

VULNERABILITY ASSESSMENT REPORT

**FOOD SECURITY THROUGH ENHANCING SUSTAINABLE AGRICULTURAL PRODUCTION
PROGRAMME (FESAP)**

Gogrial West and East Counties
May 2016



Prepared and Submitted by:

Eunice Achieng Obala

		
Project Funded by the European Union	Implemented Veterinaires sans Frontiers Germany	Co-implemented by Serve Education Development Association

Disclaimer:

"This publication has been produced with the assistance of the European Union. The contents of this publication are the sole responsibility of Eunice Obala Consultancy Ltd and VSF Germany and can in no way be taken to reflect the views of the European Union"

TABLE OF CONTENT

ACKNOWLEDGEMENTS	2
GLOSSARY.....	3
1. PROJECT BACKGROUND	4
2. EXECUTIVE SUMMARY.....	5
3. THE VA BACKGROUND – PURPOSE, OBJECTIVE AND SCOPE (max 1 pages)	8
5. THE VA APPROACH AND METHODOLOGY (one Page)	9
6. THE VA FINDINGS.....	10
6.1 SECONDARY DATA ANALYSIS	10
6.2 TRENDS IN DISASTER HAZARD IMPACT AND DEVELOPMENT	14
6.3 COMMON HAZARDS AND RISK LEVELS ON HUMAN AND LIVELIHOOD	15
6.4 KEY FACTORS FOR AGRO-PASTORALIST PRODUCTION SYSTEM.....	18
6.5 FOOD SECURITY.....	20
6.6 ASSETS AND CAPACITIES CONTRIBUTING TO FOOD SECURITY AND LIVELIHOODS	30
7. COPING STRATEGIES AND MITIGATING MEASURES TO AGRO-PASTORALIST PRDUCTION ASSETS RISK.....	49
8. LESSONS LEARNED FROM THE ASSESSMENT PROCESS	59
9. CONCLUSIONS AND RECOMMENDATIONS.....	60
10. APPENDICES	68
11. MULTI-STAKEHOLDERS COORDINATION	68

ACKNOWLEDGEMENTS

On behalf of the consultant's team, Eunice Obala and George Otieno, I would like to acknowledge and express sincere gratitude to VSF Germany South Sudan Team Mr. George Tinega, the Country Director and Mr. Sylvester Okoth the Country Program Manager for granting us the opportunity to undertake the assignment, technical guidance and support during the study.

We would also acknowledge the FESAP project Location team Daniel Nondi, Area Coordinator, Sakwa the Project Manager, Kenyi the project Manager FLIP and Mr. Pascal Otwako, for their contributions and support in the field and logistical coordination as I proceeded with the assignment. Very instrumental in organizing the field travels and community mobilization was Mr. Marko Madut VSFG Kuajok Field supervisor Gogrial West, Thomas Maggot of SEDA and Mr. Peter Arol of INFRAID.

My pleasure to recognize and appreciate the tireless contributions of the GEC Commissioner, County Director – Kuac South, Payam Administrator Kuac North, RRC Supervisor – Kuac South, Payam Administrator Pathuon West for their valuable inputs and shared experiences during the study.

With deep appreciation for the privilege of working together, Executive Chief – Nyang Payam, Executive Chief Pathuon West, Country Agriculture Director – GEC, County Water Director-GEC, Country Executive Director – Kuac South for their time and contributions during the study.

I would like to acknowledge the beneficiaries, Women groups, Youth groups, traders groups, ASCA groups, Peace committees from Nyang Payam, Pathuon Payam in GEC and Kuac North and Kuac South in GWC.

It was good interacting with you, getting your diverse ideas, experiences, challenges and proposals which made substantial incites and input were very critical to the findings of this Vulnerability assessment.

GLOSSARY

AAA	-	Arkangelo Ali Association
ASCA	-	Accumulative saving and Credit Associations
CFA	-	Cash for Work
CHWs	-	Community Health Workers
EU	-	European Union
FADA	-	Food and Agriculture for Development Agency
FESAP	-	Food Security through Enhancing Sustainable Agricultural Production
FFW	-	Food for Work
FSC	-	Food Security Committee
FSTS	-	Food Security Technical Secretariat
GEC	-	Gogrial East County
GWC	-	Gogrial West County
HHs	-	House Holds
HQ	-	Headquarters
ICRC	-	International Red Cross and Red Crescent
IDPs	-	Internally displaced Peoples
IEC	-	Information Education and community
IGA	-	Income Generating Activities
INFRAID	-	Indigenous Forest Resources Awareness in the Improvement of Diet (national NGO)
KUADA	-	Kuac Area Development Agency
LCAD	-	Lulluk Community Association for development
MAFC	-	Ministry of Agriculture, Forestry and Rural Development
MARF	-	Ministry of Agriculture, Forestry and Rural Development
MCH	-	Maternal and Child Health
MTN	-	MTN Phone Service Provider
NRC	-	Norwegian Refugee Council
PHCC	-	Primary Health Care Centre
PHCU	-	Primary Health Care Unit
PTA	-	Parents Teachers Association
RRC	-	Relied and Rehabilitation Commission
RSS	-	Refugee in Southern Sudan
SEDA	-	Sudan Education and Development Agency
SPM	-	Selection, Planning and Management
SSP	-	South Sudanese Pound
TBAs	-	Traditional Birth Attendants
TTC	-	Teachers Training Centre
UNDP	-	United Nation Development Programme
UNHCR	-	United Nation High Commissioner for Refugees
USAID	-	United States Agency for International Development
USD	-	United States Dollar
VA	-	Vulnerability assessment
VSFG	-	Vétérinaires sans Frontières - Germany
VSLs	-	Village Savings and Loan Scheme
WVI	-	World Vision

1. PROJECT BACKGROUND

Veterinaires' Sans Frontières Germany (VSF-G) is an international Non Governmental Organization, providing humanitarian aid and development assistance to pastoralists and vulnerable communities in areas where livestock is of importance. VSFG supports in animal health, livestock related agriculture, marketing, food safety, drought responses and mitigation, capacity development of communities and governmental institutions, peace and conflict resolution with the ultimate aim of food security and strengthened livelihoods of pastoralist communities.

VSF-G jointly with co- implementing partner Serve Education and Development Authority (SEDA) and associate partner Indigenous Forest Resources Awareness (IFRAID) are implementing Three year Project in Gogrial west and Gogrial East Counties of Warrap state in South Sudan which started in August 2014 and will end in July 2017. The project "Food Security through Enhancing Sustainable Agricultural Production" (FESAP) funded under the European Union's Food Security Thematic Programme (FSTP) targets population of 717,331 (census 2008) from Warrap State of whom are predominately agro-pastoral.

FESAP project supports activities aimed at improving food security for the world's poorest and most vulnerable populations through increased inputs. It also addresses structural issues leading to hunger and under-nutrition in a bid to resolve these in the medium or long term, with an emphasis on developing sustainable solutions. FESAP aims at contributing to this global objective by building capacities of local farmers and cattle keepers (returnees, IDPs, and host communities) and other actors using market-oriented approaches to improve food production and household incomes.

FESAP project aims at achieving four main results;

Result 1: Increased agriculture production and productivity through strengthened extension services and innovative farming. This objective aims to support target populations improve their food security status, access to training, essential production input supplies, quality seeds and extension services;

Result 2: Animal traction is adopted as a viable, cost-effective and sustainable technology and contributes to annual increase in cultivated farmed land, improved tillage and increased productivity per acreage.

Result 3: Increase in household income as a result of access to microfinance, local markets and linkages to value chain actors;

Result 4: Increased resilience to shocks in climatic/environmental changes and manmade disasters such as conflict.

The FESAP project intends to carry out a Vulnerability Assessment (VA) of the agro-pastoral system of the target population and to develop action plans for elimination or reduction of identified vulnerabilities as well as monitoring plans. The assessment will be participatory with valid inputs from all the relevant stakeholders such as beneficiaries, local and state agriculture and livestock officials, VSFG Staff, SEDA, INFRAID and other community stakeholders.

2. EXECUTIVE SUMMARY

The vulnerability assessment focused on assessing the likelihood and magnitude of threats from potential hazards to the target population and their resources so as to inform project implementation. The VA process determined both human and non-human elements at risk, their vulnerabilities to identified common hazards and how these vulnerabilities may negatively impact on the project implementation and expected project results.

The objective of the VA was to carry out an assessment of the relevant project target groups in respect to project activities in terms of suitability and productivity of livelihood activities and development of adoption plans towards their general livelihood activities improvement.

The VA targeted project areas of Gogrial West and Gogrial East Counties and their neighboring catchments areas impacting on target areas. Though the VA scope was confined within the FESAP project goals and objectives, however, there were flexibilities for considerations of other relevant parameters that contribute to the successful achievement of the project goals and objectives.

The VA design, process and findings target three main categories of audiences; (i) European Union – (project implementation, future programming objectives and resource allocation), (ii) VSFG and partners, (project achievement, future programming objectives, lessons learned and relevance) informed the consultants decision on sampling techniques, data collection methods and approach, analysis of the findings and recommendation(s), (iii) beneficiaries and stakeholders –(involvement in VA process, ownership and accountability

Vulnerability Assessment Tasks

The VA tasks relate directly to the VA objective and should be comprehensively addressed with reference to one another. The consultant understands that she is expected to undertake below tasks which will contribute to the achievement of the VA objectives.

1. Cataloging assets and capabilities (resources) in the agro-pastoral production system; assigning quantifiable values and importance to those resources;
2. Identifying the vulnerabilities or potential threats to each resource;
3. Developing actions for mitigating or eliminating the most serious/critical vulnerabilities for the most valuable resources

The VA recognized the significance and contributions of beneficiaries and stakeholders targeted by FESAP project. This informed the design and choice of appropriate VA tools, methods and approaches used to ensure their active participation and involvement throughout the entire VA process to guarantee quality of final outcome. The VA sampling techniques, data collection methods and approaches used captured and reflected the needs and vulnerability levels of beneficiaries, and identified the priorities of the stakeholders targeted by the project. The findings and recommendations in the VA final report and action plan developed shall therefore guide the project implementation progress and help improve the relevance of project to needs of beneficiaries and priorities of stakeholders

The VA findings are categorized into main sub-topics; (1) Trends in disaster hazard impact on livelihood and developments in past 10 years, (2) Common Hazards and their risk levels on Human elements and non human elements (livelihood assets), (3) Key factors contributing to agro-pastoralist production system (4) Food Security (5) Asset and capacities Contributing to Food Security and Livelihoods (6) Coping strategies and Mitigating Measures to Agro – Pastoralist production system (7) Lessons Learned (8) conclusions and Recommendations.

The subsequent part of this section will highlight the findings sequenced as per the nine sub-topics.

(1): Trends in disaster hazard impact on livelihood and developments in past 10 years

This section of the report highlights changes observed by the sampled population in the past 10 years resulting as a result of impact of disasters or developments. The changes highlighted capture changes in practices, management and new developments in the Education, Health, water and sanitation, livestock, livelihood diversification, conflict, income generating activities, governance structure and Gender.

(2): Common Hazards and their risk levels on Human elements and non human elements (livelihood assets),

This section of the report highlights the main common hazard that increases risk and vulnerabilities of those at risk to the disasters. The identified disaster risks were Drought, flood and conflict which were independently analyzed according to their impact on the livelihood assets focusing on degree of risk and vulnerabilities on human elements, non human elements, vulnerable groups and

(3): Key factors contributing to agro-pastoralist production system

The session captures key factors that contribute to agro-pastoralist production system analyzing how each may increase / reduce vulnerability or increase capacities. Factors include Land, Labor, Human capital, knowledge and skills, access to credit, infrastructure (Health, Water and Sanitation, Technology and innovation.

(4): Food Security

This session highlights findings on how capacities and vulnerabilities within the pillars of food security; Food Availability, Food Access, Food Utilization and food stability.

(5): Asset and capacities contributing to Food Security and Livelihoods

This section highlights findings of the study in relation to the main assets and capacities capital for livelihood promotion and sustainability. This focused on Human Capital, Social capital, Physical Capital (livestock production, Agriculture production, fishing production, diversified income, Health, water and sanitation, infrastructure shelter, markets, Roads, Transport, communication), Financial Capital (different production assets, Average HH annual income, Average Annual expenses and season income flow), Natural Capital.

(6:) Coping strategies and Mitigating Measures to Agro –Pastoralist production system

This section highlights key production weak points which increases human and livelihood production capacities focusing on key components; Food security, Agriculture, Fishing, Health and Nutrition, Water and Sanitation, insecurity, Education, Climate change, Floods and infrastructure.

(7) Lessons Learned: - The section captured main lessons and opportunities identified during the study that would be important for consideration in relevant FESAP programming activities such as Peace building, Animal Health, Agriculture, ASCA and coordination between VSFG and government.

(8): Conclusions and Recommendations.

The consultant has generated conclusions for consideration in FESAP project and future programming; Social cohesion and Peace building, Food Security, Livestock and poultry, Agriculture – Seeds and tools, labour force, water for farming, soil fertility, protection of farms against livestock destruction, Animal Traction, Technology and innovation, Natural Resource Management, ASCA, Diversification of livelihood, and Value Addition

3. THE VA BACKGROUND – PURPOSE, OBJECTIVE AND SCOPE

The vulnerability assessment focused on assessing the likelihood and magnitude of threats from potential hazards to the target population and their resources so as to inform project implementation. The VA process determined both human and non-human elements at risk, their vulnerabilities to identified common hazards and how these vulnerabilities may negatively impact on the project implementation and expected project results.

VA objective - The objective of the VA was to carry out an assessment of the relevant project target groups in respect of project activities in terms of suitability and productivity of livelihood activities and development of adoption plans towards their general livelihood activities improvement.

Scope of the VA - The VA targeted project areas of Gogrial West and Gogrial East Counties and their neighboring catchments areas impacting on target areas. Though the VA scope was confined within the FESAP project goals and objectives, however, there were flexibilities for considerations of other relevant parameters that contribute to the successful achievement of the project goals and objectives.

Target audience - The VA process and findings targeted three main categories of audiences; (i) European Union – (project implementation, future programming objectives and resource allocation), (ii) VSFG and partners, (project achievement, future programming objectives, lessons learned and relevance) informed the consultants decision on sampling techniques, data collection methods and approach, analysis of the findings and recommendation(s), (iii) beneficiaries and stakeholders –(involvement in VA process, ownership and accountability

Vulnerability Assessment Tasks

The VA tasks relate directly to the VA objective and should be comprehensively addressed with reference to one another. The consultant understands that she is expected to undertake below tasks which will contribute to the achievement of the VA objectives.

4. Cataloging assets and capabilities (resources) in the agro-pastoral production system; assigning quantifiable values and importance to those resources;
5. Identifying the vulnerabilities or potential threats to each resource;
6. Developing actions for mitigating or eliminating the most serious/critical vulnerabilities for the most valuable resources

The FESAP project Vulnerability Assessment (VA) targeted agro-pastoral system of the target population and to develop action plans for elimination or reduction of identified vulnerabilities as well as monitoring plans. The assessment involved participatory approaches, vulnerability and capacity assessment tools, Do no harm approach and Risk analysis with valid inputs from all the relevant stakeholders such as beneficiaries, local and state agriculture and livestock officials, VSFG Staff, SEDA, INFRAID and other community stakeholders. The VA recognized the significance and contributions of beneficiaries and stakeholders targeted by FESAP project. This informed the design and choice of appropriate VA tools, methods and approaches used to

ensure their active participation and involvement throughout the entire VA process to guarantee quality of final outcome. The VA sampling techniques, data collection methods and approaches used captured and reflected the needs and vulnerability levels of beneficiaries, and identified the priorities of the stakeholders targeted by the project. The findings and recommendations in the VA final report and action plan developed shall therefore guide the project implementation progress and help improve the relevance of project to needs of beneficiaries and priorities of stakeholders.

