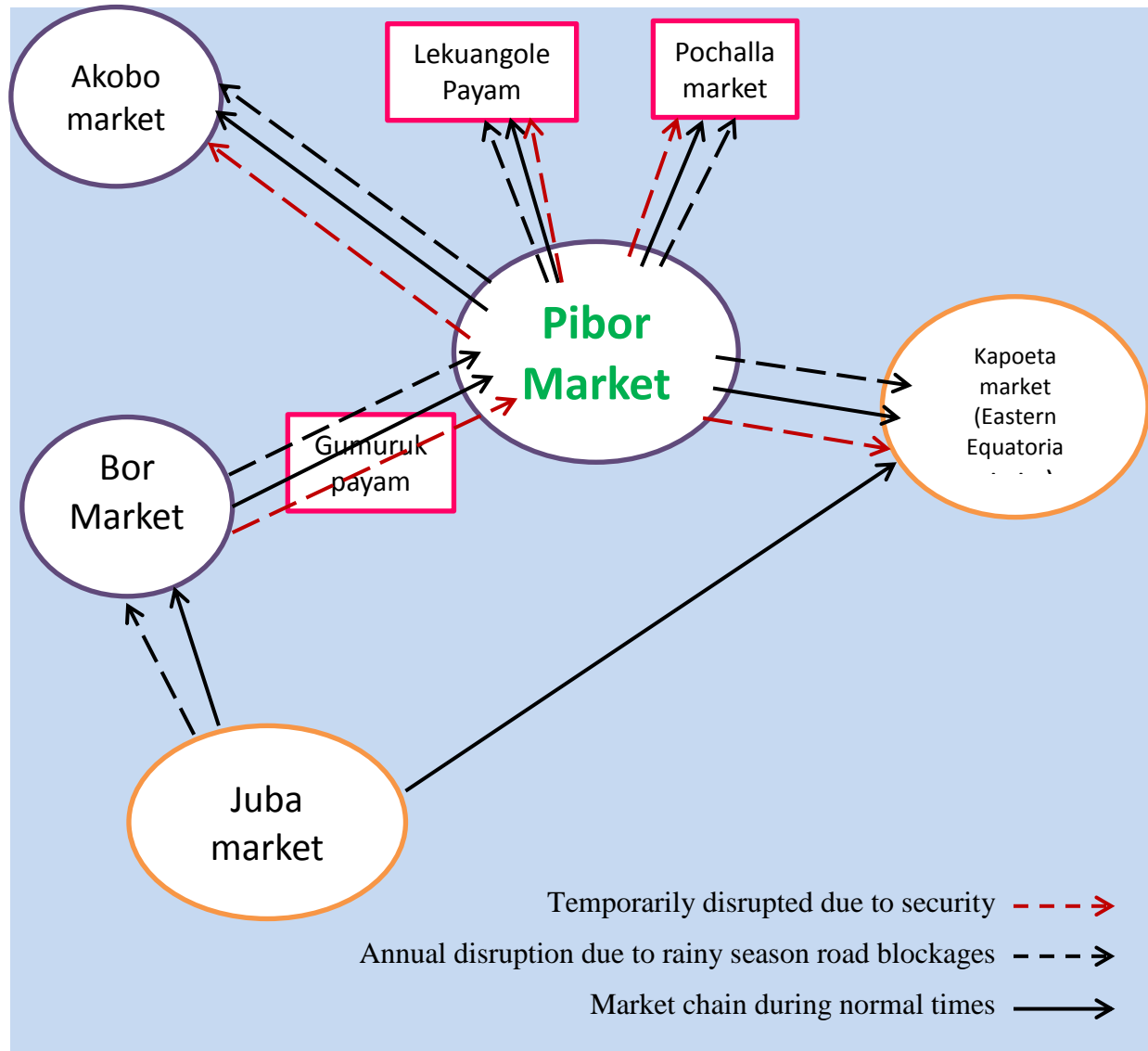


Figure 9: Pibor Town Market current supply chain of food commodities and markets as of March 2013

4.3.2. Supplier credit:

In normal times a majority of traders (70%) relies on credit from suppliers for purchasing inputs – largely wholesalers, retailers, manufacturers and artisans (blacksmiths, carpenters). Following the crisis, findings indicate that:

- **20% of traders** previously accessing supplier credit continue to access credit, while 80% do not
- Overall credit access has dropped significantly following the 2011/2012 ethnic conflict between Murle and Lou Nuer and beginning of operation by David Yau Yau RMGs since June 2012. Hence, **regular sources of supplier credit** have dried up for rural traders, who now purchase on credit “occasionally” rather than “most or all

of the time”.² Regularity of access to credit sources is likely linked to both demand issues e.g. traders are not moving as much stock due to lagging business demand, as well as supply issues e.g. suppliers are hesitant to extend credit. See Table below for a summary table of changes in credit access.

Table 9 Changes in access to trader credit

Percent traders	Pibor Market
Accessing credit previously*	81%
Accessing credit now**	23%
Accessing credit now***	20%

* Occasionally, most of the time or all of the time

** Among all traders

*** Among traders who accessed credit previously

4.3.3. Buyer credit

Just as suppliers routinely lend to local traders, traders also routinely lend to their customers. This established custom is a vital safety net for vulnerable members of the community who are not always able to pay up front. Borrowing from shopkeepers and traders to cover basic necessities is one of the most prevalent coping strategies in the study villages.

Globally 75% the traders report extending less credit to their buyers compared to before 2012. This finding concerns the vast majority (90%) of wholesalers and retailers who supply items of first necessity. Traders report that due to the depletion in buyers’ income sources they are hesitant to continue lending when individuals are not credit worthy.

4.3.4. Prices and business volume

Shortages of basic commodities at the national level – sugar, fuel and natural gas to name a few – has placed significant upward pressure on prices and led to inflation. 100% of interviewed traders report significantly higher inputs prices associated with inflated fuel and transport costs.

Higher prices combined with low consumer demand in the affected areas have affected recovery for all types of traders. A majority of traders report lower business volume compared with one year ago. Geographically, lower sales across all types of traders are reported in 2012 and 2013 due to the ethnic conflict during December 2011 and January 2012 and presence of RMGs since June 2012. 70% of manufacturers, as well as 67% retailers, 60% wholesalers and 70% service providers (transporters, restaurant owners) report lower business volume than one year ago. All traders do not expect to

² 4% of rural traders currently buy on credit on a regular basis, compared with 31% prior to the crisis.

have the capacity to meet additional demand in the near future as their business operation has been scaled down for more than one year since January 2012.

4.3.5. Impact of food aid on traders

The World Food Programme (WFP) has been carrying out general food distributions in the affected areas since 2012. WFP rations contain sugar, tea, wheat, rice, oil and pulses. Eligible households must be formally registered with the government to receive assistance. In addition other Non-Governmental Organizations (NGOs) has supported IDPs, returnee/stayee and vulnerable communities in the study areas including provision of agricultural inputs such as seeds and farm tools. World Food Programme is transitioning from general distributions to food-for-work, food-for-assets programs, school feeding and other livelihoods-oriented programs.

Eighty five percent of food commodity dealers³ report being significantly affected by on-going free food distributions. Reported impacts include fewer buyers and lower sales of wheat, rice and ghee. Among food dealers, low consumer demand is reported to be one the major constraints currently faced for improving their business. Food aid is partially responsible for the lower demand in basic food items.

Table 10 Impact of food aid on traders

Have food distributions had an impact on your business?	Pibor market dealers
None or N/A	15%
Yes	85%

4.3.6. Constraints faced by traders

The study shows that main constraints reported to be faced by traders are poor road condition (road blockage during rainy season) and insecurity by 100 of the respondents; high transport and fuel costs and lack of demand from buyers (71%); lack of cash, absence of electricity supply high input and labour costs (57%) and lack of credit from suppliers (43%). See table 11 below.

³ Wholesale and retail general stores present in towns and villages that deal in rice, gurr, wheat flour, tea, sugar, ghee, pulses and fertilizers (among other essential items).

Table 11 Market constraints faced by traders in Pibor market

Market Constraints	Frequency	%
Insecurity	7	100%
Poor road condition (Road blockage during rainy season)	7	100%
High transport and fuel costs	5	71%
Lack of cash	4	57%
Lack of demand from buyers	5	71%
Absence of electricity supply	4	57%
High input and labour costs	4	57%
Lack of credit from supplier	3	43%
Total respondents	7	

4.4. Livelihood groups and Wealth ranking

A livelihood group is a collection of people who share the same food and income sources, share access to the same livelihood assets and are subject to similar risks. People with similar food and income sources will tend to respond in similar ways to particular shocks. They will also tend to benefit from the same interventions to promote their food security and support their livelihoods. Identifying livelihood groups within the affected population allows us to analyse the severity of food and livelihood insecurity by group, and formulate recommendations by group⁴.

The result of structured household questionnaire and FGDs indicate that the community in the study areas is classified into four livelihoods groups such as Stayees, Internally Displaced Persons (IDPs), returnees and hosts. The study indicated that 39% of the community are stayees, 26% IDPs, 16% returnees and 20% hosts.

Table 12 Livelihoods groups

S.No.	Livelihoods category	Number of HHs	%
1	Stayees	32	39%
2	IDPs	21	26%
3	Returnees	13	16%
4	Hosts	16	20%
	Total	82	100%

The analysis of the livelihood zones indicates the predominance of the livestock herding as a source of income. However, it does not precise how the population depends on it.

⁴ ACF FSL Assessment Practical Guide For Field Workers, April 2010

A baseline assessment conducted by WFP5 indicates that most small farmers/livestock herders rely on cattle and small ruminants rather than on the agricultural production because of the limited practice on agricultural (crop) production.

Households were also classified into four wealth groups across the assessed villages, that is, better off, middle income, poor and very poor.

The particularities of each wealth group have been analysed through wealth ranking exercise in the FGD⁶:

- Very poor households are characterized by having no shelters, no livestock ownership, limited or no access to farm land, internally displaced people or returnees with limited income sources; labour poor and with high dependency ratio; and earning a monthly income of less than 200 SSPs which is the minimum standard livelihoods threshold based on WFP standards in Pakistan.
- Poor household categories share main characteristics of very poor people except that they are permanent residents in the area, have very few livestock, have access to land as owners, and have active labour that can earn income through mainly wage labour.
- Middle income households have access to land and earn their income from crop and livestock production, with comparatively diverse sources of income including labour and petty trading and small businesses.
- Better off households are the wealthier groups who have got large number of livestock, have access to sufficient amount of land and capable of producing crops such as cereals, vegetables and fruits, government employees, and businessmen with diverse livelihoods options.

4.5. Land holding status, Crop production and constraints

The study finds out from the data gathered through FGDs and household interviews that land holding size depends on households' capacity to cultivate. As crop production has been practiced by fewer portion of the population as means of livelihoods and due to sparse settlement of population coupled with vast plain land that is not yet used for agricultural production, land holding size depends on the households will, possession of hand tools and other required inputs and practice rather than based on a clearly defined land tenure system. Moreover the community at large is very much dependent on livestock herding than agricultural production. As a new nation, South Sudan is designing a policy on land tenure system. The assessed districts are basically rural areas. Even if livestock is the major economic activity, the majority of people are linked directly or indirectly with agriculture (crop production). It was observed in the assessed

⁵ WFP; Baseline Survey of National Program for Food Security and Productivity Enhancement; December 2011

⁶ Level of income for each group was very difficult to analyze because of the inconsistency of the data gathered. In addition to that, information about income level in secondary sources was not found.

areas that 72.8% of population has easy access to an average of 1.5 hectare (approximately 3 acres) of land.

All the respondents replied that they never used mechanised farming practices such as use of tractors for preparation of their land as they practices manual tools for tilling. They do get hand tools from traditional artisans operating in the county capital, Pibor town. 79% of the households who are engaged in crop production replied they never used fertilizers (both organic and inorganic) and the remaining 21% said they use organic fertilizers such as use of cow dungs to improve of fertility of the soil. Similarly all households use local crop seed varieties to plant on their plots and when asked about the source of these seeds during the 2012 cultivation season, 43% of the households replied that they used their own seed savings from the previous cropping season (that is from 2011) and the remaining 57% said they bought from local markets.

Crop production constraints were also asked during the FGD and household interviews. Major production constraints identified during the study are lack of knowledge on modern production practices including land preparation, management and post-harvest handling; lack of agricultural extension services such as training, use of insecticides, credit facilities, etc; lack of inputs such as hand tools, seeds and fertilizers; security problems such as women/ child abduction, killing and mobility; and floods.

Table 13 Crop production constraints in 2012

Constraint	Counts	%
Lack of knowledge	39	48%
Lack of inputs	65	79%
Security threats	66	80%
Floods	69	84%
Lack of agricultural extension services	19	23%
Total	82	

Out of the 82 households interviewed, 48% HHs responded that they lacked proper farming practices to cultivate their plots in the year 2012; 79% faced with lack of inputs such as farm tools, seeds, etc; 80% relied security threats such as child and women abduction and killing as constraints for production; 84% replied that flood partly or fully affected their production and 23% mentioned lack of agricultural extension services as production constraints in 2012.