5. THE VA APPROACH AND METHODOLOGY

The secondary data analysis included National, State and County policies, demographic and baseline reports, Project Baseline reports, Project documents, Annual Project Reports (APR), Project Implementation Reports (PIR), project technical reports, FAO/WFP food security report).

The consultants used participatory investigative approach for an inclusive contribution in culture, gender, geographical location and special interest group's sensitivity to equitably capture needs, vulnerabilities and capacities. The FESAP project team, partners, beneficiaries, government and stakeholders actively participated and were consistently involved in study. VA tools such as vulnerability and capacity assessment, community managed disaster risk reduction, participatory rural appraisal methods and Do No Harm approach principles were integrated in vulnerability framework which guided the process of data gathering and analysis. A 30x 30 sampling method used informed by representation of the number of VSFG target HH beneficiaries, partners and stakeholders from selected Bomas in the four Payams (GEC – Pathuon west and Nyang, GWC – Kuac North and Kuac South) within Random selection of HH on straight line skipping every 2 HHs.

The VA process involved VSFG and FESAP partners to harmonize their priorities and reflection of opinions to harmonize expectations and vision of the contribution of the project towards the achievement of its objectives. A clear data gathering plan was developed in consultation with the project team explaining data to be collected, sources of data, data collection methods used and data enumerators. Appropriate and relevant qualitative and quantitative data collection methods to local context, purpose and objectives used included review of secondary data, problems and priorities pair wise ranking, site visits, direct observations, transect walk, semi-structured interviews, household questionnaires, key informant interviews, focus group discussions, seasonal calendar, daily calendar, historical profile, wealth ranking, scoring or matrix ranking and community mapping Venn diagram.

Table 1: Sample Frame

Sample categories	Sample Frame	GEC		GWC	
		Pathuon West	Nyang	Kuac North	Kuac South
Household	No of HH	135	135	40	80
		TOTAL	270	120	
Focus Group Discussion	Men FGDS	4	3	2	2
	Women FGDs	4	3	2	2
	Youth FGD	4	3	2	2

	Traders	1	0	0	1
	TOTAL	13	9	6	7
Government		GEC		GWC	
	County level	3		2	
	Payam Level	7		5	
Partners	VSFG & Partners	6		2	
	TOTAL	16		9	

The general rule related to acceptable margins of error (5%) in social research will apply to the study. To ensure accurate and reliable data the finding from different tools were triangulated for information errors and inconsistencies. Draft findings were presented to FESAP field teams /stakeholders for validation and draft report sent for feedback before final report submission.

6. THE VA FINDINGS

6.1 SECONDARY DATA ANALYSIS

According to World Bank, 2015, the National population of South Sudan by 2014, is estimated at 11,091 million with a sex disaggregate of male 52% and female 48%. UNOCHA, 2014 report indicated that an average HH size has 6 people with 71% of the HHs headed by women attributed to loss of their husbands to the protracted civil wars. South Sudan is perceived among the nations with the weakest economies due to its gross domestic product (GDP) per capita of \$1,111 in 2014, with over 85% of its population in unpaid labour work in animal husbandry and agricultural activities despite its wealth endowment (e.g oil, gold and River Nile). The South Sudan Poverty rate is steadily increasing since 2010 with 2015 study showing that 57% South Sudanese people live below poverty line (The World Bank, 2015).

The main guideline frameworks for food security policies formulated at national and states levels to achieve food security for all the people of the RSS forms provides a road map for food security however, this has not been fully implemented due the socio-economic and political challenges and conflicts that have rocked the country in the recent past. The federal government established the FSC supported by the Food Security Technical Secretariat (FSTS) and Food Security Units in key government institutions such as Ministry of Agriculture, Forestry, Cooperatives & Rural Development (MAFC&RD) and the Ministry of Animal Resources and Fisheries (MARF) leading the food security planning, policies and strategies formulation to address food insecurity. The South Sudan's Vision 2040, Agriculture Sector Policy Framework (2012/2016), South Sudan Development Plan (April 2011), the Transitional Constitution of the Republic of South Sudan – RSS (2011) are other key frameworks that VSFG project could be grounded

The economic situation in South Sudan has experienced serious tabulations following the conflict that erupted in 2013 with a steady inflation following devaluation of South Sudanese Pound (SSP) by 84% by December, 2015. The RSS government had previously fixed rate to the US dollar before it reversed the decision in December 2015 to un-peg the exchange rate and allow

for a floating system which has impacted negatively evident in the devaluation of the local currency, abnormal rise on food and fuel prices in most markets, wage income devaluation and reduced HH purchasing power, worsened by limited rain fall, looting of livestock, food shortage and limited humanitarian assistance.

According to the County secondary data, the productive population aggregated by gender in GEC is 44.17% male and 55.83% females while GWC has 45.2% male and 54.86% females. The consult reviewed the project secondary reports and previous study. This guided the design of information to be collected and choice of data collection tools used in order to prevent duplication of already known information.

6.2 DEMOGRAPHIC INFORMATION

Households

The study in GWC targeted 33% and 67% HHs in Kuac South and Kuac North respectively reaching, 12% males and 88% females in Kuac South and 11% males and 89% females in Kuac North. The study shows that areas where conflict have been prevalent has more female headed household than stable payams increasing HH vulnerability and reduces capacities to respond to or mitigate hazards. In GEC, HH heads in Pathuon west Payam was 57% women, 37% males and 6% child headed, while Nyang payam has 51% females and 49% males. In GWC, Kuac North has 56% males and 44% females and Kuac South 50% males and 50% females HH heads.

Vulnerable groups

The study sorted to determine the main vulnerable groups in the four payams. In Pathuon west has Host 67%, IDP 25%, and Returnee 16%. The refugee and IDPs number in Pathuon west is attributed to National and tribal conflicts and floods. Nyang Payam has Host 55%, IDPs 29% and Returnee 16% all attributed to effects of cross border conflict with Nuers and recurrent flood in homes and farms. The people from Nyang indicated that the number of IDPs which was higher in 2015 reduced due to government resettlement programs of IDPs back to Nyang original homes in warabei.

In GWC, Kuac North has Host 78%, IDPs 0%, Returnees 17% from other parts of Refugee camps and disabled 6% victims of war while in Kuac South, host 82%, IDPs 0% and Returnees 18% resulting from flooding effects.

Education levels

The study recognizes education as a key factor in determining degree of human vulnerability and capacity to venture in diversified livelihoods to build their resilience, prevent disaster or bounce back from impact of disaster risks on human elements and non-human elements (livelihood productive assets, critical services and facilities). The study focused on respondents and their HH education member's education levels.

TABLE 1: Level of Education in GEC

Level	Respondent (HH Head)		Household	
	Pathuon	Nyang	Pathuon	Nyang
None	63%	61%	44%	45%
Upper primary	10%	20%	30%	30%
Lower Primary	7%	13%	10%	11%
Secondary	3%	6%	0%	6%
Vocational	17%	0%	16%	9%
University/college	0%	0%	1%	0%
Total	100%	100%	100%	100%

The high illiteracy level among head of HH has reduced due to increase in HH members' enrolment in lower primary level. However, there is alarming school dropout in upper primary due to lack of fees and teachers, early marriages, migration to camps, armed forces, provision of labor to livelihood activities like herding, agriculture, fishing and casual wages to meet immediate family needs. There increase in vocational training enrolment by school dropouts in attempt to gain life skills for IGA or diversify livelihood source an opportunity VSFG could tap

TABLE 2: Level of Education in GWC

Level	Respondent		Household	
	Kuac North	Kuac South	Kuac North	Kuac South
None	78%	60%	77%	40%
Upper primary	6%	14%	15%	33%
Lower Primary	6%	6%	5%	18%
Secondary	11%	12%	2%	4%
Vocational	0%	8%	2%	4%
University/college	0%	0%	1%	2%
Total	100%	100%	100%	100%

Kuac South has higher illiteracy level despite availability of more education facilities and closeness to Kuajoc town. This influenced by available casual jobs in town, diversified source of income, access to more inputs for productive livelihood production. Kuac South has less of such opportunities due to limited access to basic services and flood impacts; The two payams face similar challenges of school enrolment and dropouts like in GEC.

PRODUCTIVE POPULATION AT HOUSEHOLD LEVEL

TABLE 3: Productive HH members in GEC

	Pathuon West	Nyang
No of productive members	% of HH	% of HH
0	0%	2%
1	0%	23%
2	26%	34%
3	13%	11%
4	61%	30%
5	0%	0%
TOTAL	100%	100%

No of productive members of HH in Pathuon West is between 2 to 4 members due to education opportunities, life skills, capacity building, community organization, access multiple livelihood options or diversified income in both (labour and credit investments) available throughout the year. Pathuon has also received a number of life skills and livelihood production trainings from VSFG, government and other stakeholders and community organizations. Nyang Payam depend more on agriculture, fishing and partly livestock livelihood which are labor intensive invested with very limited outside support

TABLE 4: Productive HH member in GWC

No of productive members	Kuac North	Kuac South
	% of HH	% of HH
1	11%	9%
2	22%	26%
3	33%	26%
4	28%	30%
5	0%	0%
6	6%	11%
TOTAL	100%	100%

Kuac North have HH members involved in diversified productive work (paid work) due to increased access to education facilities, employment opportunities in nearby urban area, existence of NGOs and Government trainings, organization and provision of inputs for agriculture, livestock and fishing, community organizations into productive groups, access to information for livelihood improvement.

Kuac South Payams on the other hand depend more on labor intensive livelihood production with limited trainings, lack of life skills, lack of access to livelihood inputs, communication and community organization

Table 5: 6.2: TRENDS IN DISASTER HAZARD IMPACT AND DEVELOPMENT

ASSETS	TRENDS OR CHANGES IN 10 YEARS
Housing	Permanent housing, brick houses, iron sheet housing, electricity and solar lighting system
Education	Construction of government schools, availability of private schools and community schools, increase in pupils enrolment in schools, increase in number of schools, awareness on girl child education. Information on importance of education,
Health and Nutrition	Availability of hospitals, use of modern medicine, trainings of TBAs and CHWs, nurses and MCH, immunization of children, changing of food consumption patterns during hunger gaps, delivery in hospitals, washing of utensils, use of cooking pans, wearing clothes, visits to hospitals for medication. Selling of grass, charcoal and firewood to get income to buy food, education of infant/child, pregnant and lactating mothers feeding preferences in normal or stress.
Water and sanitation	Construction of bore hole for drinking, farming and livestock water, construction and use of toilet, trainings in hygiene, washing hands before eating, washing clothes, treatment of water to become safe for drinking, construction of latrine toilets.
Agriculture	Introduction of farming tools like ox-plough, malodas, seeds, information of modern farming techniques, farming inputs (seeds, irrigation pumps, watering cans, groundnut press), trainings on vegetable farming, crop farming, Reduced feddan productivity level, increase in feddan sizes from 1-3 to 5-10, sales of crops, low soil fertility and way of treating soil (compost manure, mulching), soil erosion of top fertile soil, food storages, use of ash as crop pesticide, changes in crop production practices, flooding of farms destroying crops, seed fairs, seeds and tools distributions, vegetable irrigation.
Livestock	Reduced number of HH herd size, increase in livestock population. Training of CAHWs to provide treatments and vaccinations. Use of modern medicine. Agro-vet stores, vaccination campaigns and mass treatments services. Reduction in quality and quantity of livestock products (blood, milk, ghee, butter). Willingness for farmers to sell livestock for income for food. Access to meat from butcheries. Prolonged time for livestock migration period from 3 – 6 months leave families longer without food. Increase in conflict in grazing areas over pasture and water. Diminishing water and pasture. Increase in prices. Available livestock Auctions.
Fishing	Fishing as a way of the filling hunger gap, source of livelihood and source of income
Diversified income	People do different sources of livelihood like income wage labor, incomes from livestock and livestock products sale, Vegetable and crop agriculture produce sales, savings and loans activities, employment, Business and trade, income generating activities, fishing and hunting
Communication	Use of mobile phones, National Radio, Police Radio, letters, vehicle letters or parcels, money transfers
infrastructure	Public transport (motorbikes, Atos, shuttles, taxi), markets, bridges, markets. Tools/equipments - ox-ploughs, maloda, axe, wheelbarrow, tractors, rake, and sickle. Compost manure and mulching, improved poultry keeping, groundnut press machine, grinding mills, boats
Conflict	Conflicts between Dinka and Nuer due to cattle raids, resource conflicts, elopement, revenge, dissatisfaction of conflict settlements in

	grazing areas (Tonj, Nyang, Makue, warabie, Tichie), fights in fishing ground along River Jur in (Panachier, Llilabieei, Pinydit, Malual Anguei, But, Mading, Malual Awein.
Governance structures	The national level governance structures was reviewed following the compromise peace agreement that led to the formation of transitional government of national unity. These leadership dynamics resulted to the increase of states from 8 to 28 states. Gogrial State was also sub-divided the old counties of GEC and GWC into additional Payams changing the administrative units that were targeted by the FESAP project.
Gender Roles	Besides reproductive chores and construction of houses, engage in productive work, such as selling of goods at local markets, restaurants, selling cereals, crop farming, vegetable farming, poultry and beer brewing. Women allowed to attend meetings, involve in communal work, represent women in peace meetings at Boman and Payam, and leadership, represented in community meetings

Table6: 6.3 COMMON HAZARDS AND RISK LEVELS ON HUMAN AND LIVELIHOOD

Hazards	Key Livelihoods	Magnitude of risks and vulnerabilities of at most risk non- Human elements		Magnitude or risks/ Vulnerabilities of at most risk Human Elements	
		Magnitude of risks /vulnerabilities	Non- Human element	Magnitude of risks /vulnerabilities	Human Elements
Drought	Livestock	*High concentration of livestock in Toc and other border grazing areas increasing spread of livestock diseases. *Weakened livestock body and health conditions due to long distances migration in search of pasture water. * Land degradation. *Livestock malnutrition and poor body conditions due to underfed livestock. * Poor livestock and human body health conditions. * Exposure to livestock theft and raids *livestock concentration far grazing for 5 months exposes them to new diseases. * Increased in livestock deaths due increased diseases. * Restricted migrations to other territories reduce livestock foods. * Over grazing degrades rangeland *Exposure to extreme temperature worsens body and health conditions. Pressure on water and pasture lead to resource based conflicts	Cattle, Sheep Goats, Poultry, Donkey Pasture Browser Water Shrubs	* Longer period in far grazing area 3 to 5 months leave homestead without access to food in hunger gap period (blood, milk, butter, meat). * less food to meet nutritional preference/needs. *Increased exposure to hygiene due to lack of access to water. * Increased exposure to malnutrition related disease infections – famine. *Reluctance to slaughter livestock due to losses (deaths/raids) * Killings/injuries in resource based conflicts and revenge fights. * Revenge fights over raids. * High Human malnutrition, *Extreme temperature * dependency on market. *food aid dependency *Increase Zoonosis prevalence in pasture zones. *Insufficient foods	Disabled, farm less, Children. Street children Elderly, pregnant/lactating mothers Widows Pregnant women Abandoned Prisoners Herders (m/f) Cattle keepers.

	Farming	* Dried up crops. *Food shortage. * Bare soil * Infertile soil. * Deforestation * Loss of seeds * More insects worms * Immature crops	Farms, water sources, fences, crops	* less food to meet nutritional preference/needs *failed crops * Malnutrition prevalence * dependence on market for food. *Migration from lowlands to highlands *Food shortage * Consumed crop seed stocks * Unreliable source of food or income * Eat wild fruit	Women, Pregnant and lactating women, children, elderly, girls, farmers
	Fishing	* Dried rivers * dead Fish * No floods.		*Loss of source of livelihood. *Seasonal income * less food to meet nutritional preference/needs* Relief	Fishermen, elderly, women, children
Flood	Livestock	* Increases livestock diseases outbreaks * Livestock drowning in valleys * Snake bites * Worms * More cattle raids * blocked treatment/vaccination services * Tsetse fly *Mosquitoes * poor skin conditions * Famers unable to reach drug stores or get vet services despite disease outbreaks. Disruption of grazing and migration patterns	Cattle, shoats, donkey, cattle dips, roads, bridges	* Unable to access farms, increased workload (divert water, dig ridges and canals. *Forced migration to high ground * Increase water borne diseases * Hunger. *Malnutrition * * Malaria * Snake bites * children drown * women additional work (repair or build houses. *Women and children flood divert water from houses.	IDPs, elders Women, children, herders, CAHWs
	Farming	* Destroyed farms and crops in floods *Swept fertile soil *Inaccessible roads and rivers *abandoned farms *Failed crops *Disruption of farming seasonal activities	Farms, Crops, bridges, canal/dykes, stores, roads, houses	* Destroyed houses /food store * immature stocks * failed yield no food * Abandoned properties and food stocks * Snake bites. *Theft of grains * Food shortage * less food to meet nutritional preference/needs	Pregnant women children, Elderly, IDPs, lactating women, farmers
	Fishing	* Busted rivers free fish, worms and snakes, destroyed banks * Mud on fish	Fish, roads, river, swamp	* Mosquito and snake bites * loss of fish in busted rivers, *	Fishermen, women, men
Conflict	Livestock	*Burnt or abandoned houses and property in conflict zones *Raids or theft IDPs * Destruction drug stores and offices * Block access to basic services * Conflicts in main grazing area limit access to pasture and water * Abandoned of livestock * inaccessibility to livestock during vaccinations and mass treatment. * Livestock and human migration to far pasture and water for grazing. * Rushed long distance movement of livestock from conflict hotspot weakens body conditions. *Disruption of	Cattle, Sheep, Goat, Donkey, pasture browser cattle camps, water points, Migratory routes, Road , bridges,	* Injuries /death of sons and husbands (breadwinners) in battle fields and grazing areas. * Women home alone with children, take over men roles, violated, sexually abused and raped. *Looted and destroyed properties and livestock. * Withdrawal of boys from schools and farms to fight* limited movement & trade* Increased Adultery and eloping incidences. *Escape long distances to bushes with no shelter, water, food, drugs, school, security guarantee *Walk long distances to safe	IDPs Youth Warriors herders, women, children, cattle camp girls and boys, community police, cattle keepers, traders

		pastoralist production system	houses	location with children and properties *Displacement of families *several types of conflicts (GEC/GWC, Gogrial/Unity, Apuk/Aguok)	
	Farming	* Attacks and destruction of farms, crops & irrigation equipment. * Abandoned farm crops due to insecurity *Stolen or destroyed tools and seeds * burned or stolen stocks * disruption of seasonal farming activities	Farms, rivers bridges, stocks, crops	* less food to meet nutritional preference/needs *Farmers lose their food stocks, tools & equipment. * Loss of key source of income * Attacks launched in nearby farms & house owners. * Food shortage * Disruptions of trade.	Women, children, Elderly, farm owners, traders
	Fishing	Insecurity in fishing beaches, destruction or stealing of fishing equipment and harvested fish, Spoiled fish harvest due to poor preservation skills and blocked roads to markets. Disruptions of fishing activities, conflict over fishing grounds	Fish, hooks, twines, canoes, boats,	* Attacks on outsider fishermen by host fishermen * Temporary dependence on fishing at the expense of farms/livestock *Loss of fishing gears *payments for elders protection* lack of skills on fish processing * season fishing activities * Disrupted trade system	Fishermen and families, women, traders, children,

6.4 KEY FACTORS FOR AGRO-PASTORALIST PRODUCTION SYSTEM

6.4.1 Land

There is no individual land ownership in Dinka community; however people acquire land through family inheritance or communal allocation. IDPs who wish to construct shelters or do farming request extended relatives, friends or community customary elders. Similarly community's members interested acquire fertile land outsider their inherited land for farming identify the unoccupied land then make a request to customary elders for consideration. Most grazing land though not occupied are fully designated communal grazing.

6.4.2 Labour

Women besides reproductive chores (prepare water and food for the entire household, cleaning the house and the compound, collecting firewood and grass for thatching roof, building of houses, roofing, washing clothes, manage shoats, milking, cook food, and bathing children) engage in productive work, such as selling of goods at local markets, restaurants, selling cereals, crop farming, vegetable farming, poultry and beer brewing. Women now involve themselves in communal work, manage farms, inputs and control farm produce, represent each other in peace leadership at Bomas and Payam, and participate in community meetings. Men take care of large livestock (cattle, shoats), fight in conflict, protect livestock and family, clear farmland during the dry season, cut poles, install house construction poles and mudding, take livestock to market, attend meetings, make family decisions, pay dowry, control livestock use,

6.4.3 Income

Economic activities, livelihood income sources, livelihood groups, security challenges, reproductive work, access to water, wage labour opportunity earnings directly contribute to production systems and therefore critical for consideration of HH vulnerability risk levels, decision making process, practice and response.

Table 7

6.4.4 Human Capital Knowledge and Skills

Pathuon West	Nyang
Training on Savings and loan, Training on vegetable production, training on modern farming, Training on improved poultry management. Dry season vegetable gardening training, Animal traction training, CAHWs, borehole repairs, Livestock treatments, agro-vet business, grinding mills management, brick making, cooperatives, Butchery, ground nut pressing, teaching, peace building, tailoring, driving, welding, business, borehole repairs, food restaurants, shops and cereals sales, livestock drugs use, soap making, charcoal burning, threshing, Bore hole water management training, compost manure and mulching training	Fishing, traditional crop farming, indigenous poultry, CAHWs, livestock keeping, weaving, pole cutting. Charcoal burning, grass cutting, vegetable farming, brick laying, dig farms canals ridges, Thatching roof, threshing crops, fish drying, brew, canals making, rope, baskets and mats making, pottery,

Kuac North	Kuac South
PFS Vegetable gardening, Animal traction training, CAHWs extension services, CAHWs, improved Poultry, improved crop farming, cattle keeping, agro-vet stores, cooperatives, Fishing, fish drying, savings and	Brick making, weaving, mating, Fishing, flood canals, indigenous poultry, CAHWs extension, indigenous crop farming, cattle keeping, TBA, cut

loans, ground nut paste, peace building training, TBA, tailoring, driving, peanut paste, business, charcoal making, restaurants, shops, cereals sales, business skills, training in peace building, use of seeds and tools, ox-plough and tools repairs, bore hole repairs, livestock drug use, brick making, manure	poles. Charcoal burning, grass cutting, vegetable farming, ox plough use. Thatching roof, threshing, fish drying, brew, welding, tailoring, rope, baskets, pottery, weaving, weeding, canoes making
--	---

Table 8

6.4.5 Access to credit

Pathuon West	Nyang
Jur River Community bank	No finance service provider
Kuac North	Kuac South
South Sudan Community bank, Kenya Commercial Bank	No finance service provider

Table 9

6.4.6 Infrastructure (Health, water, finance)

Critical Facilities	Pathuon West	Nyang
Finance/ Banks	1 Community Bank – Jur River	0
Black Smith	2 (Luonyker and Mayen Rual Blacksmith groups)	0
Schools	27 schools (26 primary , 1 secondary) No adult education	4 schools - Primary) and 1 adult education. No Secondary
Health facility Personnel	CHWs – 19, Doctor – 1, Nurses - 7	CHWs -2, 1 Nurse
PHCC	1 Lunyaker	0
PHCU	1 Lunyaker	1 in Warabiei
Agro-vet Shops	1 Agro-vet	1 Agro-vet
Butcheries	1	0
Auction	1	0
Slaughter slab	1	0
Markets	8	0 (depend on Lietnon)
CAHWS	5	3
Electricity	No	No
Communication	Zain, MTN, police radio, runners, meetings	Zain connection in Warabiei only, no Radio, runners and meetings
Roads	Murram roads, bridges, 50% access in rainy	100% inaccessibility in wet season
Public Transport	Bicycle, Taxi, motorbikes, walking	Walking, Boats, motobikes
Churches	1	0

Critical Facilities	Kuac North	Kuac South
Finance/ Banks	2 Community Bank – South Sudan village bank	0
Black Smith	1	0
Schools	15 Primary and 1 Secondary	21 Primary, No secondary
Health facility Personnel	1 MCH, 3 CHWs, 3 Nurses	2 CHWs, 2 Nurses, 2 MCH

PHCC	1	0
PHCU	2	2 PHCU- Magai, Thurnyor
Agro-vet Shops	1Agro-vet	1 Agro-vet
Butcheries	35	0
Auction	2	0
Slaughter House	1	0
Markets	5	5
Electricity	No	0
Communication	Zain , Vivacel, MTN, GEM tel, Radio, Police Radio,	Zain, police Radio, Radio, Meetings
Roads	Tarmac, all weather, murram	80% inaccessible in rainy season
Public Transport	Motorbikes, Tuktuk, Bicycle, walking, Boats	Public transport –motorcycles, Atos, Taxi, Boats
Bore holes	45 – 25 broken down	3 – 2 working

6.5.7 Technology / Innovation/ Inputs

In Pathuon west, there are new innovations tools like ox-ploughs, maloda, axe, wheelbarrow, tractors, rake, grinding mills, groundnut press, and sickle and practices such as mulching and composed manure which contributes to increased food production. On the other hand ox-ploughs were newly introduced this year with limited evidence in Nyang Payam.

In GWC, Kuac North have experienced a number of new technology, quality variety crop, vegetable and cereals seeds, ox-ploughs, tools (rake, folk, maloda, jembe etc), foot irrigation pump, watering cans, and practices such as mulching, composed manure, grinding mills, groundnut press, milk processing, butcheries. In Kuac South, ox-plough, maloda, grinding mill, borehole irrigation and watering cans.

6.5 FOOD SECURITY

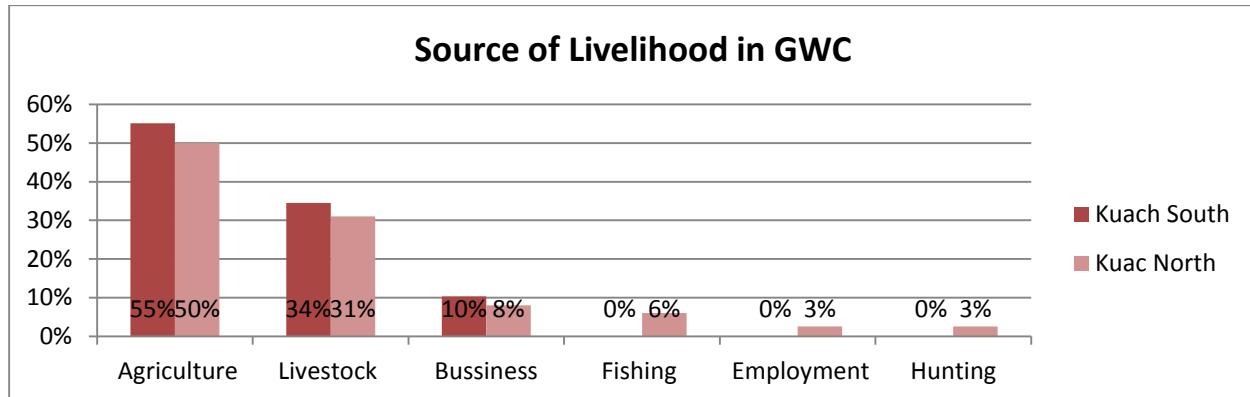
6.6.1 Food availability

The study identified different ways in which the beneficiaries obtain sufficient quantities of food available on a consistent basis by identifying their main sources of livelihood and production.

In GEC, Pathuon West and Nyang Focus group discussions indicated livestock and farming were the main sources of livelihood with fishing and business being explored at minimal scale. In GWC, finding from the study shows that main livelihoods are Agriculture, Livestock, with micro-business and seasonal fishing activities. Pastoralist and farmers consume their produces and sell products and harvest respectively to get income e.g slaughter shoats / cattle meat or buy meat from butcheries; other people do business and use income to buy food. Traders stock their food stuff shops through bulk purchase of farm crops during harvest time by hiring friend or relatives living within the community to buy on their behalf. Other individual traders cultivate between 7 to 15 feddans of crops (maize, sorghum, sesame and groundnuts) or jointly cultivate between 10 to feddans through trader associations. In Nyang HHs do not have

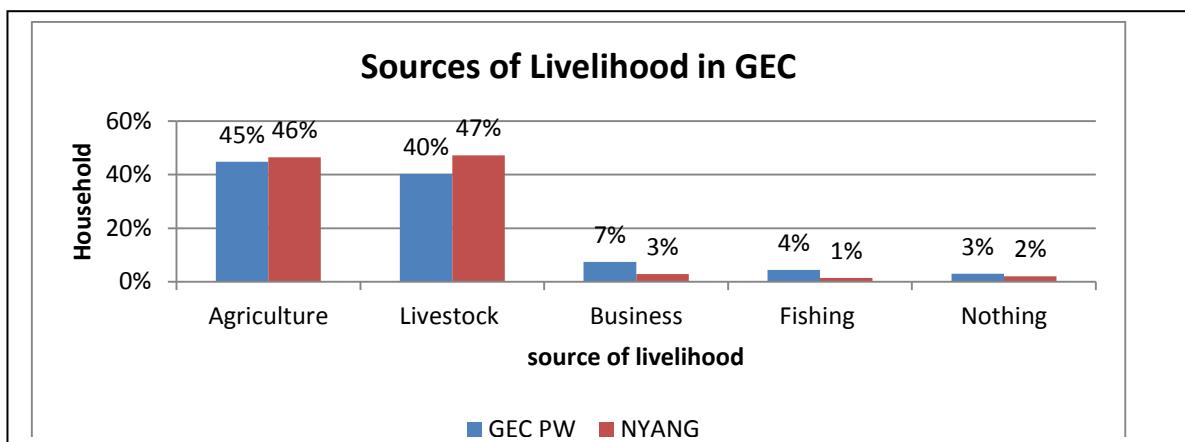
butcheries to buy meat since livestock are rarely slaughtered unless they travel to Lietnom. HH supplement local crop produces with imported Rice, pasta.

Graph I: Livelihood sources for GWC



Kuach North have multiple livelihood options (Agriculture, Livestock, fishing, business, employment and hunting thus more resilient and less vulnerable compared to Kuac South whose main livelihood source is Agriculture, Livestock and petty trade business only more resilient and less vulnerable to disasters.

Graph II: Livelihood sources for GEC



In GEC, Nyang Payam main source of livelihood depend on traditional agriculture and fishing, with fewer animal health services and meager petty trade, with only VSFG starting its activities in the areas worsened by high insecurity and recurrent floods disasters impacts. Pathuon West is less vulnerable due to a number of external support from NGOs and government through trainings on improved crop farming, livestock management, fishing, irrigation vegetable farming, poultry farming, innovative tools, seeds and tools distributions, formation of ASCA and PFS groups, and community organizations.