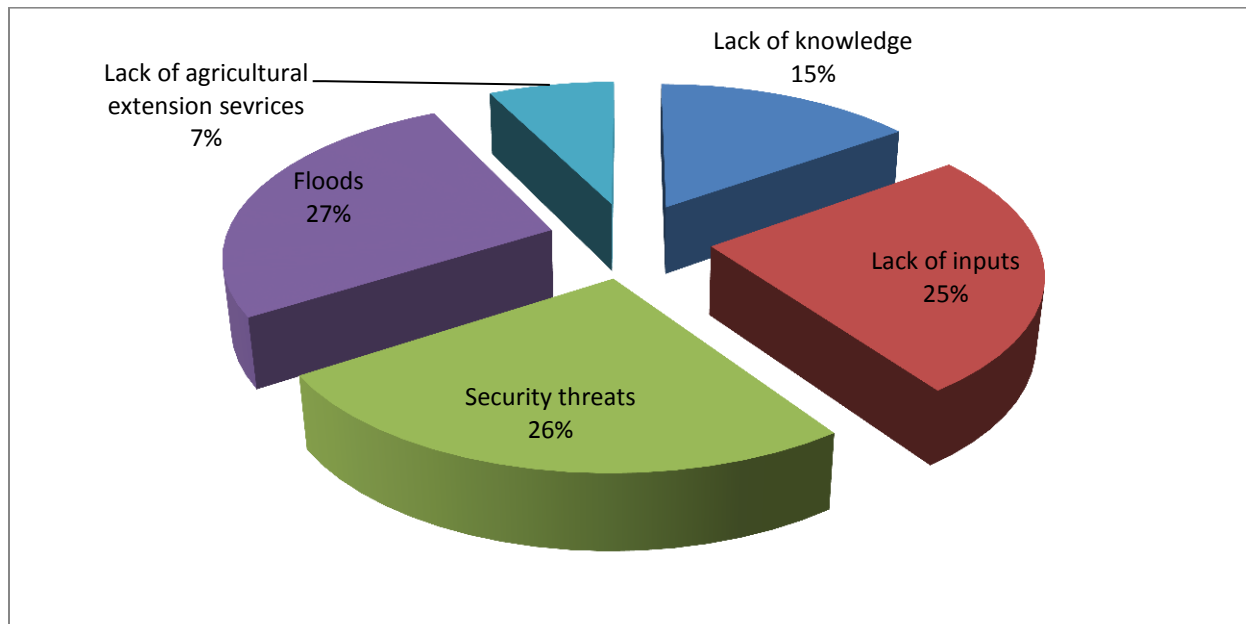


Figure 10: Crop production constraints in the year 2012

Communities in the assessed areas are still constrained by other factors that prevent them from fully recovering, rendering them still vulnerable to hazards. Cash is still the main concern for the surveyed population: 36% of the households are facing shortages of cash and 22% lack of employment opportunities. Other important restrictions that the communities face are: damaged natural assets (18%); lack of productive assets (17%) and damaged productive infrastructure (8%). The main priorities identified by the community for recovery based on relative importance are water road infrastructure 38% and employment opportunity (Cash) 25%.

The survey identifies that the short term needs for the assessed community are cash grants, food aid and construction materials. In the medium term, the population expressed that their medium term needs are cash grants, employment, agricultural inputs and food aid. The DLA also arrives to the conclusion that the demand for agricultural inputs rises with wealth, and the demand for employment is inversely related to wealth, which is consistent with the livelihoods zones and wealth groups presented in this assessment.

4.6. Livestock production, holding and constraints

The assessed villages are basically rural areas. With livestock the major economic activity, the majority of people are linked directly or indirectly with this sector. From the household questionnaire, the total heads of cattle for the 82 households are 4276 and small ruminants (goats and sheep) are 796. Average cattle holding per household is 52.1 where as small ruminants is 9.65. There is limited number of poultry, donkeys and horses in the study area and consumption or sale of poultry and poultry products is not

commonly practiced. The average poultry holding is less than one whereas donkeys and horses holding is close to none. This is attributed to the inconvenient weather condition for rearing of donkeys and horses. Though importance of livestock consumption within the diet is well understood by the community, the sale of livestock to raise cash to purchase food is not a common food security strategy among surveyed households.

The study also explored presence of veterinary services in the study area. Even if there exists huge livestock resources, 86% of the households responded that they do not have access to modern veterinary services and drugs in their surroundings. They get the service from traditional veterinary service providers with a reasonable service fee. Only 14% of the respondents replied they do have access to basic veterinary services (periodic vaccination) from an NGO operating in their proximity. There is no veterinary clinic run by the government in the study areas.

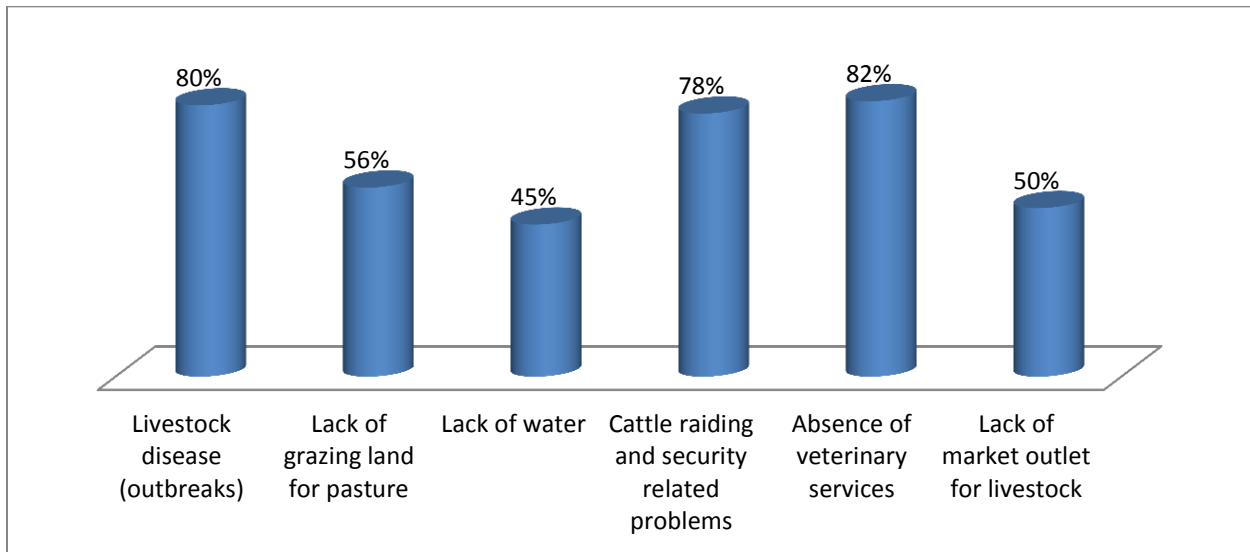


Figure 11: Livestock production constraints

When asked about the major constraints pertinent to livestock production, 82% of the respondents replied absence of veterinary services; 80% livestock disease and outbreaks; 78% cattle raiding; 56% lack of grazing land and pasture; 50% lack of marketing opportunities for their livestock and 45% lack of water as their challenges constraining livestock herding.

4.7. Food sources and dietary diversity

4.7.1. Food sources

The study indicates that more than half of all food is sourced from the **market**, with significant shares also contributed by **food aid** (16%) and **social networks** (borrowing & gifts, 16%). In areas where aid is distributed (WFP and other NGOs) most sugar, tea, wheat, oil, rice and pulses is sourced from the aid. Milk, green leafy vegetables, maize and eggs tend to be sourced from **own production** when available. See Figure below.

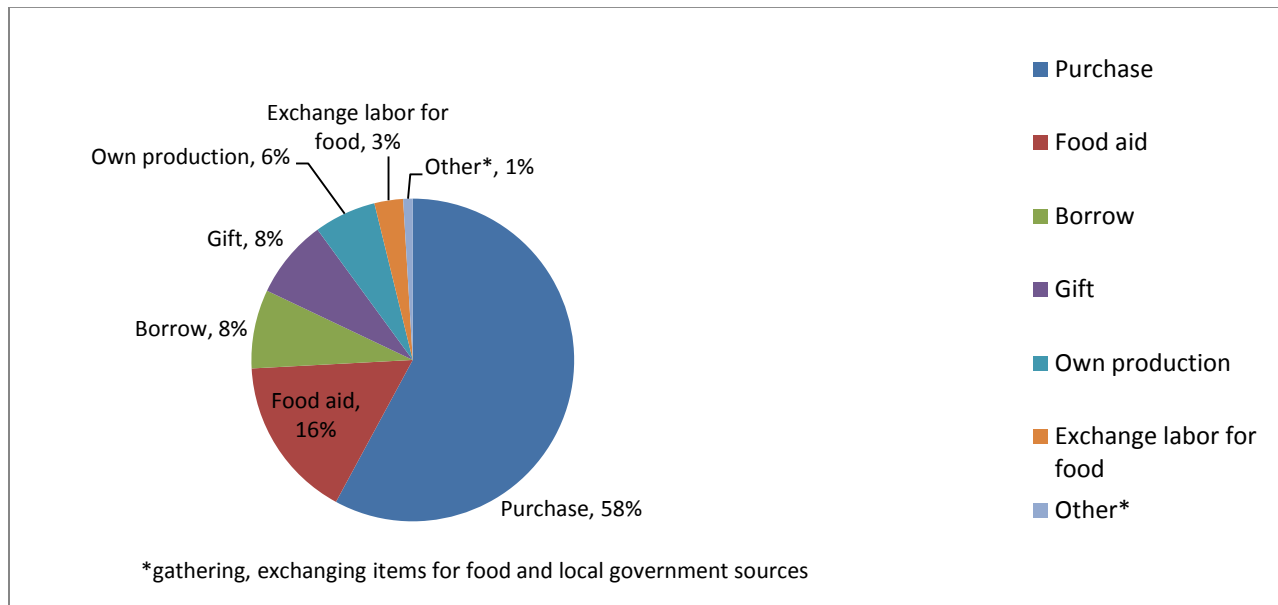


Figure 12: Sources of food

IDP households followed closely by returnees are most dependent on **precarious food sources** such as borrowing, gifts and official food aid. Today these sources collectively support a large portion (61% and 55%, respectively) of these groups' food needs, but are unlikely to be sustainable in the mid- to long term.

Compared to other groups, **returnee and stayee populations are most reliant on gifts and borrowing** to meet their current food needs (34% and 22%, respectively), reflecting the importance and resilience of local community-based social networks. In contrast, host communities are able to source the large majority (85%) of their food from the market and so remain less vulnerable to food insecurity. See Figure below for sources of food by settlement status.

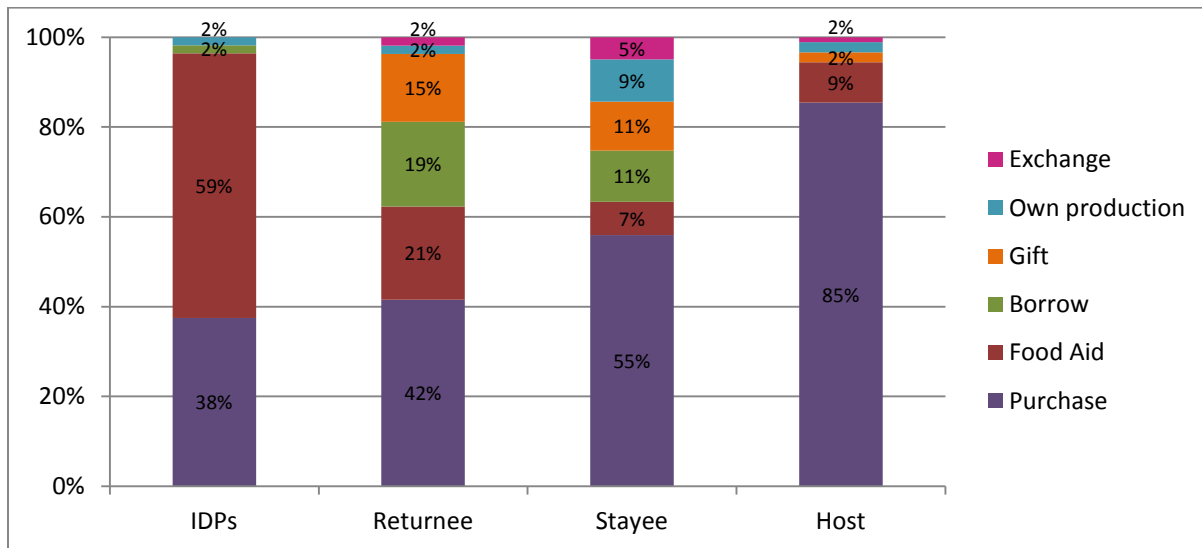


Figure 13: Sources of food by settlement status

4.7.2. Dietary diversity

4.7.2.1. HOUSEHOLD DIETARY DIVERSITY SCORE (HDDS)

Household dietary diversity score (HDDS), which measures the number of different food groups consumed the previous day, is a proxy indicator to food access for the following reasons:⁷

- A more diversified diet is associated with improved birth weight, child anthropometric status, and haemoglobin concentrations.
- A more diversified diet is highly correlated with such factors as caloric and protein adequacy, percentage of protein from animal sources (high quality protein), and household income.
- Even in very poor households, increased food expenditure resulting from additional income is associated with increased quantity and quality of the diet.

The HDDS takes into consideration the number of different food groups rather than the number of different foods consumed with the objective of analysing the quality of the household's diet. Foods are grouped taking into consideration their quality in terms of calories, micro and macro – nutrients they contain.

The following set of 12 food groups was used to calculate the HDDS in this assessment: cereals and grain products, roots or tubers, vegetables, fruits, meat or poultry, eggs, fish or shellfish, foods made from legumes or nuts, dairy products, foods made with oils or fat, sugar or honey, and other foods such as condiments/coffee/tea. The HDDS is calculated as the addition of the groups consumed by the household.

⁷ Household Dietary Diversity Score (HDDS) for Measurement of Household Food Access: Indicator Guide (Version 2), FANTA, 2006.

Household questionnaires were used to collect data on dietary diversity. Women were asked about the foods consumed in the last 24 hours in their household. To measure dietary diversity a simple procedure was used, according to which a score of 1 was allocated to the group if one or more items from that group had been consumed; and 0 if it had not. The higher the HDDS, the more diversified the diet is, and as a consequence, the surer the access to the nutrients that the members of the family need to have a healthy life.

The HDDS for stayees, IDPs, returnees and host community is 5.2, 4.3, 4.7 and 5.6 respectively. The percentage of households with a HDDS of 5 and below was 42%, and those with HDDS 5-6 was 58%. The results of the analysis indicate that the households in the assessed areas need to be supported so as to improve their food security. Having a low dietary diversity score might be a result of lack of access to food as well as knowledge about balanced diet. A deeper analysis needs to be done in order to understand the causes of the low HDDS.