The respondents from GEC and GWC identified the main factors that contribute to their vulnerability to food insecurity and livelihoods as IDP putting pressure on existing basic resources, failed crops increasing hunger gap period and consumption of seed stocks, conflict paralyzing farming and livestock activities, loss of properties and deaths, visitors increasing consumption on food stocks and lack of employment .

Table 10: GEC Payams

Payam	Conflict Displacement	Flood disaster	Sick breadwinner	Visitors	Failed crop	No Job	Don't know
Nyang	11%	27%	20%	13%	11%	18%	1%
PW	0%	4%	17%	25%	0%	17%	0%

Table 11: GWC Payams

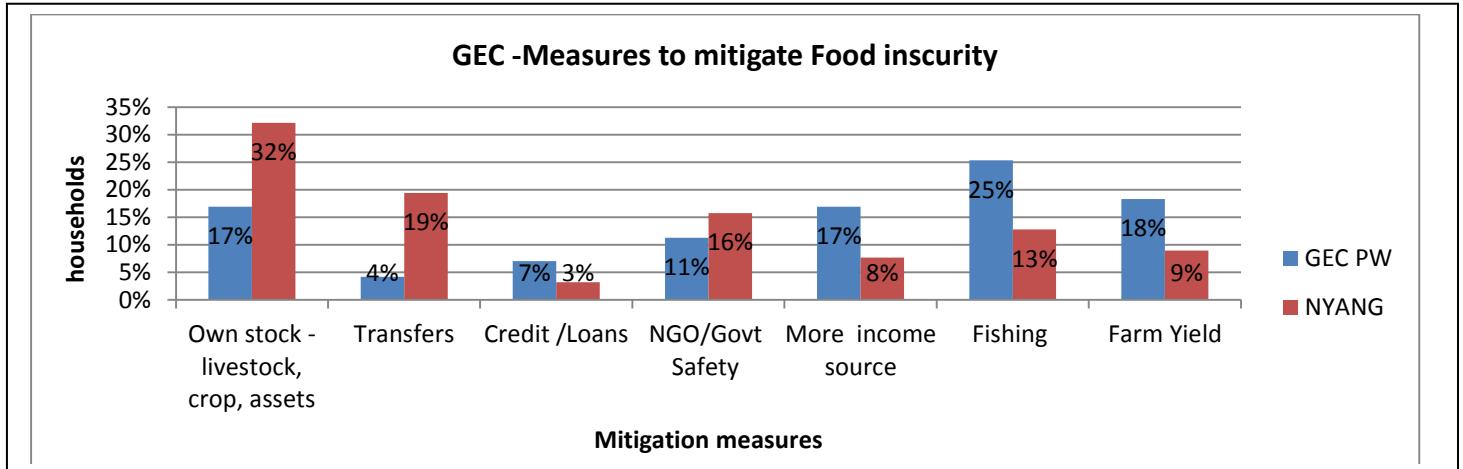
Payam	Displacement	Flood disaster	Sick breadwinner	Failed crops	No Jobs	Drought
Kuac N	61%	0%	10%	24%	5%	0%
Kuac S	28%	14%	8%	39%	3%	8%

6.6.2. Food access

Food access focused on determining ability of the beneficiaries to have sufficient resources to obtain appropriate foods for a nutritious diet. The session captures different livelihoods options Livestock, farming, fishing and business, diversification of income, access to credit, and availability of social services, water and sanitation that determines purchasing power or ability get food

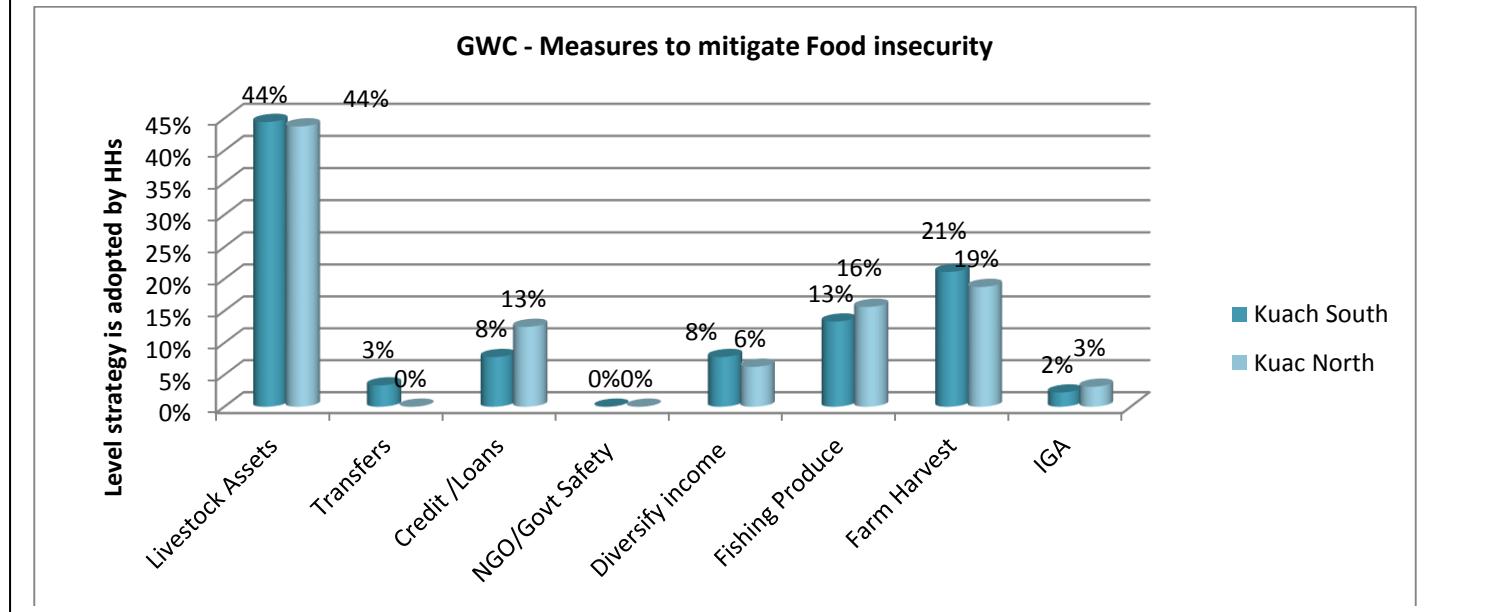
In Pathuon west and Nyang, food purchasing power is determined by access to cash/capital, prices of food stuffs in market and seasonality of food variety preferred by consumers. Generally locally produced food prices are lower between September to December after harvest and higher between January and August due to less supply and high demand. The beneficiaries and stakeholders interviewed all know and explain this market dynamic in terms of supply and demand of food and how this translates to market prices, however, they are unable to plan in advance to mitigate these negative effects by purchasing food during low prices to stock for future use due to lack of capital . Currently food produced at HHs level is not enough and cant support them throughout the hunger gap. Interviews with traders in Pathuon west and Kuac South indicated that International food products such as salt, sugar, clothes, soap, Rice, Maize, pasta, drinking water, petrol prices increases between May to September during rainy seasons due to increased costs on transport and losses incurred on transit. On the other hand, non-food items prices are higher between October to December due high demand for them during festive ceremonies and low demand for food stuffs due to availability of food after harvests. Below are a number small scale mitigation measure undertaken.

Graph: III –Mitigation measures GEC



In GEC, Nyang community rely on livestock and crop products 32%, cash transfers from family members 19%, Government assistance 16% fishing 13%, farm yield sales 9% and petty trade IGAs 8% indicating their vulnerability. Pathuon west control the fishing capital 25%, livestock products 17%, farm yield sales 18%, small scale IGA 17% with very minimal dependence on transfers indicating resilience.

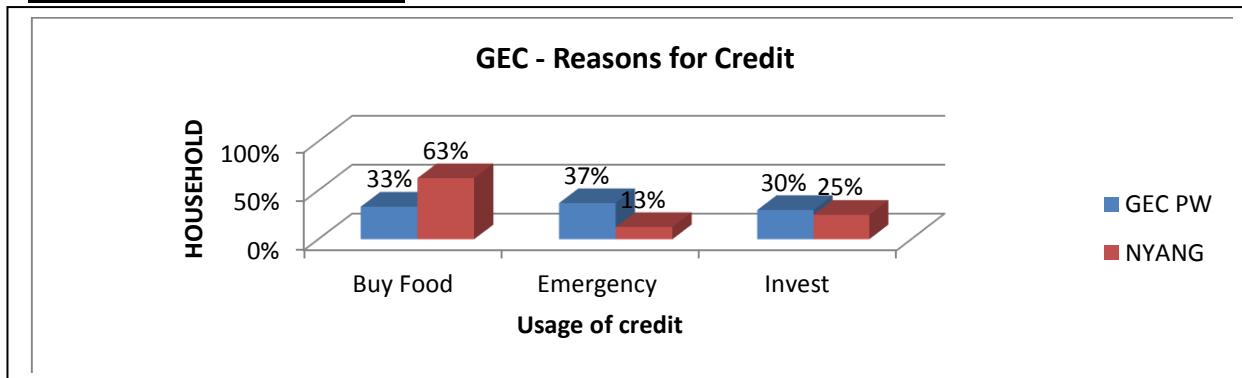
Graph IV: Mitigation Measure GWC



In GWC, Kuac North depend on livestock assets for food and sales to strategic livestock market 44%, access to loans from ASCA and community bank 13%, diversify sources income with advantage of the Kwajoc, IGAs and fishing due to reliable market in Kuajoc and improved crop and vegetable farm produce resulting from trainings, seeds and tools, extension services and innovation from NGO and government support. Kuach South despite the remote locality and

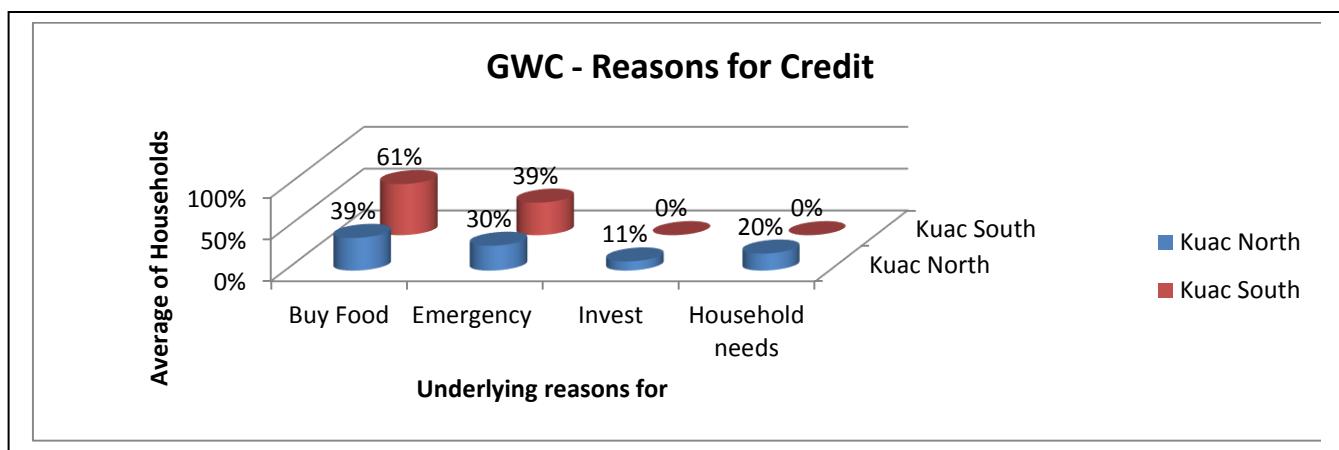
unreliable market conditions has great potential for IGAs. Livestock assets and products 44%, access to ASCA and savings groups credit, income from fishing produce and farm harvest for food help to increase community ability to bounce back from hazard effects. However, there is need to strengthen the local capacities from traditional management and practices on livestock, fishing and farm to improve quality and quality of final product, income and practices.

Graph V: Credit Themes GEC



Interviews in GEC, indicated that communities take loans for three main reasons; buy food, solve emergencies like sickness, accidents, procure medicine or pay fees, while some invest the loan on buying livestock, farm tools or inputs, start business or fishing equipments. In Nyang, over 76% of loans received goes to buying food 63% which is a basic need and emergency 13% which are non-productive expenses indicating their high degree of vulnerability and high risk level of defaulting. Similarly, Pathuon west spend over 69% of the loans on non-productive expenses though better off with 33% going to food. Besides the vulnerability and risk level, there is need to invest in capacity building through ASCA component of the project to improve credit access and management.

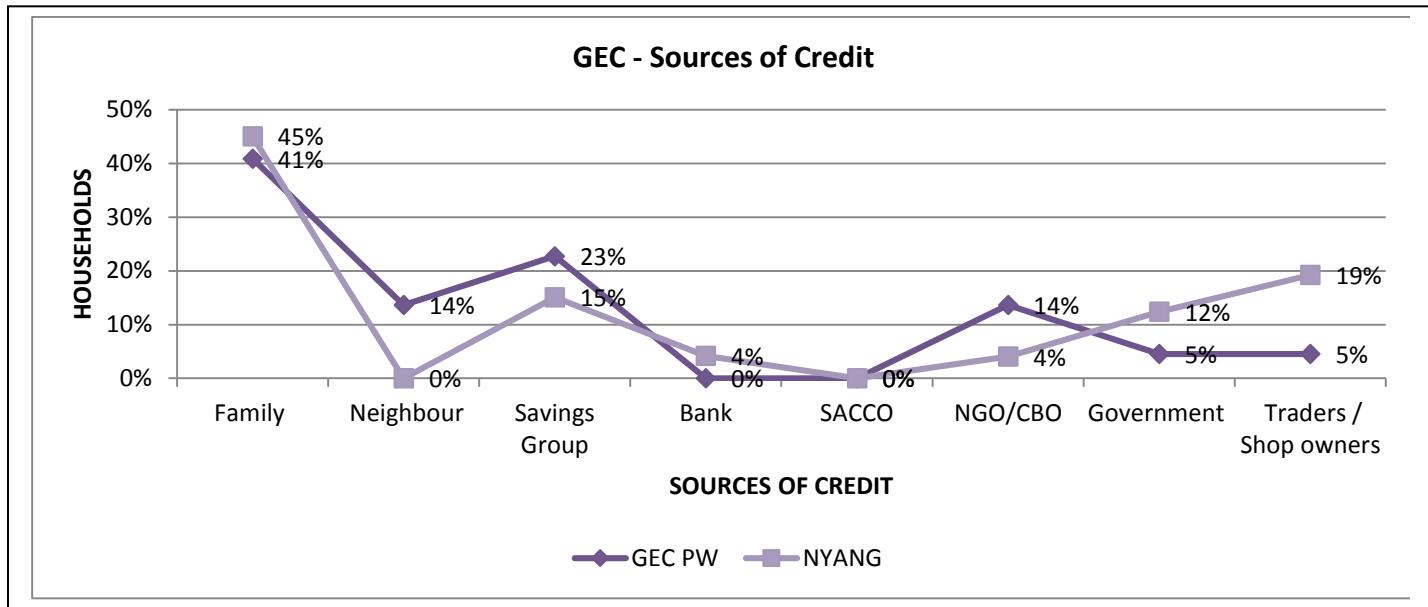
Graph VI: Credit Themes GWC



In GWC, the communities borrow to buy food, emergency, investment and meet household needs; In Kuac South, 100% of loans are for non productive loans 61% for buying food and 39% for emergency. Likewise in Kuach North, 89% of the money is spent on non-productive

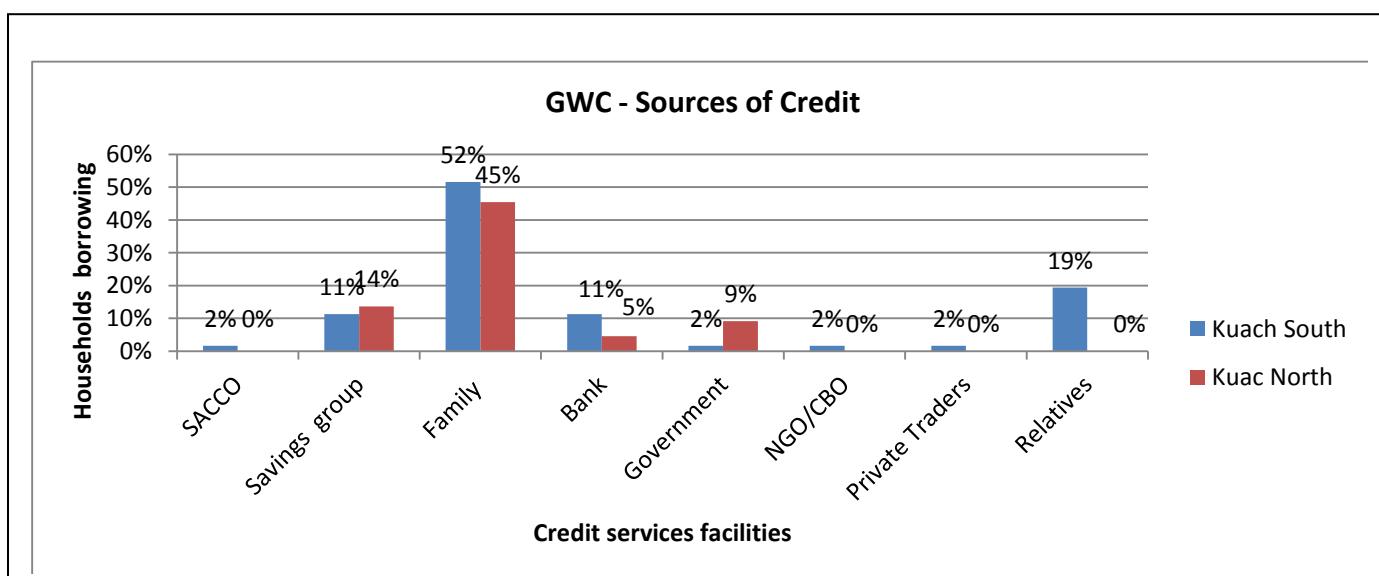
expenses (39% food, 30% emergency and 20% HH needs). Lack of savings and credit skills on savings combined with traditional credit services system with specified repayment plan, the risk and vulnerabilities increases. ASCA component of the project need to consider these dynamics to guide the design and implementation strategy.

Graph VII: Sources of Credit GEC



According to respondents interviewed through household and focus group discussions in interviewed in GEC main source of credit is family, savings groups (mostly ASCAs), traders and once in a while NGOs and Government interventions. VSFG could use the existing credit services bring used as entry point for ASCA activities coupled with trainings and awareness creation and lesion from failures in the existing community banks and SACCOs.

Graph VII: Sources of Credit GWC



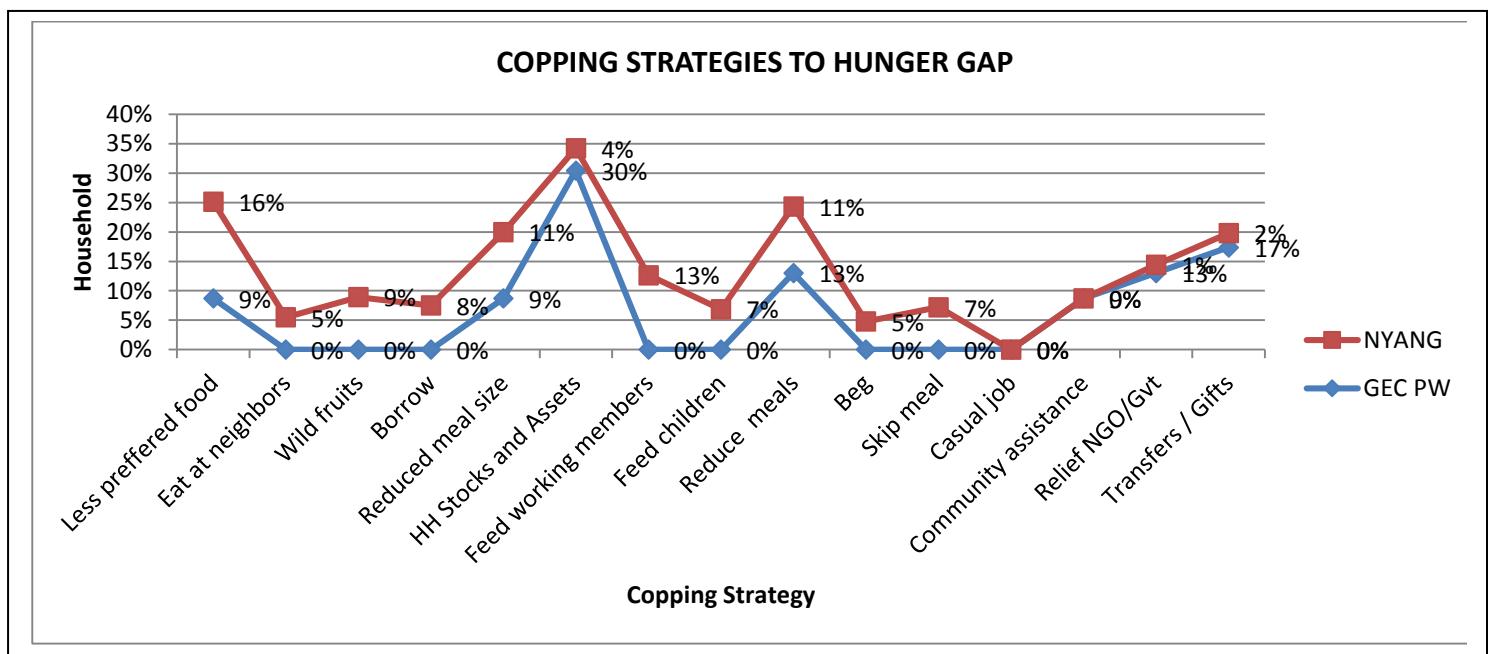
Similarly, in GWC, In Kuac North, credits are mainly from family, savings groups and government due to the proximity to state government sectors, while in Kuac south, the main credit facilities are family, savings and relatives due to stronger social networks (family and clan ties).

6.6.3 Utilization Food

The study questioned focused on identifying appropriate use of food based on knowledge of basic nutrition and care, as well as adequate water and sanitation. The study considered the significance of food utility as key component in determining the vulnerability levels to food security. Respondents engaged in HH interviews were asked question on how they coped during hunger gap in terms of consumption, dietary practices and short term food availability. Study findings from the four payams reveled that beneficiaries have different levels but almost same coping strategies during hunger gap. The main coping strategies were included;

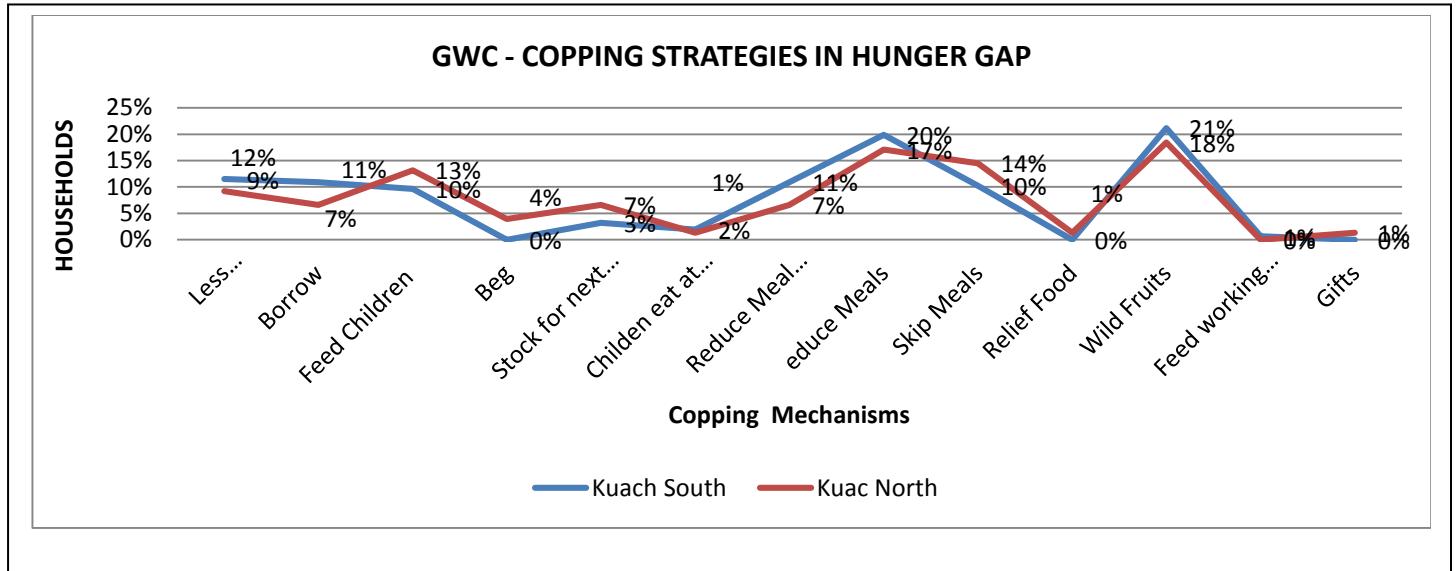
1. **Change in consumption patterns** by taking less preferred cheap and less preferred but substitute meals e.g *skip meals, send children to feed at neighbor, food ratios, borrowing, rituals, relief, gifts or support from relatives and friends etc.*
2. **Change in dietary** practices influenced by market forces, dry and wet seasons and special groups nutritional needs (rainy and dry) e.g **consumption of wild fruits, fish and sorghum, tomatoes, pumpkins, groundnuts during wet season, and sorghum, maize, sesame and groundnuts in dry season** Dietary practice during dry seasons:
3. **Change in Household average consumption and (4) Increase Short term Food Availability -** borrow, credit food purchase, gather wild fruits, harvest immature stocks, consume seed stocks, send kids to neighbour, eat immature crops, consume seed stocks for next planting season, borrowing from family and relatives, purchase in credit, begging, food assistance.

Graph VIII: Coping strategies GEC



Pathuon West payams use coping mechanisms that increases their vulnerability for example eating less preferred foods, reduce meal size or number of meals without considering dietary requirements (1,800 kilocalories required per day) and implication, consumption of HH seed stock meant for next season farming. The findings show that Nyang payam communities use extreme coping strategies e.g less preferred foods, wild fruits, reduced meals, send children to neighbors', skip meals making due to its higher degree of vulnerability and risks compared to Pathuon East communities.

Graph VIII: Coping strategies GWC



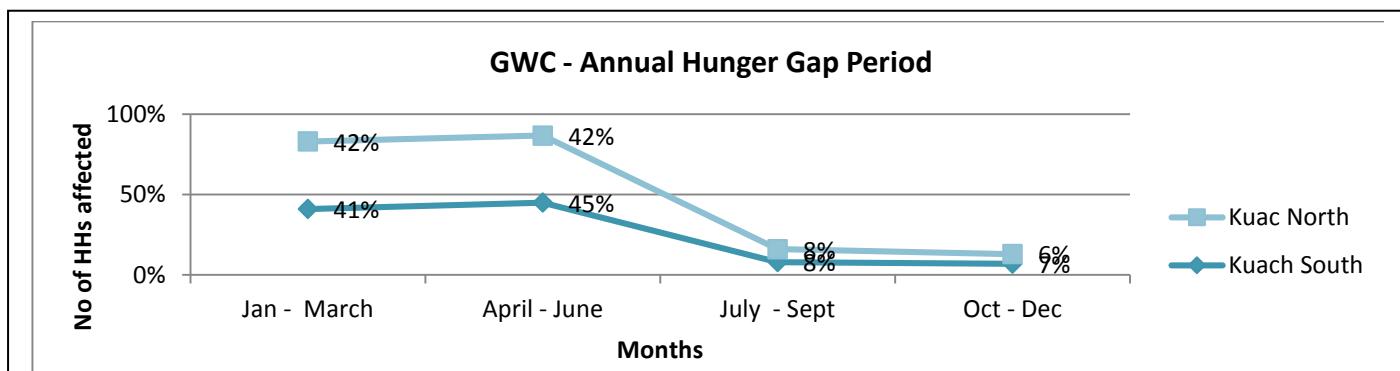
In GWC both Kuac Norh and Kuac South use extreme coping strategies like feeding children, eat stocks for next season, reduce number of meals and meal sizes, skip meals, eat wild fruits but the frequency of use is higher in Kuac South than Kuac North making it more vulnerable. FESAP project need to build capacities of beneficiaries to reduce their vulnerabilities through interventions that promote long term mitigation measure as opposed to current over reliance on short term strategies

6.6.4 Food stability and Creation of assets

1. Hunger Gap

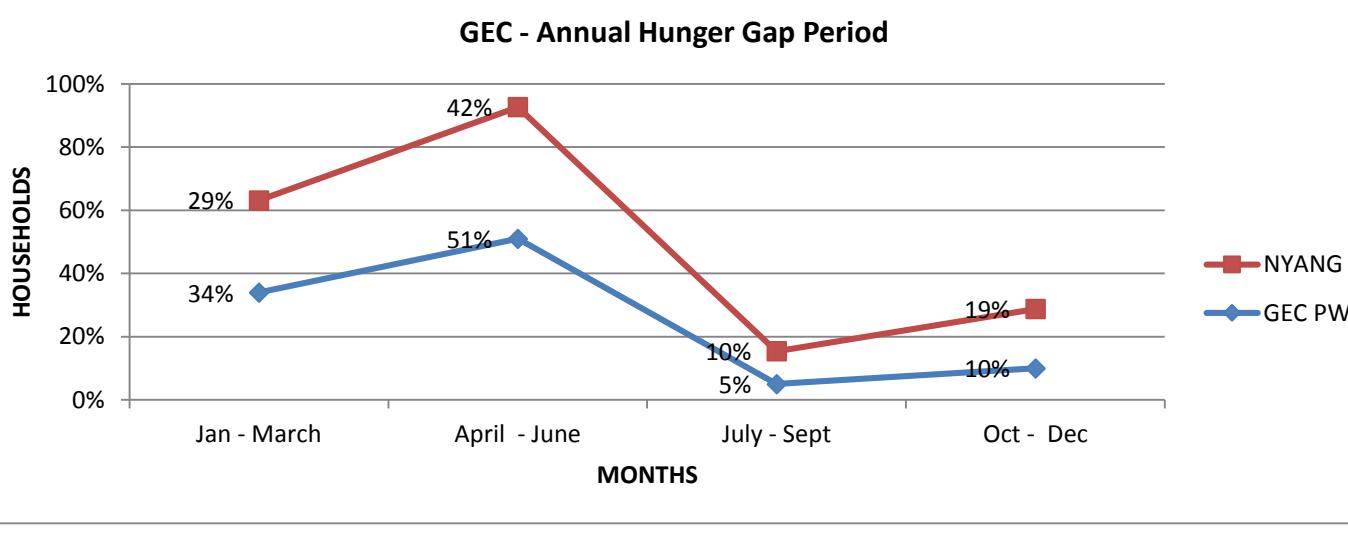
The study enquired the seasonality of HH food availability throughout the year to highlight how long the HHs have food available and accessibility critical in assessing their capacities and vulnerability to food security. The study highlighted the trends of hunger gap and food available periods.