HDDS in the assessed zone varied between 4 and 6, with a mean 4.95 food groups consumed by households. Given that sugar and tea were found to be universally consumed across all zones and population groups, a diet with an HDDS of five or less can be considered inadequate or lowest for supplying all necessary macronutrients (cereal or starch, pulse, oil and vegetable).

See Table below for a profile of household diets by dietary diversity tercile in the assessed villages.

Table 14 Profile of household diets by diversity tercile

	Lowest diversity (4-5 groups)	Medium diversity (6-8 groups)	Highest diversity (9-10 groups)
1	Cereals (wheat, rice)	Cereals (wheat, rice)	Cereals (wheat, rice)
2	Vegetables (green leafy & other)	Vegetables (green leafy & other)	Vegetables (green leafy & other)
3	Oil or ghee	Oil or ghee	Oil or ghee
4	Sugar	Sugar	Sugar
5	Condiments	Condiments	Condiments
6		Pulses, lentils, nuts and beans	Pulses, lentils, nuts and beans
7		Milk and milk products	Milk and milk products
8			Potato
9			Meat
10			Other fruits

4.7.3. Periods of food gap

There are two seasons in Pibor County, Dry and Rainy seasons. Crops are planted during the first two months of the beginning of the rainy season that is April and May and harvested in November and December. 70% of the households indicated that June through November are periods of severe food shortage in the year. The main reasons for food shortages in the mentioned periods are seasonal food gaps, decrease in supply of food in the local markets due to roads blockage which result in increase in price of main food items and decreasing purchasing capacity.

4.8. Income sources and debt

4.8.1. Sources of income before and after the crisis

Major pre-crisis (before 2012) income sources were livestock herding (42%) followed by Agriculture/crop production (20%), relief aid (10%), unskilled Labour (9%) and gifts/remittances (7%). Following the crisis that is the devastating ethnic conflict between the Murle and Lou – Nuer in December 2011 and January 2012 that have continued to date and the movement of Rebel Militia Groups (RMGs) being led by David Yau Yau since June 2012 has turned the livelihoods of the population in the study areas. Following the crisis the relative contribution of income from major sources declined across all study villages due to displacement, disruption of economic activities and loss of assets.

It is evident from table 15 that main sources of income before the crisis were livestock and agriculture for stayees, IDP and host communities rather for returnees relief aid casual labour and gifts/remittances were the most important income sources. Declines were most drastic for livestock (15% reduction) and Agriculture (10%). Remittances and relief aid remain the notable exception as increasingly vital income sources, rising from 10% to 24% (relief aid) and from 7% to 14% (gifts/remittances). It is currently the one of most important of household income sources. Income portfolios became more diversified, with 2 new sources of income emerging: Income Support (relief aid) and Asset Sales (livestock, jewellery, rifle, etc.).

Table 15 Main sources of income per livelihood group before and after the crisis

Source of income	Before January 2012 and after January 2012														
	Stayees			IDPs			Returnees			Hosts			Average		
	Bef ore	Aft er	Differ ence in %	Bef ore	Aft er	Differ ence in %	Bef ore	Aft er	Differ ence in %	Bef ore	Aft er	Differ ence in %	Bef ore	Aft er	Differ ence in %
Livestock production	53 %	37 %	-16%	51 %	8%	-43%	8%	13 %	5%	56 %	51 %	-5%	42 %	27 %	-15%
crop production	21 %	13 %	-8%	27 %	3%	-24%	7%	7%	0%	23 %	16 %	-7%	20 %	10 %	-10%
Casual labour	8%	11 %	3%	5%	18 %	13%	21 %	16 %	-5%	3%	3%	0%	9%	12 %	3%
Trade	2%	1%	-1%	2%	2%	0%	0%	13 %	13%	4%	4%	0%	2%	5%	3%
Handicraft	3%	1%	-2%	2%	4%	2%	9%	2%	-7%	2%	2%	0%	4%	2%	-2%
Gifts/remittances	6%	16 %	10%	7%	19 %	12%	11 %	6%	-5%	5%	14 %	9%	7%	14 %	7%
Salary work	2%	2%	0%	2%	0%	-2%	7%	3%	-4%	5%	5%	0%	4%	3%	-2%
Relief aid	2%	12 %	10%	1%	39 %	38%	36 %	39 %	3%	2%	5%	3%	10 %	24 %	14%
Sale of assets	3%	7%	4%	3%	7%	4%	1%	1%	0%	0%	0%	0%	2%	4%	2%
Total	100 %	100 %		100 %	100 %		100 %	100 %		100 %	100 %		100 %	100 %	

4.8.2. Assets

Significant asset loss was suffered in the study areas. Livestock assets were lost as people were looted and their cattle raided during the ethnic conflict; sold livestock on low rates or left their cattle behind in fear of the ethnic conflict or the on-going RMG and government troops operations against the RMGs. Seed stocks were lost or consumed upon return. Personal financial assets such as jewellery and guns were looted or sold to pay for transport and cover subsistence needs. In some communities, forest and agricultural land was damaged from shelling or set ablaze to remove cover for militants. Homes and businesses were looted during villagers' absence. In host and transit areas, the presence of IDPs stretched and eroded residents' resources and placed pressure on natural assets such as forests and water sources. Global asset loss was reported at 58%. Asset recovery has been slow across almost all villages with only 18% of lost assets recovered to-date since the beginning of the crisis in January 2012.

Natural assets

Livelihoods in the affected areas draw from the natural resource base such as land, water and forest resources. Fruit and vegetable production is source of employment and cash income. Forests serve as water catchment areas that control erosion and regulate water availability. Fuel wood and non-timber forest products also support local

livelihoods. Forests and agricultural land were damaged by the floods that have continuously been happening almost every year.

Physical and financial assets

Similarly, physical and financial assets were lost or damaged most acutely in areas of return. Community infrastructure such as schools, basic health units, water supply schemes and irrigation networks were affected by shelling and floods. Schools in particular were targeted by opponent ethnic groups and damaged or destroyed on a large scale. Household assets such as livestock, tools, trader stocks, handicraft assets and jewellery were lost, looted or liquidated. Seed stocks were consumed.

4.8.3. Debt

There are two main sources of credit in the assessed villages: Non-institutional sources: 80-90% of total and formal micro finance institution established by an NGO 10-20% of total. Traditional sources of credit are largely informal and include relatives, friends, moneylenders, local traders and seed dealers who sell on credit. These sources are available to small farmers and other individuals. The micro finance institution only provides credit services to large farmers ahead of the growing season for the purchase of agricultural inputs and is paid back at harvest time.

All sources of credit were found to be less accessible following the crisis. Informal sources have remained most steady with declines of one-fifth to one-third of previous level, while dealer and bank credit has contracted by nearly two-thirds. One-fifth of communities report no source of credit after the crisis – these are largely IDP communities, both camp and off-camp. See Table below.

Table 16 Percent decline in credit access by source

Source	Percent decline
Family and friends	19%
Moneylenders and shopkeepers	36%
Buyers/wholesalers and banks	61%

The findings reflect the impact of the crisis on traditional lending networks which are stretched thin. Shopkeepers, dealers and institutions are increasingly reluctant to extend credit as sources of income in affected communities have dried up, and relatives outside of the affected areas are less able to support family over the long term as scarce resources become increasingly burdened. See Figure below.

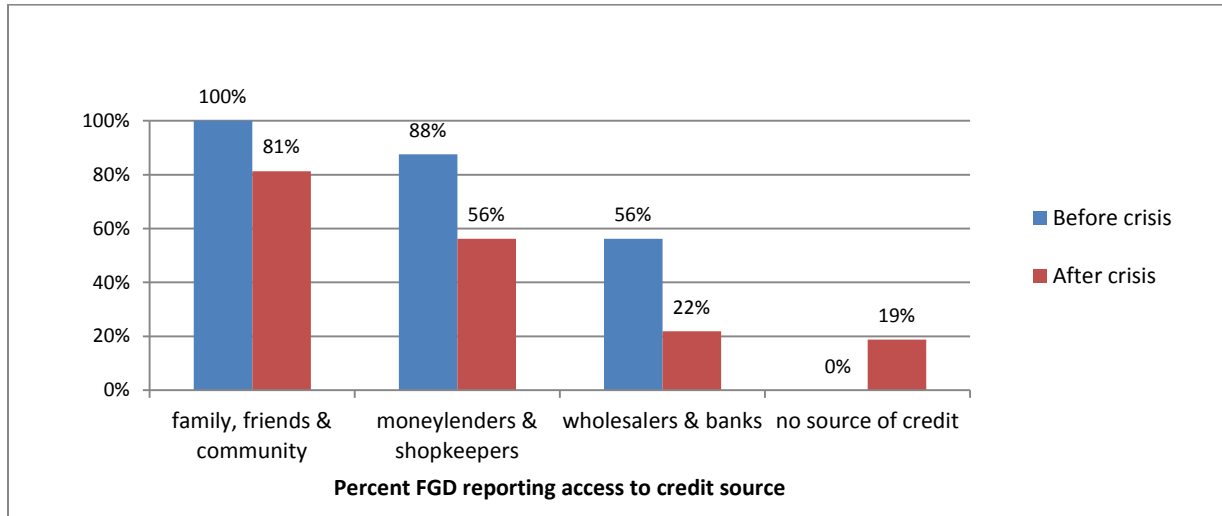


Figure 14: Availability of and access to credit

Uses of the new debt taken on by households were assessed to determine whether it was being used to rebuild livelihoods or to meet daily expenses. Findings suggest that: Most expenditure of new loans is being directed to **subsistence needs** such as food and health care, rather than livelihood recovery. Livelihoods ranks as the 3rd priority behind food and health care. 50% of assessed communities report using some share of the loan for **livelihoods recovery** such as repair or replacement of assets. Greater indebtedness combined with low levels of livelihood recovery is likely to increase the vulnerability of affected households in the mid- to longer term

See Figure below for a breakdown of uses for newly acquired debt by % of communities reporting such use.

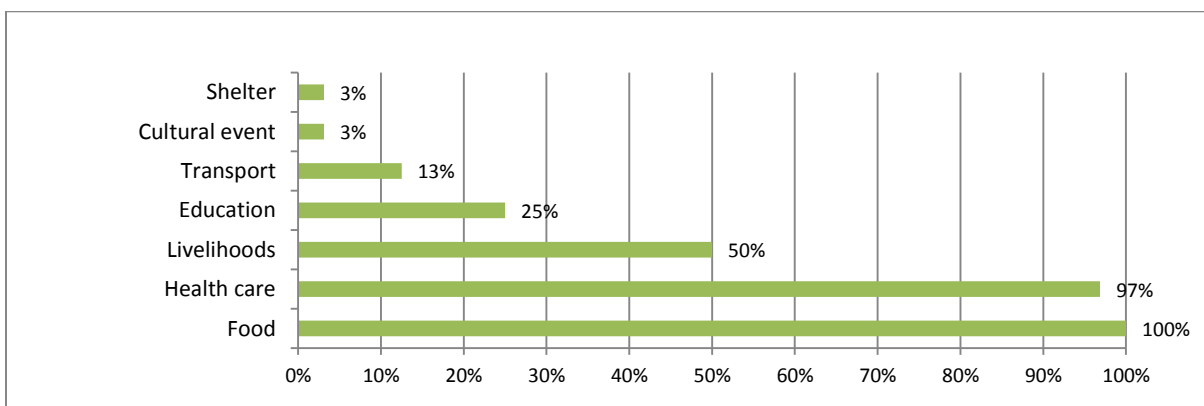


Figure 15: Uses of new Loan

4.9. Coping strategies in times of food shortage

Household coping strategies are a reflection of household food sources, income sources and expenditure in relation to the scope and magnitude of a shock or strained

situation. Strategies are weighted according to the severity and unsustainability of the behaviour to determine overall vulnerability of the household. Five coping strategies related to food shortage were assessed by settlement group (returnee, stayee, IDP and host) and analysed in terms of 1) percent of households employing each strategy and 2) Ranking of mean scores weighted by severity of strategy

The most common strategies employed by a majority of households involve **dietary change** (reliance on less preferred and less expensive foods, 78%) and **increasing short-term food access** (borrowing food or relying on gifts from friends and relatives, 57%). More damaging **rationing strategies** are employed by a smaller but still significant share of the population (limiting portion size, 29%; reducing the number of meals, 16%; and restricting consumption by adults, 12%). See Figure below.

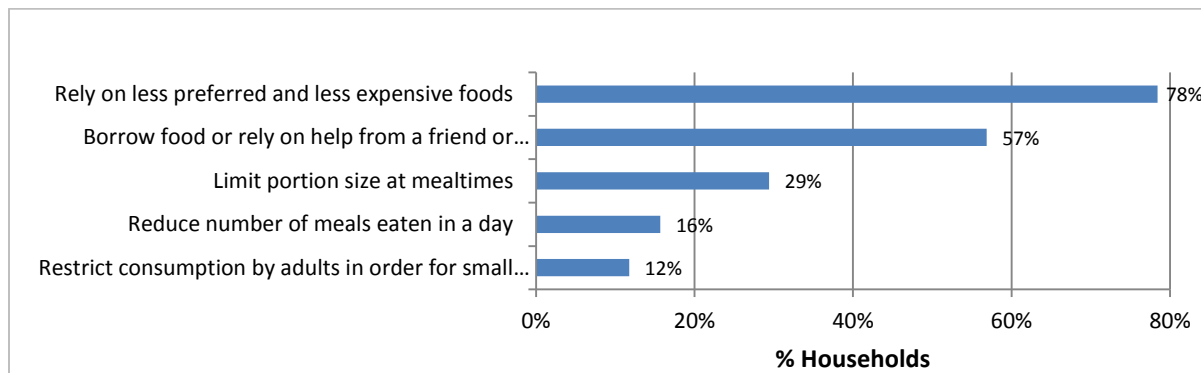


Figure 16: Strategies employed to manage food shortage

A Coping Strategies Index (CSI) score was compiled for each household based on the number of days in the past week each strategy was employed and the severity of that particular strategy.⁸ Higher scores indicate greater incidence and severity of strategies and therefore greater vulnerability. Groups were then ranked by CSI score to compare their relative vulnerability. Data suggests: **IDPs are the most vulnerable group** followed by returnee, host and stayee groups. IDP households have a mean CSI 2-2.5 times that of returnees, hosts and stayees and are 2 to 3 times more likely to rely on damaging coping strategies. 12% of all assessed households reported to have employed damaging coping strategies in the last 7 days. See Figure below for a vulnerability ranking of settlement groups by CSI score.