Graph IX: Hunger Gap GWC



Finding in GWC, shows that hunger gap starts between January to June with 42% of HHs in Kuac North and 41% - 45% HHs left vulnerable. Focus Group discussions and Key informant interviews ascertained that despite their knowledge of annual hunger gap trends, they lack the skills and capacities to analyze risks, develop appropriate preparedness and contingency response measure to activate in their event. During this period children are fed mostly on porridge.

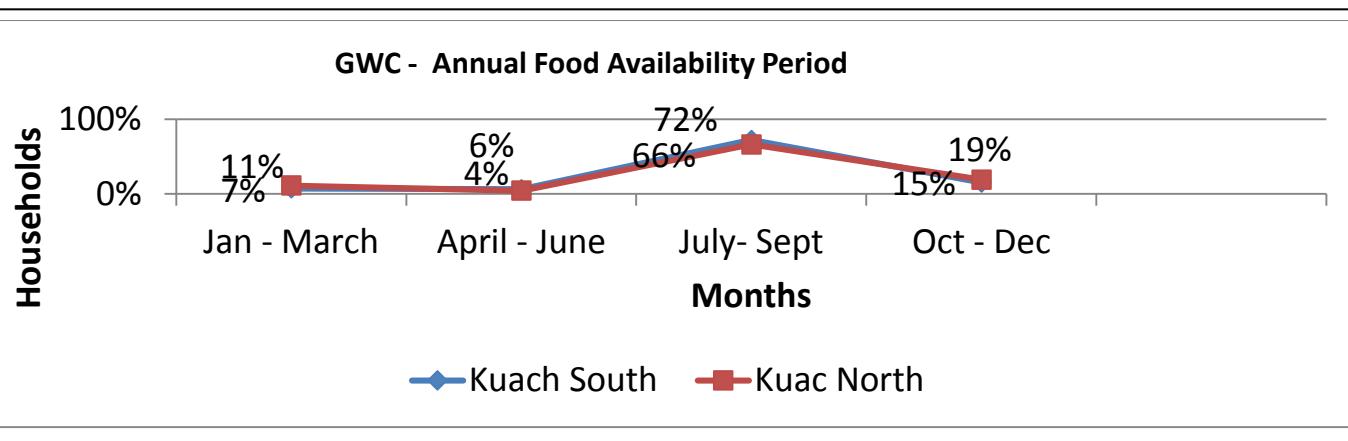
Graph X: Hunger Gap GEC



In Pathuon west and Nyang, food shortages at household and unavailability in markets is between January to June due to high cost of transport, lack of food in the market resulting to increase in food prices and reduced HHs purchasing power.

2. Food Availability Season

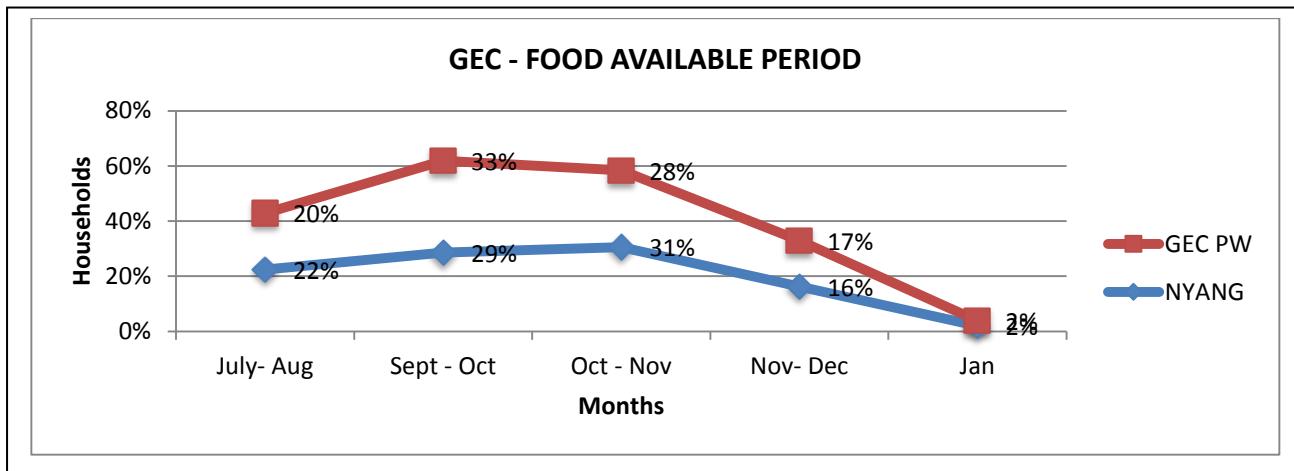
Graph XI: Food Availability GWC



In Kuac North and Kuac South, food is available from September to December. Kuac South is most affected by floods and fewer farming equipments that delays farming period coupled by

livestock diseases. During these period the communities could be engaged in participatory disaster risk assessments processes to develop community managed preparedness and contingency plans.

Graph XII: Food Availability GEC



The study findings in GEC, shows that food is available between July to December in Pathuon West and Nyang Payam. However, due to lack of adequate capacity the communities to analyze the trends and develop community manage Preparedness measures and coping strategies, the opportunities go untapped. VSFG could capitalize of this through facilitation of community managed disaster risk reduction planning processes during the food available period when stress is low to maximize their full participation in process, ownership of outcomes and establishment of community organization to manage the implementation of DRR measures.

6.6 ASSETS AND CAPACITIES CONTRIBUTING TO FOOD SECURITY AND LIVELIHOODS

Table 12

6.6.1 HUMAN CAPITAL

i. GEC - Existing Knowledge, skills and experiences

CAPACITIES	PATHUON WEST	NYANG
Knowledge / Training on livestock, fishing, farming systems	Vegetable gardening, Animal traction, CAHWs, CHWs, improved crop farming, cattle keeping , agro-vet stores, cooperatives, women groups, ground nut paste making, peace building, improve and indigenous poultry production, dry vegetable production, modern ox-plough animal draught use, tailoring, driving, peanut paste, business, charcoal making, food restaurants, food stuff shops, business, livestock marketing, arts and craft, sports, driving, carpentry, masonry, mechanics, welding, restaurant, grinding mill operation, ASCA, PFS learning	Fishing, indigenous poultry, CAHWs, indigenous crop farming, cattle keeping, traditional vegetable harvesting, poles cutting. Hunting. Charcoal making, grass cutting, brick laying, traditional ox plough use. Thatching roof, threshing crops, fish drying, brew, canals making, rope, baskets and mats making, pottery, weaving (arts and craft) weeding, fishing skills, dances and songs. Fermenting milk,
Education – formal and informal	Public school education is free Public schools funded by government (teachers, education materials and construction) There are 27 schools (1 private school, 18 government primary school and 9 community primary schools. Out of the 27 schools only 3 are concrete building, the rest of school studies done under tree or local Tukuls. PTA responsible for supervision of school running. Teacher houses not available. People walk 30 minutes – 2 hours There are approximate is 5-6 per class with over 70% of the teachers untrained (volunteers or PTA employed). No teachers training admission in colleges since 5 years ago. Low remuneration of government employed teachers de-motivates teachers' performance. Girl's enrollment is only 4.5% as most girls are taken to cattle camps or forces into marriage compared to 98% of boys due to cultural belief and norms that inform household preferences for gender in education. No adult education facility (one was there before but closed due to lack of teacher). Distances to school covers an average from 2 hour to 3 hours. UNICEF provide feeding programs to schools with concrete classrooms, kitchen, toilet, Borehole and store therefore disqualifying 89% temporary schools.	Public school education is free and facility sponsored by government but supervision by PTA There are 4 Primary schools very apart from each other with no secondary school with pupils traveling between 2-4 hours. Only one school has permanent building, one under tree and the rest constructed in local materials (poles, grass thatch, mud walls and floors, wooden windows). 3- 4 teachers per class. Pupils migrate from the temporary schools to the permanent school due to feeding programs in permanent schools. This increases walking distances to the permanent school and over a period of time drop off from school. Girls' enrollment is less than 2%. NO NGO support school's enrolment. Water shortage is rampant in schools with only one of the schools have a borehole.

Table 13**ii. GWC Human Capital**

CAPACITIES	Kuac North	Kuac South
Knowledge / Training	Milk preservation, gardening, poultry keeping, Community have life skills in skills on Mudding, roofing, cutting trees, grass harvesting for roof, ghee making. skills in Masonry, basic tailoring, carpentry, arts and craft, bakery, Catering, Welding, driving, computer, crotched bed sheets and energy savings jikos, savings and loans, honey production, TBA, fruits tree planting, improved vegetable , improved crop farming, improved poultry production, bead making, brick making, peace building, soap making, cottage industry, hunting, sports, clay pot making, arts and crafts, business and black smiths.	Soap making, baking, catering, counseling, rope making, charcoal making, grass cutting, thatching, pot making, guest services, brew, milking, beads making, livestock products drying / frying, honey production, lalop medicinal tea making, fish dying, peace building, conflict resolution, tailoring. ghee making, weeding, TBA, clay making, Fruit trees planting, arts and craft. Indigenous poultry production
Education – formal and informal	Government provide teachers, education materials and construction) Have 15 schools (10 government primary school and 5 community primary schools and 1 secondary. Out of the 15 schools 10 are permanent PTA responsible for supervise school running. Teacher houses not available. There are approximate is 6-8 per class with over 70% of the teachers untrained (volunteers or PTA employed). No teachers training admission in colleges since 5 years ago. Low remuneration of government employed teachers de-motivates teachers' performance. Girl's enrollment is only 15% as most girls are taken to cattle camps or forces into marriage compared to 85% of boys due to cultural belief and norms that inform household preferences for gender in education. Water shortage is rampant in schools with only 11% of the schools having boreholes. No adult education facility (one was there before but closed due to lack of teacher) Distances to school covers an average from 2 hour to 3 hours.	Head teachers run daily activities education supervisor and PTA supervise the operations.. Has 21 Primary schools (10 government and 11 community schools) No secondary, No vocational. School with pupils traveling between 2- 4 hours. Only one school has permanent building, one under tree and the rest constructed in local materials (poles, grass thatch, mud walls and floors, wooden windows).. Pupils migrate from the temporary schools to the permanent school due to feeding programs in permanent schools. This increases walking distances to the permanent school and over a period of time drop off from school. Girls' enrollment is less than 11%. NO NGO support school's enrolment.

6.7.2 SOCIAL CAPITAL

Social capital focus of social resources that build on level of interactions, relationships, values, trust and participation such as networks, kinship, neighborliness, groupings, status, religious affiliations, service delivery systems and institutions in community that support people to pursue their livelihood or contribute to their livelihood improvements.

Apuk community occupies both GEC and GWC and therefore share a number of cultural social activities.

Common traditional social activities undertaken by both GEC and GWC communities include night and day drums, marriage ceremonies, funeral ceremonies, Rain making ceremonies, women groups meetings, youth groups meetings, communal cultivation work, local court sessions to resolve cases, arts and craft making gatherings, fishing gatherings, cattle camp meetings, peace meetings, sports, cultural ceremonies. Every 5 years, Apuk community conduct their cultural festivals which is held rotationally per County payam besides its annual congress organized to foster critical decision making process combined with cattle keepers ceremonies, dances, sports and cultural events. Key decision on community culture, norms and practices are made in the two meetings.

Besides the traditional social activities, there are also conventional of government holidays ad indicated in below table that help pave way for communities way of life and interaction critical to enhance livelihood options successes.

Table 14: Social Organization – GEC

Organizations	Pathuon West	Nyang
Finance / Credit	7 ASCAs, 1 Payam administrators savings and emergency group, 1 Jur River cooperative	None
Rangeland groups	1 Boma water committee, 2 Payam water committees, 139 Borehole, 139 WUAs committee	1 Payam water committee, 6 Borehole 6 WUAs committee
CAHWS/Famers	1 CAHWS Association	0
Traders groups	5 traders groups	0
Women groups	6 Vegetable and ASCA groups	1 woman group – not active
Youth Groups	3 farmers, brick makers, ASCA)	0
Traditional groups	2 Bomas council (resolve disputes, water conflicts, border disputes)	1 Boma level
Peace / Security	3 Boma peace committees, 6 Cattle keepers heads	1 SPLM group, 1 payam peace committee. 4 Boma cattle keeper head
FFS	1 mixed group	0
Administrators		0
Disaster	1 Fire control	0
Black Smith	1	0
PTA	27	4
Early warning	0	0

Table 15: Social organizations – GWC

Organizations	Kuac North	Kuac South
Finance /Credit	1 South Sudan community bank 5 ASCAs, 8 traders groups	0 16 trader groups
Rangeland groups	45 borehole committees	26 Bore hole management committees
CAHWS / farmers	1 group not registered. 5 Cattle keepers	12 CAHWS, 4 Cattle keepers
Traders groups	1 Ngoth Company	5 traders groups, 10 Progressive farmers
Women groups	1 Ponduk w. group, 2 vegetable groups	1 women association, 4 Boma women groups
Youth Groups	4 (Angui, muojoc, lukluk, mathiang)	1 Youth Association, 4 Boma youth youths
Traditional groups	1 Payam and 4 Boma committees	1 Payam level council, 4 Boma Councils
Peace / Security	1 Payam and 4 Boma peace committees	1 Payam and 4 Peace committees
Farmers field School	1 – Tinachua, Mathiang	1
Administrators group	0	0
Disaster management	0	0
Black Smith	0	0
Parents Teachers Association	16 PTAs	21 PTA
Early warning system	0	0

6.7.3 PHYSICAL CAPITAL

i. Wealth Ranking Definition

The consultant took the communities through a participatory wealth ranking process in order understand their significance into the productive assets and capacities which contribute to their livelihood priorities;

Table 16: Wealth Ranking in GEC

Wealth Rank	Pathuon west indicators	Nyang Indicators
Poor	<5 cattle, <3 shoats, <1 feddan	0 cattle, 0 shoats, 0 fertile farm
Medium	Cattle 10-30, Shoat 10-15 shoats, Chickens 5-10 feddan	5 cattle, 5 shoats, 3 chicken, 5 feddan
Rich	Cattle 50, shoat 30-50, chickens 6-15 Over 10 feddans	Cattle 20, Shoats 30, chicken 10, feddans >10

Table 17: Wealth Ranking in GWC

Wealth Rank	Kuac North indicators	Kuac South Indicators
Poor	No cattle, No shoats, no chicken,	No cattle, No shoats, no chicken,
Medium	No cattle, 30 shoats, 10 chickens	No cattle, 30 shoats, 10 chickens
Rich	Cattle 300-400, shoats > 50, >10 <20 feddans / sorghum100 sacks	Cattle 50-100, shoats <50, <10 Sorghum-10-50 sacks, < 10 feddans

Tables 18 and 19:

ii. Livestock Production

GEC level	Pathuon West Payam		Nyang Payam	
Capacities	Asset / Capacity	Capacity Gap	Asset/ Capacity	Capacity Gap

<p>GEC has 2 vet doctors and 30 extension workers provide overall animal health services.</p> <p>Cost recovery Government 1 SSP per animal, VSFG 50SSP for 100 animals</p> <p>Access vaccines against common diseases (Anthrax, CBPP, CCP, foot and mouth, coughs)</p>	<p>20 CAHWs, 1 vet shop, 1 cold chain facility with 3 fridges in Lunyaker. 7 markets, 1 Auction</p> <p>Vaccinations mobilization less than $\frac{1}{2}$ a day.</p> <p>Vaccinations last 1 to 2 week per site</p> <p>Keep local livestock breeds (cattle, goat, sheep, poultry)</p> <p>Split herds (1st and 2nd class bulls to Tonj but 3rd class graze at home. Sell products at higher prices</p>	<p>CAHWs not enough.</p> <p>Allowances to CAHW of @ 20 SSP too low and demotivating.</p> <p>Diminishing pasture and water</p>	<p>4 CAHWs trained and equipped with drugs and equipments. No Market</p> <p>use vet shops in Lietnom or Lunyaker.</p> <p>Mobilization for vaccinations less than $\frac{1}{2}$ a day and vaccination 1 week.</p> <p>Keep local breed. Split herd (2nd, and 3 rd class). Sell livestock product</p>	<p>Trained CAHWs not enough. There is no vet shop to replenish CAHWs drugs. No butchery for meat</p> <p>High use of herbal medicine. No vaccine cold chain but depends on Lunyaker cold chain compromise vaccine quality and increase logistic cost.</p> <p>Mobilization and vaccinations don't reach interior areas and herds</p> <p>4 Bomas inaccessible in rainy season. Vaccines don't meet local needs. Highest insecurity at borders</p> <p>Livestock prices lower</p>
	<p>Have wet and dry season grazing pattern. Migrate to Tonj for 4–5 month (Jan/Feb – May)</p>	<p>Pastoral livelihood system – free range</p>	<p>Migrate in tonj 6 months (Dec to May)</p>	<p>Depleted grazing areas, depend entirely on Tonj swamp.</p> <p>Pastoralism adaptation system (search for water and pasture</p>

GWC County	Kuac North		Kuach South	
Capacities	Asset / Capacity	Capacity Gap	Asset/ Capacity	Capacity Gap
Has 2 vet doctors and 1 Supervisor,	1 vet shop, 5 trained CAHWs, 1 abattoir, 1 livestock auction and 8 butcheries. Mobilization $\frac{1}{2}$ day and vaccinations 7 days	CAHWs and vet shop not enough	16 CAHWs (12 active 4 inactive), 1 vet doctors, one vet shop, one butchery and no auction.	Butchery not enough
		Less vaccines	Mobilization $\frac{1}{2}$ day and vaccinations 7 days	Vaccinations not regular

Table 20
 iii. **Agriculture Production**

GWC County	Pathuon East	Nyang		
Capacities	Asset / Capacity	Capacity Gap	Asset/ Capacity	Capacity Gap
1 Director and 12 Government extension staffs (10 in PW and 2 Nyang) to provide technical and extension services - Farmers field size decisions, crops and vegetables seed selection, Rainfall information to guide	<p>139 bore holes, 139 WUAs functional</p> <p>Crop and vegetable seeds distributed to vulnerable farmers (sesame, sorghum, groundnuts, seasm, pumpkins, okra, egg plant, kudhra, rigla, maize etc). Farmers trained on skills on rotational farming system, modern farming methods, sustainable farm clearance (cut trees), Make mulching and compost manure production. Constructed 1 seed bank to</p>	<p>No skill on how to use farm stocks for animal feed. Lack of pesticides and insecticides</p> <p>Stock kept in mudded</p>	<p>6 Boreholes 6 WUAs.</p> <p>No seed bank.</p> <p>Trained 300 on ox-plough draught</p> <p>No model farmer</p> <p>No farmer group</p> <p>No seeds and tools distribution</p> <p>Average feddan per HH 2.5 feddans for maize</p>	<p>Less water for irrigation and WUA skills.</p> <p>No skills in modern farming.</p> <p>No skills in animal</p>

their farming decisions. Coordinated agriculture activities of government and NGOs. Monitor performances. 3 tractors in County to cultivate government farms and community hire. 1400 farmers trained on ox-plough draught 500 model farmers trained cultivate between 70-120 Feddans. 4 farmers groups Cultivated 2000 feddan crop (sale food and use income for school, health and water development.	store and sell seeds to model farmers and vulnerable HHs. Has 1100 progressive farmers. 500 model farmers. 4 farmers groups established. Farmers distributed for tools: ox-plough, watering cans, malodas, wheel barrow axe, folk, rake, Jembe, and irrigation foot pumps. County recommend millet, beans, simsim, groundnuts for the soil. Average HH feddan 6 with a productivity of 3 bags per one feddan for Sorghum. 5 traders groups cultivate 40 – 60 feddans. Farmers hire both Bull and Ox-plough @ ssp 1,400 per feddan Watering from 7.00am to 900am and 7.00pm to 8.00pm 50 Traders involved in direct sorghum and groundnut crop farming individually (7-10 feddans each) and through 5 groups cultivate 10 – 20 feddans	granaries prone to pest and insect attack Some farmers still use local pesticide making (Ash). Lack of skills and experience	while in productivity of 3 bags per feddans of sorghum Farmers hire ox-plough @ SSP 150-200 for 4.5 hrs (8.00am - 11.30hrs Soil good for Sorghum, groundnuts, okra, maize, and pumpkins, County recommended vegetable, maize and vegetables Okra, pumpkin, egg plant, chilles, water melon, cabbage, sweet potatoes, cassava for the soil type	traction Delay in farming inputs (seeds and tools) distribution No skills on farming group formation No seed bank short maturity variety. Lack of credit and market
---	---	--	--	---

Table 21: Agricultural Production GWC

GWC County	Kuac North		Kuach South	
Capacities	Asset / Capacity	Capacity Gap	Asset/ Capacity	Capacity Gap
one Agriculture Director and 4 extension services officers provide similar services like GEC	(1) Payam agriculture officer and one tractor each. 45 boreholes (20 functional 25 broken down). 45 water committee. Training on modern farming.. Watering of farms between 9.00am – 10.00am and 7.00pm – 9.00pm. Irrigate vegetables in boreholes shared with livestock and domestic. 4 women and youth vegetable groups involved in vegetable and trees. Good access to good quality inputs (seeds and tools) from nearby Kwajoc town. Soil good for crops are sorghum, Maize, Seasim, groundnuts, kudhra, rigla, egg plant and Kudthra. Average yield per feed is 5 (90kgs bags). NGOs provide Agriculture support (VSFG, LEAD, FADA and Government. Crop and vegetable sales, trainings in modern farming	Prolonged watering time exhausts women due to cans. Poor borehole maintenance, funds and repairs. Insufficient seeds and tools. Need for labor free irrigation	(1)Payam agriculture officer and one tractor each Vegetable garden watering from 6.00am – 9.00am and 10.00-11.00pm. Share borehole water with livestock and domestic Average per feddan is 2 bags. Farmers mainly grow subsistence crops. HHs depends on market food purchase. Only VSFG provide Agriculture support seed, tools and trainings Only 3 bore hole are functional for domestic, livestock and vegetable production. 2 vegetable farmers group. Sales made upon harvest	Longer watering time due to cans and pressure on water by other users increase women working hours and load Only 3 functional boreholes due to lack of spare parts and skills. Food availability in market very unstable Mathiang Kang, Ajiep and Jerbak Bomas inaccessible during floods for 9 months Lack of skills in process and preservation

Table 22 and 23:
iv. Fishing Production

GEC County	Pathuon		Nyang	
Capacities	Asset / Capacity	Capacity Gap	Asset/ Capacity	Capacity Gap
	No fishing activities in Pathuon west		<p>Fishing done in seasonal River Jur and flood swamps fishing gears; fishing nets, small spears, canoes, hooks, twines, motor boats for transport. Fish harvested divided into four (fresh for HH food, Fresh for sale or dried for HH, dried for sale).</p> <p>Key fish markets in wau/lietnom and Lunyaker. Fishermen found in conflict seek mediation from marine police and traditional elders. Fishermen contribute 3 fish out of every harvest per day for incentive to the elders</p>	<p>Conflicts in fish breeding and fishing ground paralyze activities.</p> <p>Fishing is season livelihood.</p> <p>Lack of skills in fish processing, preservation</p> <p>Lack of skills in conflict resolution or mediation</p> <p>Foreign fishermen targeting</p>

GWC County	Kuac North		Kuach South	
	Asset / Capacity	Capacity Gap	Asset/ Capacity	Capacity Gap
	<p>Fishing activities are seasonal from River Jur. Use fishing gears; fishing nets, small spears, canoes, hooks, twines, motor boats for transport. Fish harvested divided into four (fresh for HH food, Fresh for sale or dried for HH, dried for sale. Dry fish on ground. Key fish markets in wau/lietnom and Lunyaker. Fishermen found in conflict seek mediation from marine police and traditional elders.</p>	<p>Lack of skill on processing and preservation</p> <p>Inadequate fishing equipment .</p> <p>Poor quality of fish on ground (dust and soil).</p> <p>Lack of steady market, information and price fluctuation</p>	<p>Fishing done whole year River Jur and flood swamps fishing gears; fishing nets, small spears, canoes, hooks, twines, motor boats for transport.</p> <p>Fish harvested divided into four (fresh for HH food, Fresh for sale or dried for HH, dried for sale. Key fish markets in wau/lietnom and Lunyaker. Fishermen found in conflict seek mediation from marine police and traditional elders.</p> <p>Fishermen contribute 3 fish out of every harvest per day for incentive to the elders</p>	<p>Small scale fishing activities. Lack of skill to preserve fish for stress period</p> <p>consumption or sell. In adequate fishing equipment</p> <p>Market price instability</p>

v. Diversified Incomes / Sideline Incomes

Study findings confirmed that HHs that adopted Livelihood strategies were informed by their existing livelihood assets, capital, skills, experience, perceptions of risk impact, and livelihood options available within their locality. Three main strategies depended on how they allocated their resources and utilized assets e.g *capital led Specialization strategy* (invest large quantity of physical assets or capital), *labour led* (invest by labor input instead of financial and physical capital investments – employees) or *diversified livelihood led* (invest on different sources of income, balance income source, e.g agro-pastoralist).

Table 24: Incomes GWC

GWC County	Kuac North		Kuac South	
	Asset / Capacity	Capacity Gap	Asset/ Capacity	Capacity Gap
	Agriculture, Livestock, ASCAs savings and loans,, business / IGA - brick laying, Taxi and motorbike transport services, business (retail shops, cereals, butcheries, agro-vet shops, repairs, grinding mills, non-food items, money transfer, community banks, local brews, tree seedlings sales, poultry production, hire ox-plough, vegetable sales, firewood sales, charcoal sale	Skills in business, marketing skills, savings and loans. High cost of inputs, equipments and transport Lack of capital	selling charcoal, firewood, local brews, water lilies, arts and crafts products, brick laying, hire ox-plough, fish, local poultry, crops produce, vegetables, making ropes, thatching, grass and brick laying	Lack of capital Lack of marketing skills, access to credit, access tailor made training Innovative value addition

Table 24: Incomes GEC

GWC County	PW		Nyang	
	Asset / Capacity	Capacity Gap	Asset/ Capacity	Capacity Gap
	Different way to generate income - ASCA -savings and loans, community banks, commercial banks, hostels, disco, bars, butcheries, slaughter house, auction, local brew, charcoal, restaurants, food kiosk, retail shop, phone shop, money transfer, phone charging, grinding mills, groundnut press, art and craft, welding, pottery, brick laying, embroideries and crocheting, poultry, catering, soap making, fresh milk processing, tailoring, tree seedlings, masonry, carpentry, formal employment, casual labor, transport service and hunting.	Very low literacy level. Lack of skills, Fewer diversification , Lack of capital, Lack of knowledge in business skills, Mentoring service non-available, Lack of vocation training facility	More than one livelihoods option - sell poles, firewood, charcoal, retail shop, food kiosks, soap making, bakery, catering, guest hosting, boat transport, brick laying, bicycle/motor bike repairs, grass, peanut paste, tailoring, welding, driving and transport, auction and casual labor. Trader groups diversify business with crop farming. Procurement of crop produces during harvest. Procurement of bulk food during low prices. sell during food demand in market, support members in cost recovery.	Lack of capital, business skills and resources to start. Lack of access to regular market information. Low literacy level. Link with good information

vi. Health centers

Health and nutrition ensure human physical ability needed to increase food productivity and participation in livelihood activities. Availability and access to health facilities (PHCC, PHCU), health personnel (Nurses, MCH and CHWs), medicine, immunization, delivery, mother and child

health, food quality, preferences and stability improves human survival and wellbeing, reduce HH expenditure on health to increase expenses in food, education and livelihood activities.

GEC, Pathuon west has 1 PHCC in Lunyaker, 1 PHCU in Majok, 1 MCH, 7 Nurse and 19 CAHWS while Nyang has 1 PHCC, 2 CHWs and 1 Nurse. The HHs from Pathuon who visit health facility (clinic 24%, hospital 66% and private 14%) while those from Nyang HH visit clinic 34%, Hospital 56% and private 10%. The distance travelled by patients in Pathuon west to the health facilities are 30 minutes 40%, 60 minutes 37%, > 60 minutes 13% and over 2 hours 10% while those from Nyang takes 30 mins 7%, 60 minutes 36%, > one hour 33% and over 2 hours 24%. The interviewed respondents in Pathuon west who gave their under 5 year vaccines 59%, breast milk 20%, vitamins 20% while those in Nyang vaccines 41%,beast milk 33% and vitamins 26%

GWC has 5 health delivery system, 3 in Kuac North (PHCU in Angui and Malek, 1 PHCC in Majiep), 6 CHWs, 3 Nurse and 3 MCH, and 2 in Kuac South (2 PHCUs in Magail and Thurnyor,), 2 CHWs, 2 Nurses and 2 MCHs. In Kuac South 57% of HHs visit community clinics (PHCC) and 43% visit hospitals while in Kuac North 24% of HHs visit clinic, 52% hospital and 24% private hospital. Distance to health facilities in Kuac North is between 30 minute s to 2 hours (30 minutes 38%, <60 minutes 4%, over one hour 10%, 2 hours 44% and over 2 hours 4%) while Kuac South 30 minutes 11%, <60 minutes 39%, over 1 hour 22%, over 2 hours 22% and > 2 hours 6%. The major constraints affecting access to hospital in Kuac North are No drugs 24%, No staffs 5%, very far 10% and costs 62% while in Kuac South, No drugs 32%, No staffs 8%, very far 12% and cost 48%. HH members gave their under 5 years to antenatal in Kuac South vaccinations 60%, breast milk 20%, vitamin A 16% and nothing 4%. Kuac North gave vitamins 63%, breat milk 29%, vitamins 6% and nothing 1%.

Table 24:
Vii. Water and Sanitation

GWC County	Pathuon West		Nyang	
	Asset / Capacity	Capacity Gap	Asset/ Capacity	Capacity Gap
1 County Water Head, 12 Water personnel overseeing operations (4 in Nyang and 8 in Pathuon West) 1 down pick up and 1 hand manual drill but Brocken down.	37 trained water personnel (8 are employed by government 29 volunteers) 30 water pump technicians trained on drill use, borehole repairs and maintenance, conflict resolution. 139 boreholes and 25 non functional	Lack of spare parts, Lack of funds to undertake maintenance shallow depth dry water table, sipping water	7 water pump technicians trained on drill use, borehole repairs and maintenance 6 bore holes (5 functional and 1 broken) 6 Borehole water committees	Trained technicians very few. Boreholes not sufficient Lack of funds for spare parts purchase and repairs.