⁸ Frequency scores varied from 0 to 7 according to the number of days the strategy was used. Weights were assigned based on severity as recommended by CARE USA's *Coping Strategies Index Field Methods Manual*. *Rely on less preferred food, limit portions at mealtime & reduce meals* had a weight of 1; *borrow food* had a weight of 2; and *restrict adult consumption* had a weight of 3. Maximum CSI score = 56 points.

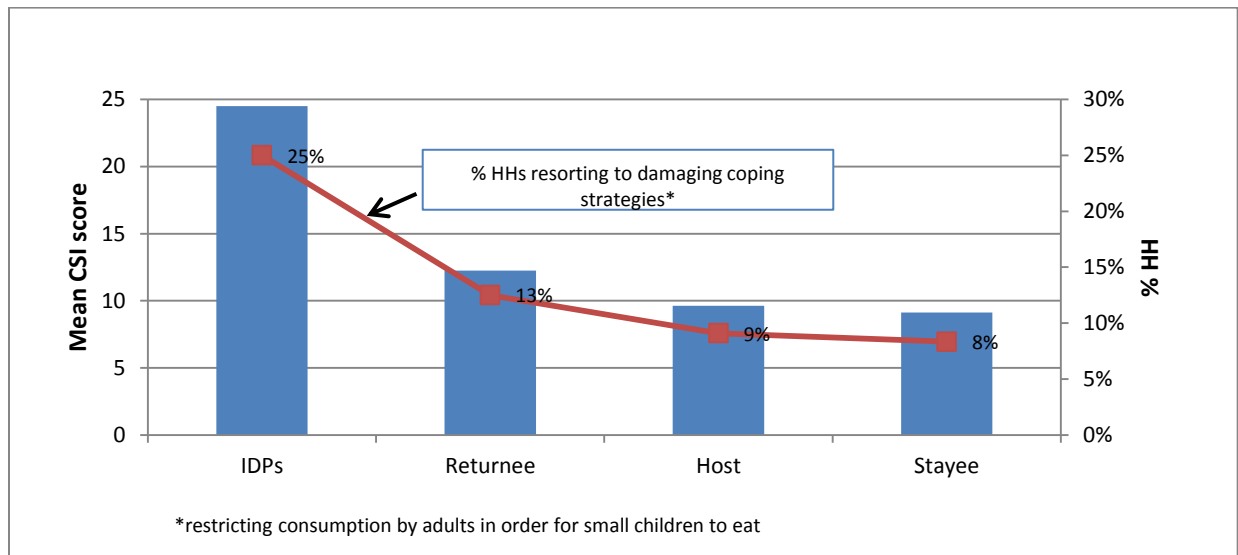


Figure 17: Coping Strategies Index

The findings suggest that a significant minority of households, in particular those resorting to more acute rationing strategies (12%), are currently facing a **very precarious food security situation** and can be considered extremely vulnerable. Qualitative data suggests these households are characterized by high dependency ratios (6-7:1) and irregular sources of income (casual labour, gifts). Many are female or disable-headed.

4.10. Disaster risk

4.10.1. Background of disaster risk in the study area

During the course of this study, data pertinent to disaster risk was collected mainly from five different sources; structured household questionnaires, FGDs, Key Informant Interview, observations and secondary sources.

All the sources clearly indicate that natural and human induced disasters are leading causes of food insecurity in the study area and affect all dimensions of food security including access to food, availability and stability of supplies, and nutrition. Most food insecure people live in areas prone to natural and human induced hazards and they are the least able to cope with shocks. Due to their vulnerability and limited capacity to manage risks, poor households are often trapped in a downward spiral of food insecurity and poverty. Globally, disaster risk is increasing due to climate change, political instability and population growth and disaster frequently bring with them a food crisis.

The socio-economics of Jonglei state in general and Pibor county in particular relies mainly on agro-pastoralist and fishing communities, the main livelihood activities being farming, cattle keeping, fishing, hunting and trading, among others. The state has two

major seasons known as the dry and wet seasons. The dry season has a cooler and a warmer period. The average annual rainfall during the wet season, usually 7-8 months per year, is 400-110mm. In Nuer, Dinka, Murle and Kachipo cultures the communities are traditionally governed by the head of the clan, followed by elders. Jieh and Anyuak communities are headed by a king. The communities have strong cultural roots and most of their activities are dominated by traditional practices such as initiations, inter-marriage and wife inheritance when a brother passes away. For instance, in Nuer community the initiation is done through tattooing and removing of lower teeth for any boy or a girl to be qualified to adulthood, whilst in the Dinka culture, in addition to these practices, the male must kill a bull in order to be promoted from childhood to adulthood. The most dominating religions in the state are Christianity and African traditional religions.

Pibor County contains five payams: Pibor/Gogolthin, Gumuruk, Lekuangole, Verteit, and Buma. An official census from 2008 gives the population figures as: Pibor/Gogolthin - 44,168; Lekuangole - 44,997; Gumuruk - 31,684; Fertet - 7,134: Total - 127,983 (excluding areas towards and around Boma). The predominant tribe residing in Pibor County is Murle. It is evident from various studies and assessments done by humanitarian actors such as UN agencies, International and National NGOs and the state government that the population in Jonglei state in general and Pibor county in particular has been suffering from natural and human induced disasters before and after independence of Republic of South Sudan. The most prevalent natural disaster causing significant damage on the lives and livelihoods of the community in Pibor County is flood. Whereas the most common human induced disasters causing insecurity in the area are ethnic and tribal conflict, presence of Rebel Militia Groups (RMGs) and cattle raiding.

It was learnt from primary and secondary research data sources that in December 2011 and January 2012 there was an intertribal attack on Pibor. It was the largest and most violent of an escalating chain of attacks and counter attacks between the Murle and Lou-Nuer tribes in Jonglei state. In the attack hundreds of people were killed, women and children were abducted, and thousands of cattle were raided. There was large scale destruction of property and looting within Pibor town. A further result of the intertribal violence was the deployment of additional SPLA troops to carry out disarmament of all civilians within Jonglei state. Starting in March 2012 and continuing through August 2012 SPLA troops (the government armed forces) have been disarming civilians in villages and towns all around Pibor County. There have been documented instances of violence associated with the disarmament process, including beatings, water torture, and rape. This has led to a poor relationship between SPLA and civilians. In August 2012 clashes began between the SPLA and the rebel group led by David Yau Yau (a former resident of Pibor) within Pibor County. This has further decreased the

security of civilians. The civilians have evacuated Lekuangle town following a clash between the SPLA and David Yau Yau rebels on 23 August, 2012. The situation has added further complications to accessing Pibor and the surrounding areas of the county. The security situation must be daily reassessed before any movement by aid personnel around the county.

Another salient natural disaster that affects Pibor County is flood happening every rainy season though the scale varies. The floods have affected both the urban and rural population in the County. The main cause for flooding in the urban areas and their surroundings is poor drainage (no culvert, no bridges). In rural areas, it is a combination of various factors that include excessive rains during 2012 rainy season, settlements that are too close to the rivers, dwellings / schools that are situated on low ground and in water ways, excessive water in the rivers that was flowing out of river channels, and unrepaired dykes.

The result of these floods (and prolonged rains) has been the displacement of people from their homes to seek shelter on higher ground (neighbors' or kins' dwellings), distortion of livelihood activities causing food shortage, destruction of food stores, and a dependency on the market rather than own production because of flood effects. Coping strategies have been introduced in different households such as skipping meals (one meal a day) while trying to feed children, turning to casual labor, selling assets (livestock) and depending on kin support. It is evident that the floods have led to the destruction of crops and an increase in diseases for both humans and animals. The flood also destructs road networks (including village to farm roads), market, and other infrastructure which causes significant damages on the economic activities of the community.

4.10.2. Types of disasters prevalent in the study areas

According to the study, all informants from the four FGDs and 82 house hold interviews said that some form of disaster had affected their villages in the preceding three years that is from 2010 to 2012. As can be seen below in table 17, the major types of disasters faced by the community under study during the last three years are ethnic conflict (between Murle – Lou Noer ethnic groups); Rebel Militia Groups (RMG) led by David Yau Yau, cattle raiding and floods. As floods are natural disasters; the rest of the disasters challenging the community are human induced disasters (ethnic conflict, RMG operations and cattle raiding).

Table 17 Type of disaster incidences from 2010 - 2012

S.N.	Type of disaster	Affected HHs (Count)	%	Affected HHs (Count)	%	Affected HHs (Count)	%
		<i>n=82</i>		<i>n=82</i>		<i>n=82</i>	
	<i>Year</i>	2010		2011		2012	
1	Flood	42	51%	44	54%	61	74%
2	Ethnic conflict (including abduction, rape and killing)	23	28%	53	65%	63	77%
3	Cattle raiding	16	20%	21	26%	27	33%
4	Rebellion groups/armed insurrection	0	0%	0	0%	77	94%
	Total	82		82		82	

It could be concluded from the table that the scale of disasters and its impact on the community has increased as years pass by. In 2010, 51% of the surveyed households were affected by floods, 28% ethnic conflict, 20% by cattle raiding and no respondent was affected by RMG movements. In 2011, ethnic conflict affected 65% of the respondents, followed by 54% floods, 26% cattle raiding and still no respondent was affected by RMGs movements. The scale of the disasters has increased in 2012 with 94% of the households responded that they were affected by RMG movements, 77% affected by ethnic conflict with Lou Nuer, 74% floods and 33% cattle raiding.

Looking at the trend per disaster, flood affected 51%, 54% and 74% of the households under study in 2010, 2011 and 2012 respectively which shows that the number of affected households has gradually increased. Ethnic conflict has also worsened through time with 28%, 65% and 77% of the respondents affected during 2010, 2011 and 2012 respectively. Cattle raiding have also increased gradually with 20%, 26% and 33% of the respondents confirmed affected. A new form of disaster has also emerged during 2012 which is RMG movement. As could be seen from the table, the Rebel Militia Groups (RMGs) movements did not exist in 2010 and 2011 but affected record high number of households in the history of disaster during the last three years with 94% of the respondents confirmed to be affected by it.

4.10.3. Effects of disasters

The study also assessed and analysed effects of these disasters on the lives, livelihoods and socio - economic implications on the community. Referring particularly to the natural disaster such as the results of floods (and prolonged rains) has been the displacement of people from their homes to seek shelter on higher ground (neighbors' or kins' dwellings), distortion of livelihood activities causing food shortage, destruction of food stores, and a dependency on the market rather than own production because of flood effects. Coping strategies have been introduced in different households such as skipping meals (one meal a day) while trying to feed children, turning to casual labor, selling assets (livestock) and depending on kin support. It is evident that the floods have led to the destruction of crops and an increase in diseases for both humans and animals. The flood also destructs road networks (including village to farm roads), market, and other infrastructure which causes significant damages on the economic activities of the community.

The salient human induced disasters in the study areas such as ethnic conflicts, RMG movements and cattle raiding has also caused devastating losses and trauma among the community in the study area. United Nations Mission in South Sudan (UNMISS) official study on incidents of inter – communal violence in Jonglei state conducted in June 2012 states that on 23 December 2011, thousands² of armed youth calling themselves the “White Army”, militarily organised and primarily of the Lou Nuer ethnic group, mobilised in Nuer areas of Jonglei State from where they moved southwards. They launched a series of systematic armed attacks on areas inhabited by the Murle tribe which lasted 12 days.

On 27 December, before the Lou Nuer youth had begun retreating to their areas in Jonglei (on 3 and 4 January 2012), smaller groups of armed Murle youth began launching multiple daily retaliatory attacks on Lou Nuer and Bor Dinka areas which lasted until 4 February. The violence has taken a severe toll on all the communities which were affected: Murle, Lou Nuer and Dinka. During that period, hundreds were killed or injured and tens of thousands displaced. At the time of writing this report, many others were reported unaccounted for, including abducted women and children, leaving families in distress. In addition, the destruction of homes, property and livelihoods in communities already suffering extreme poverty and lack of access to basic Government services makes recovery from such incidents extremely difficult.

These incidents were but the latest in a cycle of retaliatory attacks which had escalated in the course of 2011. This particular cycle began with the killing of three Lou Nuer chiefs by Murle assailants in Thiam Payam in February 2011 and culminated in one of the largest armed mobilizations in South Sudan since the signing of the Comprehensive Peace Agreement (CPA) in 2005. The failure of the government to protect civilians from violence, investigate, hold perpetrators accountable and effectively administer justice is

believed to have contributed to this cycle of retaliatory inter-communal attacks, which have resulted in increasing numbers of casualties. The attacks have been marked by acts of deliberate cruelty, including well over a thousand deaths reported since January 2011 and including the period that includes the most recent attacks.

Respondents of the household interviews were requested about the effects of each disaster on their livelihoods in the year 2012 and their responses are summarized in the table below:

Table 18 Effects of disasters on livelihoods of the households in 2012

S.N.	Consequences /effects	Flood	%	Ethnic Conflict	%	RMGs	%
a	Displaced	31	51%	43	68%	56	73%
b	Water source & clinics damaged	16	26%	23	37%	6	8%
c	Children and women abducted	0	0%	4	6%	3	4%
d	Rape	0	0%	5	8%	3	4%
e	Family member killed	0	0%	6	10%	3	4%
f	Crop destroyed or left behind	58	95%	37	59%	53	69%
g	Cattle raided	0	0%	29	46%	8	10%
h	House destroyed/damaged/burnt	28	46%	11	17%	6	8%
i	Business destroyed (damaged)	6	10%	7	11%	6	8%
j	Market destroyed (blocked)	46	75%	7	11%	4	5%
k	Looted	0	0%	15	24%	4	5%
L	Disease outbreaks (malaria, diahorhea,...)	53	87%	0	0%	0	0%
	Total	61		63		77	

In the year 2012, 95% of the respondents said that the flood partially or fully destroyed their crops on their agricultural land; 87% said the flood caused disease outbreaks such as malaria and diarrhoea; 75% households said the main market was destroyed by the flood; 51% displaced; 46% their houses were destroyed; 26% responded water sources and clinics in their neighbourhoods were damaged; and 10% of the respondents said their business destroyed.

When asked about the effects of ethnic conflicts in the year 2012, 68% of the households have been displaced temporarily or permanently; 59% left their livestock and crops/agricultural activities behind; 46% said their cattle were raided by other ethnic groups; 37% said their water sources and clinics deliberately destroyed/burnt by the perpetrators; 24% were looted their assets including productive assets. 6% said

children/women abducted; 8% said their women/daughters raped; 10% said family member/s killed; other effects include damage on the market and businesses.

Similarly with regards to RMGs movements in the study areas, 73% of the respondents said they have been permanently or temporarily displaced, 69% said they left their livestock and crops behind; 10% cattle raided; 4% of the households said either their family member killed, abducted or raped by rebel armed groups; other effects include damage on water sources and clinics, house destroyed, businesses and market damaged and looted.

4.10.4. Disaster coping mechanisms

In the study areas, data collected from the household interview and FGDs showed that the most prominent coping mechanisms adopted after disasters were to 'Reduce food intake', followed by 'Eating of non-preferred foods', 'Accepted charity' and 'Credit to buy food'. Many repairs made to infrastructure, both private and community managed structures/systems such as water points are often makeshift and insufficient to the need: the field teams observed examples such as plastic bags and tape/bandage to repair leaking pipes. This is mainly due to lack of proper tools and materials.

4.10.5. Vulnerability and Vulnerable Groups

In the assessed villages an average of 57% of the population were identified by the FGD participants as extremely vulnerable, 24% very vulnerable, 11% as vulnerable and only 7% as less vulnerable. It must be noted that this information expresses the opinions of the FGD participants in characterizing groups within the community and is not based on any objective criteria.

The groups in the population most affected by these disasters were identified as 'Women, children, elderly and disabled' followed by 'small herders and farmers' and followed by large herders and farmers. All FGDs knew at least more than one individual in the village with a disability, the vast majority of whom had physical impairments as well as some with speech impediments.

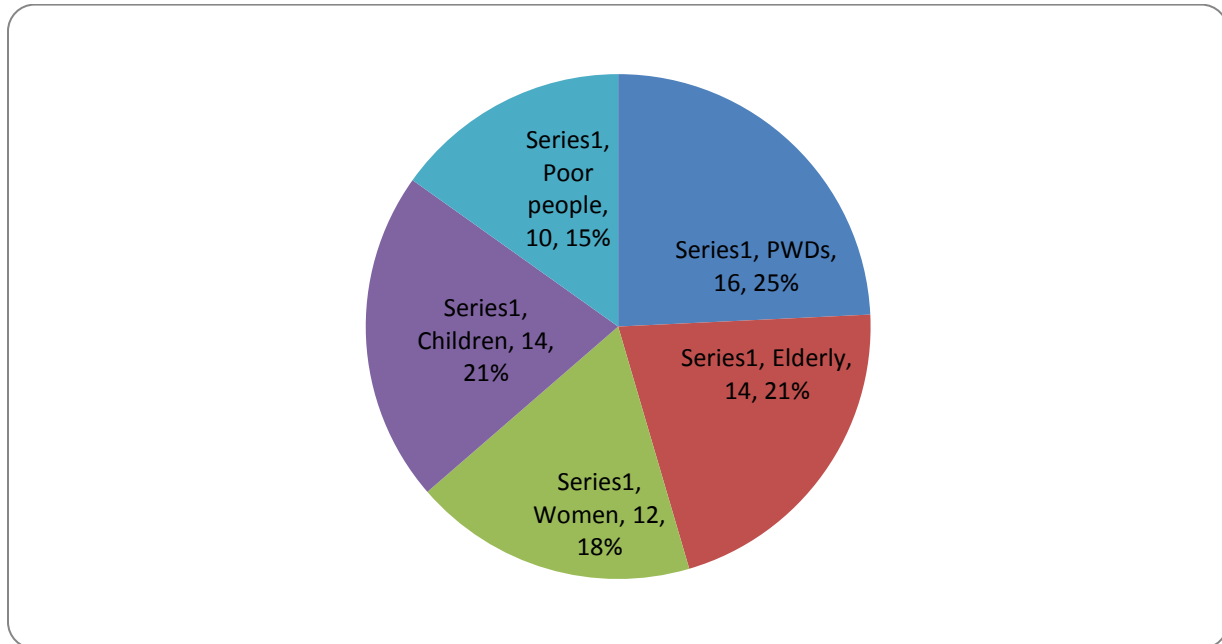


Figure 18: Vulnerable groups during disasters

4.10.6. Mitigation measures, preparedness and response

It is worth noting that there is little or no mitigation measures within the communities assessed. Observation shows that most view the disasters as God sent and man has no much control over. However some suggestions on the main necessities in terms of physical/structural mitigation measures came in the form of weirs, bridges, medicines, reforestation, retaining walls and lining of canals. This clearly shows some little knowledge that exists within communities to deal with disasters at their level but the capacity to do it is the question.

With improved technology, telecommunications and the use of phones has greatly improved information sharing, community intimated to use phones to link in the event of disasters. However most of them could not explain what would happen if the disaster destroyed the phone lines too. In the absence of early warning systems, hiding in the churches and bushes was mentioned across all the villages as the most used and possible to be used during disasters. The same is true for the perception on which to contact in the event of a disaster, the local chiefs and priests are contacted first. The presence of the local government in this respect is not exactly taken into consideration for support as perceived by community during preparation, mitigation and/or response.

The absence of evacuation plans and places means that most persons who sat at the various FGDs revealed that hiding in the bushes and relatives in safer areas are the only options when a disaster sweeps over a village. While it is more difficult for people with disabilities (PWDs) due to low mobility and loss of assistive devices in the

disasters. It is important to note that community support towards each other is quite strong and this cohesion was expressed as the mode used to clear and rebuild destroyed homes.

CHAPTER FIVE

5. Summary, conclusion and recommendation

5.1. Summary of findings

The study was conducted in Pibor County, Jonglie State of the Republic of South Sudan. Pibor Payam was particularly selected out of five Payams constituted in the county; four villages such as Manyirang and Kavachor from Gogolthin Boma and Tangajon and Bee villages from Tangajon Boma were sampled as study villages and the total sample size for household interviews were 82 covering 10% of the total households residing in the selected villages.

According to the study, the mean household size in the study areas is 6.2 persons, which is approximately close to the national average which is 6. Male constitute 46% and female 54% of the study area. Children 1-5 years of age constitute 15% of the surveyed population, children 6-18 years 29%, 18-64 years 47% and 64 years and above 10% of the study population. The overall sex ratio in the four villages was 0.85:1 or there were 85 males for every 100 females. This ratio was lower than the national average which is 1:1.

The study area is characterized by a long duration rainy season which lasts for about seven to eight months that is from April through November. The main economic activities are Cattle rearing followed by agriculture (crop production). Livestock plays the leading and most important role in the local economies of the study area, supporting household nutrition by providing often the only source of high quality food in the local diet as well as generating supplemental income and serving as a savings bank. Most households have on average 52.1 cattle and 9.6 goats and sheep.

Overall the main market is observed to be not fully functional as a result of roads blockage connecting the local (Pibor) market to main supply markets such as Juba and Bor markets during the long rainy season. This was further exacerbated by the presence of Rebel Militia Groups (named after the rebel leader called David Yau Yau Rebel Militia Groups (RMGs)) within and around the study villages beginning from June 2012 up until this study was done in March 2013 which is believed to have caused constraints in the proper functioning of the local market. The situation is worsened by launching of government troops military operations (which is officially called Southern People's Liberation Movement (SPLM)) against the David Yau Yau RMGs at the heart and peripheries of the study areas. The study shows that main constraints reported to be faced by traders are poor road condition (road blockage during rainy season) and

insecurity by 100 of the respondents; high transport and fuel costs and lack of demand from buyers (71%); lack of cash, absence of electricity supply high input and labour costs (57%) and lack of credit from suppliers (43%).

The study indicated that the community in the study areas is classified into four livelihoods groups so that 39% of the community are stayees, 26% IDPs, 16% returnees and 20% hosts.

Crop production constraints were also asked during the FGD and household interviews. Major production constraints identified during the study are lack of knowledge on modern production practices including land preparation, management and post-harvest handling; lack of agricultural extension services such as training, use of insecticides, credit facilities, etc; lack of inputs such as hand tools, seeds and fertilizers; security problems such as women/ child abduction, killing and mobility; and floods. Out of the 82 households interviewed, 48% HHs responded that they lacked proper farming practices to cultivate their plots in the year 2012; 79% faced with lack of inputs such as farm tools, seeds, etc; 80% relied security threats such as child and women abduction and killing as constraints for production; 84% replied that flood partly or fully affected their production and 23% mentioned lack of agricultural extension services as production constraints in 2012.

With livestock the major economic activity in the study areas, the majority of people are linked directly or indirectly with this sector. Average cattle holding per household is 52.1 where as small ruminants is 9.65. Despite huge livestock resources, 86% of the households responded that they do not have access to modern veterinary services and drugs in their surroundings. They get the service from traditional veterinary service providers with a reasonable service fee. Only 14% of the respondents replied they do have access to basic veterinary services (periodic vaccination) from an NGO operating in their proximity. There is no veterinary clinic run by the government in the study areas. When asked about the major constraints pertinent to livestock production, 82% of the respondents replied absence of veterinary services; 80% livestock disease and outbreaks; 78% cattle raiding; 56% lack of grazing land and pasture; 50% lack of marketing opportunities for their livestock and 45% lack of water as their challenges constraining livestock herding.

The study indicates that more than half of all food is sourced from the **market**, with significant shares also contributed by **food aid** (16%) and **social networks** (borrowing & gifts, 16%). In areas where aid is distributed (WFP and other NGOs) most sugar, tea, wheat, oil, rice and pulses is sourced from the aid. Milk, green leafy vegetables, maize and eggs tend to be sourced from **own production** when available. IDP households followed closely by returnees are most dependent on **precarious food sources** such

as borrowing, gifts and official food aid. Today these sources collectively support a large portion (61% and 55%, respectively) of these groups' food needs, but are unlikely to be sustainable in the mid- to long term.

The Household Dietary Diversity Score (HDDS) for stayees, IDPs, returnees and host community is 5.2, 4.3, 4.7 and 5.6 respectively. The percentage of households with a HDDS of 5 and below was 42%, and those with HDDS 5-6 was 58%. The results of the analysis indicate that the households in the assessed areas need to be supported so as to improve their food security. 70% of the households indicated that June through November are periods of severe food shortage in the year. The main reasons for food shortages in the mentioned periods are seasonal food gaps, decrease in supply of food in the local markets due to roads blockage which result in increase in price of main food items and decreasing purchasing capacity.

The most common strategies employed by a majority of households involve **dietary change** (reliance on less preferred and less expensive foods, 78%) and **increasing short-term food access** (borrowing food or relying on gifts from friends and relatives, 57%). More damaging **rationing strategies** are employed by a smaller but still significant share of the population (limiting portion size, 29%; reducing the number of meals, 16%; and restricting consumption by adults, 12%).

Major pre-crisis (before 2012) income sources were livestock herding (42%) followed by Agriculture/crop production (20%), relief aid (10%), unskilled Labour (9%) and gifts/remittances (7%). Following the crisis that is the devastating ethnic conflict between the Murle and Lou – Nuer in December 2011 and January 2012 that have continued to date and the movement of Rebel Militia Groups (RMGs) being led by David Yau Yau since June 2012 has turned the livelihoods of the population in the study areas. Following the crisis the relative contribution of income from major sources declined across all study villages due to displacement, disruption of economic activities and loss of assets.

All sources of credit were found to be less accessible following the crisis. Informal sources have remained most steady with declines of one-fifth to one-third of previous level, while dealer and bank credit has contracted by nearly two-thirds. One-fifth of communities report no source of credit after the crisis – these are largely IDP communities, both camp and off-camp.

According to the study, all informants from the four FGDs and 82 house hold interviews said that some form of disaster had affected their villages in the preceding three years that is from 2010 to 2012. The major types of disasters faced by the community under study during the last three years are ethnic conflict (between Murle – Lou Noer ethnic

groups); Rebel Militia Groups (RMG) led by David Yau Yau, cattle raiding and floods. As floods are natural disasters; the rest of the disasters challenging the community are human induced disasters (ethnic conflict, RMG operations and cattle raiding). Looking at the trend per disaster, flood affected 51%, 54% and 74% of the households under study in 2010, 2011 and 2012 respectively which shows that the number of affected households has gradually increased. Ethnic conflict has also worsened through time with 28%, 65% and 77% of the respondents affected during 2010, 2011 and 2012 respectively.

In the study areas, data collected from the household interview and FGDs showed that the most prominent coping mechanisms adopted after disasters were to 'Reduce food intake', followed by 'Eating of non-preferred foods', 'Accepted charity' and 'Credit to buy food'. Many repairs made to infrastructure, both private and community managed structures/systems such as water points are often makeshift and insufficient to the need: the field teams observed examples such as plastic bags and tape/bandage to repair leaking pipes. This is mainly due to lack of proper tools and materials.

5.2. Conclusion and recommendation

The study revealed the food insecurity patterns and the correlation between food insecurity and disasters (natural and human induced disasters) such as floods, insecurity/conflict and cattle raiding as they have evolved since 2009. Insecurity has greatly affected food productions in Pibor as well as continuously high level of cattle raiding and revenge attacks. This has got a bigger effect of internally displacing of people while others have fled the county to neighbouring counties such as Bor. Since the attack of December-January 2011, many people have abandoned their homes as well as their farms to either settle in Pibor County headquarter or move out of the county. This greatly affected food production negatively.

The community members related food production to key events that took place from 2009 – 2012. Study participants revealed that food security have been affected by chain of insecurity at different period of times. They realized changes in food production as result of conflicts and peace situations.

In the year 2009- Food production was high because community was stabilized as result of peace dividend, because it was interim period from the signing of CPA to election and referendum. This year there was no significant form of rebellion and communities were united toward one cause of Independence of South Sudan. While in 2010 after the election, the election results were disputed causing a rebellion that started in Jonglei state. The rebellion displaced many people, thus home and farms were abandoned. This created a sharp reduction in food production thus hunger. In the

year 2011 - Rebel Militia Group of General George Athor increased their activities and food production drastically dropped. In 2012- Conflict in Pibor is said to be at the peak as fighting between Lou Nuer and Murle intensified leading to death, killing and abduction of children and women. This is attributed to Lou Nuer's attack of Pibor in January 2012 as well as presence of David Yau Yau rebel group; whose activities increased has increased death and misery of people in Pibor.

Overall significant livelihoods-related needs were observed and identified across the study areas within all livelihoods groups such as IDPS, stayees, returnees and host community. These are linked to broad asset depletion as a result of the floods continuously hitting the area, the continuous ethnic conflicts among Murle and Lou Nuer and cattle raiding over the years and the on-going RMG movements and SPLA operations against the RMGs coupled with poor to zero rate of recovery. Markets have substantially deteriorated, without pre-crisis trade flows of major commodities restored and systems of credit and procurement.

Livelihoods recovery is likely to remain poor unless significant support is extended by the government and humanitarian actors. Findings suggest that the restoration of lost, looted and liquidated livelihoods assets such as livestock, agricultural and handicraft tools, agricultural land, irrigation networks and other small scale community infrastructure have been destructed across all the study areas. Recovery is expected to take years as a result of an acute depletion in household income sources combined with the relative isolation, poverty and continuing insecurity of these areas. Local social networks and food distributions have slightly supported the food security of the most vulnerable populations in these recent months with gifts, sharing and borrowing of food. While overall dietary diversity was found to be far below adequate as majority of the population was found to be especially vulnerable to food insecurity by their reliance on precarious food sources and unsustainable and damaging coping strategies. Overall the analysis of consolidated findings reveals IDPs and Returnees to be the most highly vulnerable groups.

5.1.1. Floods

Regardless of it being a natural phenomenon, communities in Pibor County identified flood as one of the insecurity issues that affect the level of their food production and posed threats to food security and peace at various levels in the county. Large sum of farmlands continue to be destroyed by floods repeatedly every year the rainy season comes. The floods also devastate houses, roads, small businesses and other communal assets such as health posts, schools and markets thereby cause displacement of the community either temporarily or permanently. This significantly affected the lives and livelihoods of the inhabitants to a large extent.

As the flood damages farm lands and blocks access to markets, it affects food availability from own production sources and the markets. Similarly the flood also affects the purchasing capacity of the community which reduces the people capacity to access food from markets. Flood also causes displacement and employment of stress coping mechanisms by the community such as consumption of less preferred and poor quality food, reduce number of meals, etc which directly affects people's normal food consumption patterns. Hence, the current food insecurity status of the community in the study areas in terms of availability, access and consumption is attributed to occurrence of flood every year and its devastating consequences. Not only does flooding affect food production but it also leads to destruction of property, displacement of civil population therefore, exerting pressure on few available resources.

It is recommended that the government and humanitarian community should be vigilant towards the devastating flooding incidences happening every year and put in place preparedness, prevention and mitigation schemes with in the community. The actions may include mobilizing the community to shifting settlements to upper grounds instead of staying in lowlands and river banks; construction of dikes through community participation, food for assets, food for work and cash for work programs. Moreover, it is vital to introduce flood resistant crop varieties such as rice through agricultural extension and community mobilization programs and by motivating the community through providing agricultural inputs including rice seeds to cope with the situation. It is also important to establish disaster management committee at community level comprising of youth, women, elders, paramount chiefs and local administration and provide with appropriate training and prepare disaster management plans whenever the flood situation occurs within the community. Establishing early warning committee is also equally important to alarm the community before the onset of disasters and prevent the community from being affected by disasters.

5.1.2. Attacks from RGMs David Yau Yau

Attacks from the Rebel Militia Groups (RMGs) led by David Yau Yau (the Rebel Militia Group) is another food insecurity issue identified by the study. The rebel militia group that have been based not far from the study area since June 2012 often makes unexpected attacks on government military forces officially called SPLA. In retaliation fights, some people have been killed while others displaced. Participants stated that they are not directly affected by direct violent attacks by RMGs because Yau Yau targets SPLA. However, the Youths expressed that they are directly affected by the Yau Yau presence through forceful recruitments and arrests. This in turn limits their movements and engagement in various activities such as agriculture, livestock herding

and small businesses. It was also noted that Yau Yau mainly recruits and attacks during rainy season. He hits and runs, becoming extremely difficult for SPLA to move after him leave alone getting him. The most affected payams are Pibor, Lekuongole and Gumuruk, where almost all people have run to the County capital. It is alleged that Yau Yau forcefully recruits youth into his rebel militia group. Yau Yau attacks have several negative impacts both on the general community security and food security. During the attacks residnets/community members are beaten seriously and crops are destroyed. This creates a sense of fear among the farmers that they even do not go to their farms. These obviuosly is causing food availability, access and consumption by the people.

The Government of Republic of South Sudan (GRSS) should immediately develop as a matter of urgency a comprehensive short and long-term security plan to ensure permanent protection to communities in Jonglei State in order to prevent them from suffering further attacks following disarmament. In the short term, the plan should include strengthening early warning and response systems so that prompt protective action is taken when planned attacks are detected.

5.1.3. Cattle raiding and presence of small arms

Cattle raiding were identified as an important conflict/insecurity issue. Cattle raiding are caused by presence of small arms in hands of youths who are seeking wealth, prestige, cattle to pay dowry and revenge attacks. However, the participants said that it is fuelled by community incitement, lack of order and law, inaccessibility (because of poor roads) and lack of police. Cattle raiding are mainly carried out by Nuer youth. This leads to revenge fights (Murle attacking Nuer and vice versa), loss of lives, loss of livestock, revenge attacks, food insecurity, displacement, loss of livelihood, children and women abduction and sour relationships among communities. This heavily affects food security; because in such situations people can not go to farm. Participants also said that many cows were raided in Dec 2011, depriving continued existence to those who live on cows.

The government of South Sudan launched a state wide disarmament process since March 2012 immediately following the devastating ethnic conflict between the Murle and Lou Nuer communities. Despite the on-going disarmament process in Jonglei state, the study found out that there is still presence of some arms in the hands of civilians. The study participants specifically stressed that David Yau Yau was arming youths while other youth have not been fully disarmed. Participants agreed that disarmament process was interrupted by activities of Rebel Militia Group (David Yau Yau) and hence, some guns are still in the hands of civilians. This is re-enforced increase as forcefully recruitment youth by Yau Yau, when these youth return back to their communities they come along with the acquired small arms. Some of them distribute or sell to their

colleagues. This raises concern that it might continue in perpetuating conflict among communities, resulting into more displacements, inter-tribal fights, and loss of lives, disabilities, facilitating cattle raiding, and increased insecurity at community level.

It is recommended that the GRSS should develop a comprehensive, multi-sectorial plan with short, medium and long-term actions to respond to the main causes of the violence in Jonglei State, including confidence-building measures designed to create a stable and secure environment, reduce inter-communal tensions and create a climate conducive to equitable long-term socio-economic development for all communities. The peace process which has been launched in the state, the civilian disarmament programme, the investigative committee launched to look into the violence and criminal investigations to prosecute those responsible for the killings and other serious crimes should all be incorporated into such a plan. The Government must ensure that the peace process already launched is fully supported in terms of resources, that the consultation process underway is broad enough to include all affected groups and allows them to express their grievances. Those leading the process should ensure that it includes a strong focus on human rights principles, including non-discrimination, economic, social and cultural rights, and the rights of the victims of attacks to justice and reparations. It is imperative that an implementation monitoring mechanism be established to ensure that recommendations are implemented.

5.1.4. Ethnic conflict (due to limited water points, grazing land and child/women abduction)

Limited water points and competition over grazing land

The study identified limited water points and lack of clean water and lack of boreholes as insecurity issues. Parties in the conflict are the communities in Pibor mainly women. Youth said that limited water points for animals also affecting the security of youth in the county. This facilitates cattle raiding between Nuer and Murle youths. During dry season Nuer Youths come to Pibor in search of river water. The two youth during this time engage in wars. Facilitated by the presence of arms, the youth then engage in cattle raiding. Effects of the conflict might be loss of lives and health problems. Women are particularly affected as they have to walk long distances to fetch water, which might also lead to reduced time (hours) dedicated to production of food.

The county is blessed with sufficient grazing lands for the county's cattle but during dry season the county witness migratory movement of cattle and cattle keepers from neighbouring counties of Bor and Akobo. The participants especially observed the presence of the unknown cattle keepers who come to Pibor in guise of looking for pasture and water during dry season. When it is time to return home they also raid or

steal Murle cows. The competition over grazing land many times leads to displacement of residents, loss of property and loss of lives and livelihood (cattle).

It is recommended to construct various water sources for livestock along the borders of possible intrusion areas to avoid potential interactions among ethnic groups so that those water points could serve as buffer zones. Moreover, continue with balanced disarmament process is vital to minimize possible conflicts arising out of competition over resources. In this regard participation of elders, paramount chiefs and the youth who are potentially involved in the conflicts could play a significant role in the peace and disarmament process.

Child and women abduction

Issues of child and women abduction in Jonglei state for long time have been associated with Murle however, during the Lou Nuer and Murle tribal clashes, Pibor County experienced massive child and women abduction. During consultation participants explained how child and women abduction increased revenge attacks by both tribes and loss of mutual trust among the communities, more trauma and lack of peace and security. 13th November 2012, was a very remarkable event as Pibor County witnessed the return of children that were abducted by Lou Nuer and participants told consultation team that it was as a result of Jonglei Peace Conference aimed at reconciling communities (Dinka, Lou Nuer and Murle) resolving conflicts. According to the local people, not only did the return of abducted children restore hopes on peace and security but it healed the wounds and trauma it inflicted on the communities and especially the parents.

The Government, State and local leaders should begin to condemn killings, abductions, destruction of property and cattle-theft as criminal acts which will be prosecuted through the courts. Hate speech and incitement to violence on the grounds of ethnic origin should be also publicly condemned and prosecuted. Resources need to be made available to rapidly strengthen all aspects of the justice system in Jonglei, possibly through a rapidly deployable mobile investigative and prosecutorial court system initially, so that it is equipped to deal with large scale crimes which occur in the context of inter-communal violence. The GRSS, with the support of the international community, should ensure that there are mechanisms in place to support the recovery and reintegration of abducted individuals in accordance with their best interests. In particular, it should ensure the establishment of the Child Abduction Recovery Taskforces at county and payam levels, as recommended previously.

5.1.5. Lack of Road, health facilities and unemployment

Lack of road networks

Road infrastructure in Jonglei has been one of the greatest challenges and this has affected socio-economic activities of the people in different ways. Pibor County being far away from the State Headquarter has suffered for number of years from food insecurity and conflict due to road inaccessibility creating no access to markets and other services delivery. Security forces in Pibor have not been able to reach to the scene of incidence on time due to lack of road or poor road condition and furthermore clearing the rebels in the area has also been attributed to lack of road. Young people with potentials of engaging in small business cannot undertake business activities as they remain locked up in the county and this has created idleness and participation in small crimes. Generally this situation has affected basic services delivery, food supply, market accessibility and trade hence, widening poverty lines and affecting peace and community security.

Lack of health services

The study also assessed how lack of health services affect all levels of production in the society be it reproduction or food production. Pibor County lack basic health facilities that offer basic health services and this has adverse effects on health and especially women and children. No maternity health care, lack of professional medical staff, trained midwives, clinics and Primary Health Care Units (PHCU). This has contributed to unsafe delivery and increased mortality rates in Pibor County. Due to road inaccessibility local community members are unable to have access to health facilities at state Headquarter coupled by insecurity on the way.

Unemployment

Unemployment was also brought up as a food insecurity and conflict issue. Causes of unemployment include insecurity, low level of or no education, lack of capital and lack of entrepreneurial skills. Unemployment particularly affect youth (both men and women). Effects of unemployment include low standard of living, increased number of crimes, dependency, increased crisis in the areas, cattle raiding due to redundancy and desire for dowry, migration (rural and urban), and redundancy. It was observed that majority youth in Pibor have not been exposed to any other life apart from that of gun and cows. In event where cattle are raided and guns taken away, this youth remain redundant. There was also a general concern that youth in Pibor have an attitude of waiting for government and NGOs to offer jobs to them. While others are lazy, they don't have initiative of looking or creating jobs for them. There was also an attitude that Agriculture is meant for elders and women.

While recognising the current budgetary constraints facing the GRSS, it is essential that the Government, with the support of the international community, gives priority to developing the provision of basic services such as food, adequate shelter, health care

and education. Initiation of micro and small enterprises schemes particularly designed to create employment to youth is an important aspect that should be taken into consideration in the peace building process.

5.1.6. Lack of agricultural extension services (crop and livestock)

Major crop production constraints identified during the study are lack of knowledge on modern production practices including land preparation, management and post-harvest handling; lack of agricultural extension services such as training, use of insecticides, credit facilities, etc; lack of inputs such as hand tools, seeds and fertilizers; security problems such as women/ child abduction, killing and mobility; and floods. The Key informant interviewees from state to local level recognized and underlined the fact that limited availability of well-trained agriculture professionals at all level is attributable to poor crop production and farming practices prevailing in the study areas. The government's Ministry of Agriculture and fisheries doesn't have clearly designed policies and strategies on the sector and the ministry offices at national, state and county levels are characterized by lack of qualified personnel coupled with insufficient budget to properly run the Ministry at desired level. The Ministry has only one or two focal staffs at county level and there hardly exist extension personnel in the local structure below the county such as at Payam, Boma and village level. Credit services for agricultural inputs such as farm tools, seeds and fertilizers are totally non – existent at local level. Markets also fail to supply these inputs as the local market is totally constrained by road inaccessibility and insecurity. These altogether created numerous challenges on the farming system in general and crop production in particular.

Institutional reform is required within the Ministry of Agriculture and Fisheries considering the fact that it should extend its presence up to village level and ensure well trained agricultural extension agents are in place to provide required extension services. To materialize this, the government should work closely with humanitarian community and UN agencies that have the capability to provide technical assistance in this regard.

With livestock the major economic activity in the study areas, the majority of people are linked directly or indirectly with this sector. Average cattle holding per household is 52.1 where as small ruminants is 9.65. Despite huge livestock resources, 86% of the households responded that they do not have access to modern veterinary services and drugs in their surroundings. They get the service from traditional veterinary service providers with a reasonable service fee. Only 14% of the respondents replied they do have access to basic veterinary services (periodic vaccination) from an NGO operating in their proximity. There is no veterinary clinic run by the government in the study areas. When asked about the major constraints pertinent to livestock production, 82% of the respondents replied absence of veterinary services; 80% livestock disease and outbreaks; 78% cattle raiding; 56% lack of grazing land and pasture; 50% lack of

marketing opportunities for their livestock and 45% lack of water as their challenges constraining livestock herding.

It is recommended that the government should realize the potential of livestock resources in the country's economy and allocate sufficient funding to train veterinary experts, build veterinary clinics in areas where there are huge livestock resources and provide appropriate services to the community with a reasonable service charges.

5.1.7. Absence of well-structured disaster risk management (DRM) policy/strategy and institutional set up for disaster risk reduction (DRR)

In South Sudan, Relief and rehabilitation commission (RRC) is responsible the responsible agency to deal with disasters and its set up is at national, state and county levels with no presence at county, Boma and village levels. It has not yet sanctioned its disaster risk management policy as the policy has been under review for about two years now. It focuses on responding to disasters as it is not systematically designed to provide services on prevention and preparedness. The institutional set up remains suspended at county level with no representation at Payam, Boma and village level in the community do not have any stake in DRM and DRR programs.

It thus is important for the RRC to finalize its policy and strategy and familiarize the strategy to all actors including the community at large; cascade its institutional set up down at community level to make sure the community participates in prevention, preparedness and mitigation schemes. Moreover, the RRC commission should also put local level structures in place to make sure DRR schemes are properly implemented through community participation to maximize impact.

It is also equally important to realize the fact that DRR could not be achieved by the effort of a single institution such as RRC. DRR is widely recognized as a multi-disciplinary and multi-agency effort that should be mainstreamed in the planning and implementation of development and humanitarian response programs and through wider participation of grass roots actors including the community. Hence, mainstreaming DRM should also be a core element of DRM strategy of the country.

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7. Annexes

Annex 1: Household questionnaire

1. General information

State: Jonglei County: Pibor

Payam: _____ Boma: _____ Village: _____

Name of respondent: _____ Gender: M: _____ F: _____

Age: _____

1.1. Family composition:

Age group	Number	Male (number)	Female (Number)	Disability (number)	Total
1 – 5 years					
6 – 18 years					
18 – 64 years					
64 and above					
Total					

2. Livelihood and settlement group

2.1. Livelihood group of the household

- a. Purely agriculture _____
- b. Purely pastoralist (livestock herding) _____
- c. Agro pastoral _____
- d. Self employed _____
- e. Government employee _____
- f. Other (Specify) _____

2.2. Settlement status of the household

- a. Permanent resident _____
- b. Refugee _____
- c. IDP _____
- d. Returnee _____
- e. Other (specify) _____

3. Livestock holding and management

3.1. Do you currently own any livestock? Yes No

3.2. If yes, how many (fill the table below)

Cattle	Sheep and goat	Poultry	Donkeys/horses	Other (specify)

3.3. Where does the household keep their livestock? (tick)

- a. Cattle: Homestead/barns: _____ Cattle Camp: _____ Other (specify) _____

- b. Sheep/goat: Homestead/barns: _____ Cattle Camp: _____ Other (specify) _____
- 3.4. If no, have they ever owned livestock previously? Yes _____ No _____
- 3.5. If yes, why have they destocked their livestock?
- Due to livestock disease (outbreak) _____
 - Lost due to cattle raiding _____
 - Sold/exchanged _____
 - Displacement _____
 - Left behind _____
 - Other (specify) _____
- 3.6. Do they have access to veterinary services (vaccination, drugs,...) for their livestock?
Yes _____ No _____
- 3.7. If yes, where do they access the service?
- Veterinary clinic owned by government _____
 - Veterinary clinic owned by NGOs _____
 - Traditional service providers _____
 - Other (specify) _____
- 3.8. What are the main challenges being faced by the household pertinent to livestock herding?
- Livestock disease (outbreak) _____
 - Grazing land/pasture _____
 - Water _____
 - Cattle raiding _____
 - Other (specify) _____
- 4. Agriculture and land holding status**
- 4.1. Does the household have access to land? Yes: _____ Landless: _____
- 4.2. If yes, do you farm? Yes _____ No _____
- 4.3. If yes, what kind of farmer?
- Land owner: _____
 - Share cropper: _____
 - Land renter: _____
 - Other (specify) _____
- 4.4. Land holding size and cultivation (skip this question if the household is landless)
- 4.4.1. Total Land owned/shared/rented by the household in 2012 _____
- 4.4.2. Total Land cultivated in 2012 _____
- 4.4.3. If the land owned is not cultivated fully or partly, why?
- Lack of access to land: _____
 - Lack of hand tools: _____
 - Lack of inputs (seeds and fertilizers) _____
 - Security problem (abduction, killing, ...): _____
 - Shortage of labor: _____
 - Other: specify _____

4.5. What type of crops has the household cultivated last production season (2012)?

S No	Crops, vegetables and others	Area cultivated	Total quantity	Yield
1.				
2.				
3.				
4.				
5.				

4.6. How did you use the wheat, maize, rice, etc., that you harvested last harvest season (in 2012)? (Must add to 100 %)

Did not use (still in my house) %	Sale to get income %	Sale for debt reimbursement %	Exchange %	Gift to family/poor %	Given to landowner %	Other %

4.7. For how long will the household sustain from own production this season (beginning from the period of harvest)? _____ months

4.8. How does the household prepare land for cultivation?

- a. Manual
- b. Tractors
- c. Ox plough
- d. Other (specify)

4.9. What are the sources of hand tools they are using?

- a. Traditional artisans
- b. Local input vendors (at payam or county markets)
- c. Made by self
- d. Other (specify)

4.10. What type of seeds are they using?

- a. Local seed varieties
- b. Improved seed varieties
- c. Hybrid seed varieties
- d. Other (specify)

4.11. What was the source of seeds for 2012 cultivation?

- a. Own savings from previous harvest
- b. Bought from market
- c. Borrowed from neighbors or relatives
- d. Received from government for free
- e. Received from government through a credit package
- f. Received from NGOs in the area

- g. Other (specify)
- 4.12. Does the household use fertilizers? Yes _____ No _____
- 4.13. If yes, what type of fertilizers are they using?
- organic fertilizers (compost, cow dung, ...)
 - inorganic fertilizers (DAP, UREA, ...)
- 4.14. What is the source of fertilizers?
- prepared at homestead (for organic)
 - market
 - government package
 - NGO support
 - Other (specify)

5. Income Sources and expenditure

- 5.1. How many people are working in your household? Total ____ Male: ____ Female: ____
- 5.2. What is the main source of income in your household?

No	Activity	1.2.4.1. Rank your three major sources of income (1-3)	1.2.4.2 Estimate the income value in SSPs last year (in 2012)
1	Agricultural production (sale): wheat, maize, vegetable, fruit trees, other crops		
2	Animal production (for sale or for rental): breeder		
3	Handicraft		
4	Paid job (government employee, daily worker in farms, shopkeeper...)		
5	Remittance (in South Sudan) : Money coming from family members working in S but outside the province		
6	Remittance (outside South Sudan): Money coming from family members outside of South Sudan		
7	Mortgage or sale of land		
8	Sale of productive assets (agro tools, craft tools, etc...) including animals		
9	Sale of indoor products such as embroidery, stitching, etc.,		
10	Sale of non productive assets (gas, kitchen, watch, charcoal, firewood, etc...)		
11	Others. Specify		
	Total		

5.3. How did you spend the cash you earned in 2012? Please rate in % accordingly

S.N.	Expenditure item	%
1	Food	
2	Clothing	
3	Dowry	
4	Bought assets (animals, farm tools, ...)	
5	Debt repayment	
6	Health	
7	Education	
8	Saving	
9	Social events	
10	Shelter improvement	
11	Others	

5.12. Do you have any debt? Yes No

5.13. If yes, what is the source of debt for the household?

- Informal (traditional) lenders
- From local micro finance insitutions
- From formal banks
- From friends, relatives, neighbors, etc
- Other (specify) _____

5.14. If yes, how much do you owe (in SSPs)? _____

5.15. Do you think you will need to take debts again for the coming year?

- Yes No No clear idea

6. DIETARY DIVERSITY, FOOD ACCESS AND FOOD DIVERSITY

3.1. What foods have been eaten in the household in the **last 24 hours**? 1=yes 0=no

		Score (0 or 1)	Main Food Source	Food Source codes
a	Cereals – corn soy blend, pasta, rice, ugali, chapatti, sorghum, biscuit, bread etc.	_	_	1 = Own production (crops, animals) 2 = hunting, fishing 3 = gathering 4 = borrowed 5 = purchase 6 = exchange labour for food 7 = exchange items for food
b	Roots and tubers – potato, cassava, sweet potato etc.	_	_	
c	Vegetables – sukma wiki, sombe, spinach, pumpkin, cabbage, tomato, onion, hoho etc.	_	_	
d	Fruits - mango, papaya, guava, banana, watermelon, avocado, orange, lemon etc.	_	_	
e	Meat, poultry, offal - goat, camel, sheep, cow, chicken, liver, kidney, heart etc.	_	_	
f	Eggs	_	_	
g	Fish and seafood – dried or fresh	_	_	
h	Pulses/ legumes/ nuts – beans, lentils, nuts, peas, nuts, seeds etc.	_	_	

i	Milk and milk products – fresh, powdered, yogurt etc.	<input type="checkbox"/>	<input type="checkbox"/>	8 = gift (food) from family relatives 9 = food aid (NGOs etc.) 10 = Other specify:
j	Oil/ fats – oil, fat, butter, ghee etc.	<input type="checkbox"/>	<input type="checkbox"/>	
k	Sugar – sugar, honey, sweets etc.	<input type="checkbox"/>	<input type="checkbox"/>	
l	Miscellaneous – tea, coffee, chat, condiments (royco) etc.	<input type="checkbox"/>	<input type="checkbox"/>	
TOTAL HDD S SCORE (0-12)				

7. Disaster risk

7.1. Has your family been affected by disasters in the last three years? Yes ____ No ____

7.2. If yes, please fill the following table

S.No.	Type of disaster	2010	2011	2012
1	Flood			
2	Ethnic conflict (including abduction, rape and killing)			
3	Cattle raiding			
4	Rebellion groups/armed insurrection			
5	Drought			
6	Other (specify)			

7.3. How was the family affected in 2012?

Consequences	Flood	Conflict	Cattle raiding	Rebellion groups/armed insurrection	Drought	Others (specify)
a. Displaced						
b. Water source and clinics damaged (destroyed)						
c. children and women abducted						
d. Rape						
e. Family member killed						
f. Crop destroyed or left behind						
g. Cattle raided						
h. house destroyed/damaged/burnt						
i. business destroyed (damaged)						
j. Market destroyed (blocked)						
k. Looted						
l. Other (specify)						

7.4. What coping mechanisms were used for the disasters that happened in 2012?

Coping method for disasters	Flood	Conflict	Cattle raiding	Rebellion groups (armed insurrection)	Drought	Others
a. Reduced food intakes						
b. Sale of assets						
c. Eating of non-preferred food						
d. Credit/loan to buy food						
e. Accepting charity						
f. Displaced						
g. Other (specify)						

8. COPING MECHANISMS for food shortages

8.1. In 2012, what were your strategies to manage your food needs in the absence of food or cash? (Please **Rank** accordingly. You can provide several answers)

- a. Sold animals and other assets for money
- b. Got more debts
- c. Sold other productive assets
- d. Reduced quantity and number of meals per day
- e. Migrated out of the village in search of job
- f. Requested relatives for support (money, food, ...)
- g. Requested government or NGOs for food
- h. Did not have any options to get enough food
- i. Other (specify) _____

Thank you

Annex 2: Key informant interview questionnaires (at county and Payam level)

- 1. Demography and social organization**
 - Current population of the study area
 - Population and HHs before and after disasters
 - Gender and age distribution
 - Current proportion of working aged population
 - Proportion of working aged population before disasters
 - Community hierarchy or organisation (How are community decisions made, are there any user committees established etc?) Impact of the disasters
- 2. Main Livelihood Category of the study area**
 - Agro-pastoral
 - Pastoral
 - Trade/small business
- 3. Main Characteristics of the area**
 - production system,
 - topography,
 - vegetation,
 - natural resources,
 - population density,
 - soils,
 - rainfall
- 4. crop and livestock**
 - Main Crops Consumed: Rank in order of importance for home consumption
 - Main Crops Sold (food or cash crops): Rank in order of importance for household cash income
 - Main Livestock & Livestock Products Consumed: Rank in order of importance for home consumption
 - Main Livestock & Livestock Products Sold: Rank in order of importance for cash income
 - Livelihood zone Population: Agro-pastoral, Pastoral, Traders/Small business
- 5. Agricultural Production**
 - A. Crop
 - Main Food Crops
 - Cash Crops
 - Oil crops
 - Vegetables
 - Crop Production
 - Use of inputs hybrid seeds, fertilizers, pesticides
 - Livestock

 - B. Livestock
 - Live animals
 - Animal product
 - Tenure System: traditional and modern
 - Livestock population (in the last three years 2010 – 2012)
- 6. Disaster history**
 - Main disaster happened from 2010 – 2012 (natural and manmade)
 - Frequency and periodicity
 - Effects of disasters on Production System/Livelihoods of the population
 - What coping strategies have people adopted to respond
- 7. General impact of the disasters**
 - _ Estimate roughly the level of destruction (25%, 75%, totally destroyed...)
 - _ Which assets remain?
 - _ What type of populations were the most affected? Why?
 - _ Proportion affected vs. non-affected population (%)
 - _ Loss of housing
 - _ Loss of main livelihood (main source of income)
 - _ Loss of head of family
 - _ Loss of working aged people
 - _ % HH affected by all these (HH with destructed housing and main livelihoods, & loss of working aged people & head of family)
 - _ % HH affected by two of the first three
 - _ % of population
 - _ living in own houses (without IDPs)
 - _ temporary shelters/camps
 - _ with host families (not host families themselves)
 - _ host families
- 8. Population movements**
 - _ What were the population movements immediately after the disasters?
 - _ Currently, are there any population movements taking place? If yes,

what? From where to where?

Who is moving? Why? For how long do you think these movements will take place (projections)? Why?

- _ Make a map of population movement since the disasters and distinguish times
- _ Resettlement camps

9. Sources of food

- own production, purchase, gathering/wild foods etc?
- External aid

10. Trade, markets and supply of food (focus on staple foods)

_ Is there any trade in the village, especially food and other basic items? Since when? If not, where is the closest market?

_ Is the supply adequate? If not, why? What is available?

_ Where do the foods come from? Where are the main markets in the area? Make a map of current and pre-tsunami/earthquake food supply/trade links (Note reasons for rupture). See example in annex.

_ Current and pre-disaster prices of basic food items, availability and origin

_ If produce of the village is sold: producer prices (farm-gate prices)

_ During a normal year, is trade affected seasonally? How, when and why?

11. Sources of income

_ What are the main sources of income normally? Rank in order of importance and establish % of population involved.

_ Do HH normally have more than one source income? If yes, what and how?

_ How did the disasters affect the sources of income/food?

_ Are you going to re-establish the affected sources? How? How long will this take? What are the main constraints to re-establish the activity? If some sources of income will not be re-established, why?

_ Have new sources of income emerged? What? Who benefits of these? Do these have any negative effects? What? Who is affected?

_ How is the work traditionally divided (including household tasks) among men, women, children and the elderly (who does what)? Has this been affected by the disaster? How?

_ During a normal year, are the sources of income affected seasonally? How, when and why?

12. Specifics for agriculture

_ What proportion of the population was involved in agriculture before the disasters?

_ How is access to land assured? (own through hereditary rights, rented...)

_ Where is the land located?

_ How much was irrigated? How much is irrigated?

_ What do you cultivate normally? Make agric calendar of main crops, including cash crops.

_ How are the crops used (own consumption, sales, saved for seed...)

_ How was agriculture affected by the disasters? % of crops destroyed? % of land destroyed?

_ What kind of harvest do you expect? List main crops (including cash crops) & estimate in % the harvest as compared to last year.

Annex 3: Focus Group Discussions questionnaire template and guideline

1. General information

County:

Payam

Boma

Village

Livelihood zone:

Number of participants Men and women

Date of interview

2. Land tenure system

- Grazing and farming land

3. Agricultural production

3.1. Livestock production

- Meat and milk production
- Adaptation strategies (strategy, route, season)
- Threat for different adaptation strategies

3.2. crop production

- main food and Cash crops
- yield: cereals, pulses and vegetables with and without inputs and seed requirement
- inputs utilization (type, source and % of population)
- cultural practices

4. Hazards

- Type (natural and manmade)
- Trends and seasonality and effect on production

5. Population movements

- Displacements and returnees
- Seasonal movements and economic migration
- IDPs: living place, relationship with host community

6. Vulnerable group description and ranking

- Level of vulnerability and % of population
- Definition
- Livelihoods (source of income and food)
- Ranking

7. Effect of disasters on food security

- Impact of disasters on:
 - o Food production and productivity
 - o Food access and availability
 - o Livelihoods options such as income sources
 - o Infrastructure and public assets
 - o Market and connection with other areas

8. Existing mitigation measures and strategies

- Local mitigation measures
- Institutional arrangements and policies
- Role of different actors towards responding to disasters

Annex 4: Focused Group Discussion for Disaster Risk Management

Objective: To obtain community information through participatory methods in respect to disaster mitigation, prevention, preparedness and rehabilitation

State

County

Payam

Boma

Village

Date:

Participants:

Position	Name	Preferred Nickname	Gender	Age	Signature
Boma administrator					
Boma elders					
Health Worker (LHW/LHV/Dispenser)					
School Teacher					
Security Person					
Medical Doctor					
Women's Representative					
Youth Representative					
Community Representative					
Students Representative					
<i>PWDO Focal Person / Representative</i>					
<i>Older persons' Representative</i>					

1. **General**

1.1 **Community Activities**

Livelihood	Farming	<p><i>(Check all that take place, add if others)</i></p> <ul style="list-style-type: none"> - Rice - Wheat - Mustard - Tobacco 	<ul style="list-style-type: none"> - Vegetables (any) - Root crops (Sweet potato & cassava) - Corn/Maize - Livestock (Cattle, Goat, Pig) - Poultry (Chicken) - Sugar cane
	Labor	<p><i>(Check all that take place, add if others)</i></p> <ul style="list-style-type: none"> - General laborer - Farm labor - Construction Labor - Office jobs - Institutional jobs (Schools, College, Hospital etc) 	-
	Vendor	<p><i>(Check all that take place, add if others)</i></p> <ul style="list-style-type: none"> - Fruit/vegetable seller - Handicraft - Merchandiser (Whole seller, Dealer etc) 	<ul style="list-style-type: none"> - food items seller - Agriculture inputs (tools/Seeds) - Livestock and fodder - Construction materials

Any other livelihood activities which are being done by Persons with Disabilities and other vulnerable groups? (Although PWD activities may fall in any of the above activities and livelihoods in each locality may differ, but at least the PWD and other most vulnerable groups' activities must be highlighted when doing this assessment.)

Market Access	<p>(Check all that apply, add if others)</p> <p>INFRASTRUCTURE</p> <ul style="list-style-type: none"> - Foot path - PCC road - Road without Black topping - Farm to market road - G.T road - National highway/Motorway - Walking 	<p>COMMON TRANSPORTATION</p> <ul style="list-style-type: none"> - Horse / Donkey Cart - Single motorcycle - Tricycle/Rickshaw - Private car - Jeep - Truck - Bus
Coping Method	<p>(Check all that take place, add if others)</p> <ul style="list-style-type: none"> - Fishing in river??? - Support from relatives - Extended family??? - Stored grains (Wheat, Maize, Rice etc) - Stayees (Remain in House) 	<ul style="list-style-type: none"> - Locally Produced vegetables - Access credit/Loans - Eat seeds meant for planting - Handicraft production??? - Leave the Area (Internally Displaced)

2. Natural Hazards/ Calamities/Disasters

2.1 Natural calamities' record

Natural Calamity	Where? (U.C./Village)	Rank in danger (1=highest)	How many in the last 5 years (specify the years and names)	Causes mass evacuations (yes/no)	Was the identified Evacuation Center (EC) accessible to all?	What early warning systems were used to spread information?	Was the Early Warning System (EWS) able to reach all people including PWD?
Flooding							
Landslide							
Storm surge							

Typhoon wind/rain							
Drought							
Man Made i.e Conflict							
EarthQuake							
Others (specify)							

Note: the additional 2 columns on accessible EC and Inclusive EWS must be emphasized at this activity to remind the population that accessible EC and Inclusive EWS must be incorporated in future plans / activities. The sample table on accessible EC and EWS can be taken from the sessions on “Accessibility guidelines” and “Inclusive PCVA” on “Mainstreaming Disability into DRR initiatives” training.

2.3 Causes & Consequences.

2.3.1 Causes /Consequences/ Ideas for Improvement.

Activities	Is it affected by calamities? (specify how)	Can it trigger calamities? (specify how)	Suggestions, Recommendations, Ideas for Improvement
Livelihoods activities <small>(including land use, natural resources management.....)</small>			
	Is it affected by calamities? (specify how)	Can it trigger calamities? (specify how)	Suggestions, Recommendations, Ideas for Improvement

Planning/ Housing (characteristics and location)			
Others (transport, communication.....)			

2.3.2 Causes/ Consequences: Ranking

From the above selected causes and consequences establish a ranking (1= the highest)

Activity linked to calamities.	Affected by calamities	Favoring the risk to calamities.

2.4 Community Vulnerability and Capacity (coping mechanisms).

2.4.1 Vulnerability to Natural Calamities

Who is most vulnerable to natural calamities?	Why are they vulnerable?	Recommendations

Note: one of the answers above that is expected from the community or be prompted by the facilitator if it is not mentioned by the community themselves, is the PWD. PWD crosses other vulnerable sectors, thus, addressing their problems and needs also addresses other vulnerable sectors of the community. Why are they vulnerable? (see attached document)

2.4.2. Prevention/ Mitigation.

2.4.2.1 What is the people's general knowledge about hazards and calamities?⁹(List in order or importance).

Types of natural hazards affecting its community and their characteristics.	
Prediction's methods of each type of natural hazard.	
When the hazard became calamity?	
Main consequences of	

⁹Assess how deep is the knowledge and approximately how many people (%) from the discussion group posses that awareness.

each type of calamity.	
Possible community mechanism to reduce its impacts.	

2.4.2.2 Mitigation measures.

- **What physical or structural mitigation¹⁰ measures exist in the community?**
 - Flood defense.
 - Retaining walls.
 - Dike.
 - Others (specify)_____
 - Culverts.
 - Buildings strengthening.
 - Plantation (River banks, Mountains etc)
- **If it exists any, to what extent does it minimize the disaster impact?**
- ***Does this structural mitigation measures considered accessibility features like cemented footpath to prevent soil erosions and accidents of people, wide walkways, etc.?***
- **If it exists any, which institution/organization has provided it?**
- **What are the main necessities in terms of physical/ structural mitigation measures?**
- **What non-structural measures exist in the community?**
 - Training in disaster management.
 - Land use regulation.
 - Reforestation projects.
 - Others (specify)_____
- **If it exists any, to what extent does it minimize the disaster impact?**
- **If it exists any, which institution/organization has provided it?**
- **What are the main necessities in terms of non-structural mitigation measures?**

2.4.3 Preparedness.

¹⁰Where mitigation measures is understood as any action taken to minimize the extent of a disaster or a potential disaster.

2.4.3.1 Disaster Plans / Coordination.

- **What mechanisms does the community have to anticipate natural hazards?**

- **What warning systems does your community currently use or have in place? (circle).**
 - Sirens
 - Landline
 - Cell phone
 - TV
 - Govt warnings
 - Mega-phone
 - Portable radio
 - Others_____

- ***Does the existing EWS in the community capable of reaching the entire population such as the most vulnerable groups? (including Persons with Disabilities)***

- **Who are the key people to consult or contact in case of a disaster? (circle)**
 - Family
 - UC Chairman/Nazim
 - District Coordination Office/TMA
 - Priest/Mosque
 - Peoples' organization/CBO/CCB
 - NGO (Local, International)
 - Office of civil defense
 - Others_____

- **Is the District Disaster Management Unit (DDMU) active? How often do they meet? What do they do before, during and after a calamity occurs?**

- **Does any other informal organization way related disaster exist? How often do they meet? What do they do before, during and after a calamity occurs?**

- **Does your community have a disaster plan? Basically, what is it?**

- **If none, which ones do you think would be most effective, functional, accepted?**

- ***Does your community have identified EC that are accessible? (Physical environment, Water and Sanitation, Information, etc.)***

- ***Do the identified ECs or any temporary settlements have accessible water and sanitation facilities? (just to emphasize the importance of accessible WatSan)***

2.4.4 Response.

- **Where does your family go during a natural calamity when you are forced to leave your home?**

- **Are there an official evacuation centers?** (school, Mosque, hall, municipal hall, hospital, neighbor's houses)
 - If yes, does the public know where to evacuate to during natural calamities/disasters?
 - How were they informed of this place?
- **Do Persons with Disabilities know where the identified EC/s is?**
- **Can Persons with Disabilities go to the evacuation center/s independently without having environmental barriers?**
- **How many families go there during;**
 - Small disasters -
 - Medium disasters -
 - Large disasters -
- **Is there enough clean water to drink at the evacuation center?**
- **Are there enough sanitary facilities (CRs) at the evacuation site?**

2.4.5 Post Disaster Problems & Rehabilitation.

- **After a disaster what problems occur?** (circle all appropriate / add if not listed)
 - Water pollution (Contamination, physical/Chemical)
 - Isolation (Cutoff from Main Roads, Big Cities/Villages)
 - Crops flooded/buried
 - Brown out? How long?
 - Increasing prices of basic needs
 - Destruction of livelihoods implements (fertilizers , seeds, tools etc)
 - Destruction of livelihood infrastructure (dams, irrigation channels, bridges, roads, flood control, water sources).
 - Psychosocial impacts.
 - *Loss of mobility aids or assistive devices of Persons with Disabilities*
- **What are the community mechanisms that used to reduce the impact of the above mentioned problems.**

2.5 Institutional support

- **What are the actions taken from Disaster Management Authorities to reduce the risk to disaster?**

	Mitigation (structural and non structural)	Preparedness (Risk assessment, trainings, public information	Response Rehabilitation (calamity funds, rehabilitation projects...)
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		campaigns)	
District Disaster Management Unit			
Provincial Disaster Management Authority			
National Disaster Management Authority			

- What are the actions taken from other external actors to reduce the risk to disaster?

	Mitigation (structural and non structural)	Preparedness (Risk assessment, trainings, public information campaigns)	Response Rehabilitation (calamity funds, rehabilitation projects...)
NGOs?			
Others? (Specify)			