Table 25:
Vii. Water and Sanitation GWC

GWC County	Kuac North	Capacity Gap	Kuach South	Capacity Gap
1 County and 2 Payam Water team provide technical backstopping. 2 manual operation Drill, 2 Bore hole Drilling Rick procured by government @ USD 200,000. Boma management committee monitor of bore holes twice a week & support	45 out of which 25 are broken down. 45 WMCs Consist of 7 volunteers (4 men and 3 women) trained in pump management (cleaning, back filling, fencing and minor repairs). Rick rented out to drill bore holes communities at fees @ USD \$ 5,000 per bore hole. Income from rent buy spare parts (JI Pipe – USD 35, Connecting Rods – USD 22, first moving kits, Cylinders, cylinder repairs, PPC c- USD 60, Assembly head – USD 160Pedester- USD 160 and water tank- UED 180), pay incentive to WUAs, transport of material to site and maintenance Irregular HHs monthly contributions SSP 100 for purchase of spare parts and SSP 10 for repair of Boreholes	High cost of spare parts and cost of maintenance Lack of funds to buy spare parts and repairs fees	Boma management committee Has 3 bore holes but only 2 functional 6 water management committees Consist of 7 volunteers each (4 men and 3 women) trained in pump management (cleaning, back filling, fencing and minor repairs). Three Boma has no water at all Amuk, Ador, Amok, Jur Bomas stress period Domestic water collected by women, boys and men water livestock at rivers or boreholes. Less HHs commitment to monthly contribution of SSP 100 for purchase of spare parts and SSP 10 for repair of Boreholes	Lack adequate training skills Limited funds and resources for spare parts purchase and repairs. .

viii. Infrastructure

(a) Shelter / Housing

The VA study strived to assess the available types of housing structures, light and cooking fuel used quality of construction materials in terms of durability. The study asses the types of shelter used in the areas to determine the durability and materials used.

In GWC, Kuac North 69% of the houses being Tukul with mad wall, Brick wall and grass thatched roof 13 % grass, brick wall and iron sheet roof 10% permanent houses (block and iron sheets) 8%. In Kuac South 91% of houses are Tukuls, brick wall and grass roof 5% permanent houses 4The light system used in Kuac North firewood 33%, tree stamp 24%, Torch 10%, Generator 10%, sun / moon 5%, charcoal 10% and local lump 10%. In Kuac South, the lighting system are Firewood 43%, tree stamp 20%, Sun and moon 28%, lump 9%. Sources of cooking fuel in Kuac North are Firewood 37%, charcoal 42%, Kerosene 5%, broken timber 5%, coffee husks 5% and crop stalk 5%, while in Kuac South Firewood fuel 50%, charcoal 29%, coffee husk 7% and crop stalk 7%. %. This means that there is over dependency on grass, poles, soil for

housing which directly impact on the natural resources and environment yet there is not conservation interventions.

(b) Markets

In GEC, Pathuon West has 8 markets centers for food item, food providers, repairs, livestock auction, garage and butchery while Nyang has no market no such services. Market has seasonal food supplies but minor food shortages. 50 traders in Pathuon have formed 5 groups to improve their capacity for food supplies. In Pathuon, pastoralist sells livestock for food in cash or barter (1 big goat for 1 bag sorghum). 1st class cattle sold at cash only, Heifa @ 60 Malwas bag, 2nd class exchanged @ 40 malwas for 4 sacks 40 bags, 3rd class @ 35 malwa for 4 bags. One Malwa equivalent to 4 kgs. In Pathuon west Good prices for livestock is between Jan to August 2nd grades – 3rd grades (SSP 9000 – 3,000) and shoats SSP 500- 1200 depending on grade. Bad livestock prices falls between September to December (<2000 - <7,000), shoats SSP 150 - <500). Seasonal sorghum price variations, **Lowest** – 50kg bag @ 150SSP and Highest **price** 100kg @ 300SSP Groundnut prices low prices 10 malwa @ 70SSP, then 50 kgs @ 350SSP.

In Nyang, HHs purchase much smaller portions of sorghum compared to Pathuon west due to lower purchasing power and high prices; 50kgs @ SSP 600 – 1250 from March to August, one malwa cost SSP 50-70. In nyang, Fish sales income is more during good prices from July – Dec with Tilapias @ SSP 30 and mudfish @ 100, and lower prices from Jan – June with Tilapia @ SSP 12-15 while Nile perch @ SSP 50-70

In GWC, Kuac North has 9 markets for food items, food providers, non-foodstuffs items, livestock auction and butcheries while in Kuac South there are 5 market but no auction or butchery, food items availability is not consistent as market traders depend on Kwajoc and Wau supplies thus food shortages.

In GWC, there are preferential on choice of livestock species sold out, for example in normal season, out of the livestock sold in Kuac South are cattle 42%, sheep 35%, goat 43%, while in Kuac North cattle 38%, sheep 35% and goat 42%. During stress period, livestock species sold by HHs in Kuac North cattle 54%, sheep 31% and goat 15% while in Kuac South cattle 37%, sheep 30% and goat 33%. The prices in normal period and stress period are different with average prices in Kuac North in normal time's cattle SSP 7,217, Sheep SSP 523 and goat SSP 438 while during stress period drops with cattle SSP 4,111, sheep SSP 395 and goat SSP 366. In Kuach South, prices in normal period cattle SSP 6, 354, Sheep SSP 496 and goat SSP 506 while in Stress period cattle SSP 3959, sheep SSP 324 and Goat SSP 308.

Kuac North there is a state market well equipped with all services while in Kuac South there are 9 markets (Tharkyeng, Genajomo, Wunkuel dit, Thurnyor, Weel, Yinhliet, Mabiortuot, Manyielnhom, Lakaweeet and Wailwth), with no Livestock Auctions. There are total of 16 trader groups in 9 markets in Kuac South with an average of 22 members each. *Sorghum prices* for 100kgs highest between Feb – July @ 2800- 3000 and lower between Sept – Jan @ SPP 1150 – 1500 and while 50kg highest prices @ SSP 350 – 500 and lowest price @ SSP 200 - 300 and highest @ SSP 350 – 500, while malwa – 15 – 20 SSP. *Maize prices* one malwa @ 12-15 SSP,

50kg @ 180-250, 100kgs @ ssp 900 to 1000. Ground nuts – one malwa @ ssp 7-10, 50kgs @ 300, 50kgs @ 500 SSP. Fish prices low production Jan- July @ 5 – 7 SSP and high season August – December @ SSP 10 – 20. Seasim , malwa@ ssp 20-25, 50kgs 1500, 100kgs @ 3120.

(c) Roads

In GEC, Pathuon West has 100% all weather marram roads which could be accessed during rainy season apart from flooded areas while Nyang has 90% path roads and 10% marram road through Lietnom passing blocked by flooded laggas for 8 months in rainy season. In GWC, Kuac North being the state headquarters, 60 % all weather marram, 30% pathway inaccessible in rains to 4 Bomas and 20% tarmac road network transiting to twic, lietnom. while in Kuac South has 20% tarmac to Kwajoc and 80% feeder pathway inaccessible in rainy season.

(d) Transport

In GEC, Pathuon West have access to public transport shuttle/taxi, motorbikes and bicycles, while in Nyang these services are not available, people walk with few using own bicycles and boats. Trader in Pathuon west prefer to transport their goods in bits using public means to private trucks due to cost effectiveness e.g SSP 50 per 50kg bag, people pay SSP 120. Traders prefer to use public transport for goods than hire private trucks due to high cost limited number of good transported per time. In GWC, Kuac North has access to abundant public transport Bodaboda, Atos, Tuktuk, taxi and boats due to the Kuajoc state HQ while Kuac South has limited number of Boda boda (Motorcycles), Atos, Taxi and boats.

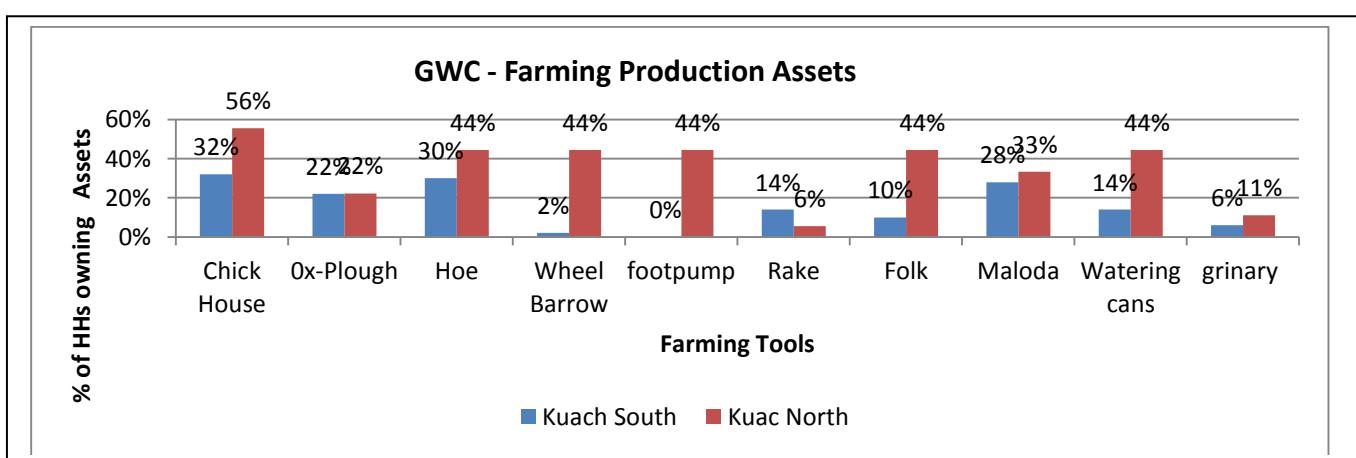
(f) Communication

In GEC, main means of communication in Pathuon west is phone network for Zain and MTN, Police radio, National Radio, runners and individual meetings. In Nyang, mainly runners and meetings with limited access to Radio and Zain only in Warabie Boma. The means of communication in GWC, Kuac North are Zain, Vivacel, MTN, GEM tel, Radio, Police Radio while Kuac North has Zain, police Radio, Radio and Meetings.

6.7.3 FINANCIAL CAPITAL

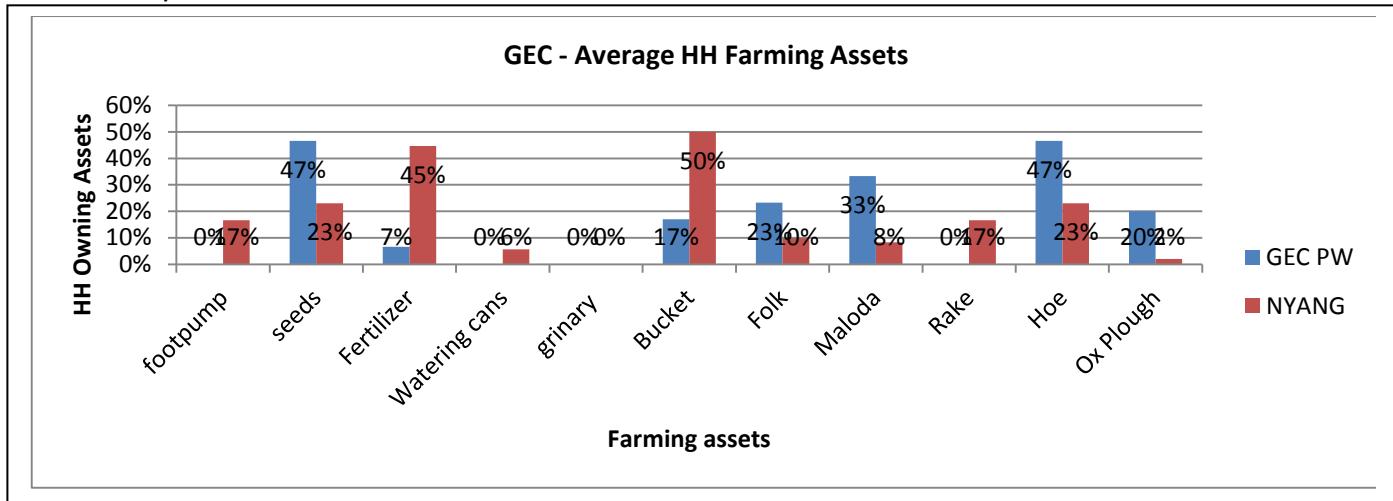
The study collected data about the resources and assets that the beneficiaries' owned in order to ascertain their ability to effectively pursue their livelihood options. The study focused on assets and resources for three main livelihood sources Farming, livestock and fishing.

Graph: XIII-Production Assets GWC



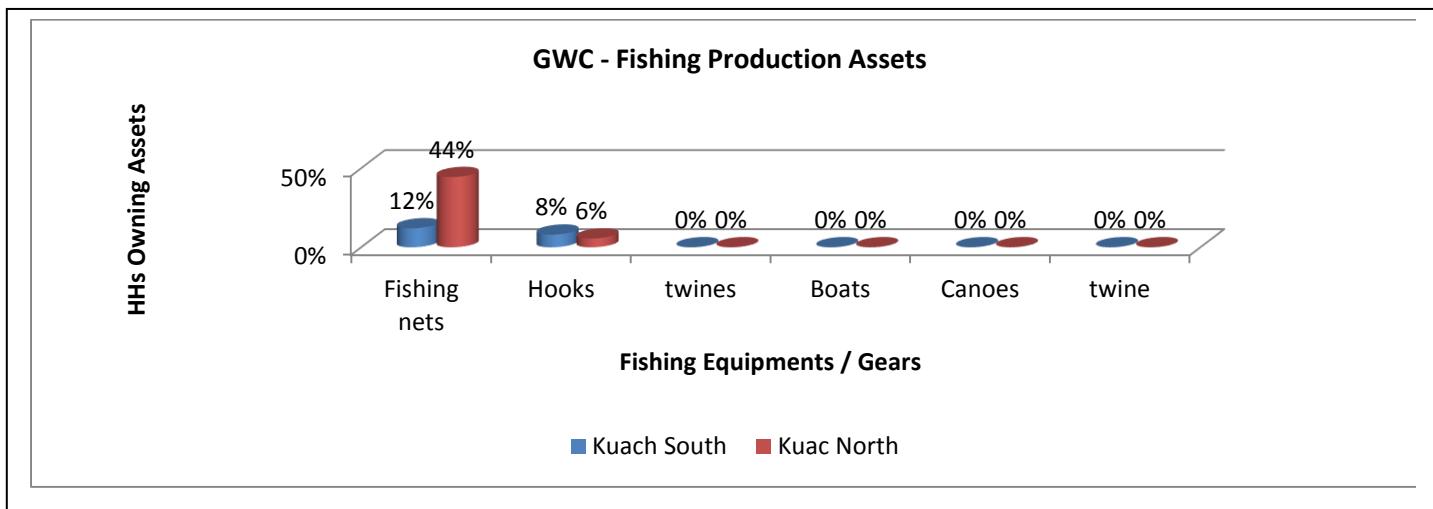
and Malodas were the most commonly used tools. More HHs in Kuach North with over 40% owned tools compared to less than 25% of HHs in Kuac South.

Graph: XIII-Production Asset GEC



The findings of the study in GEC, in Pathuon west showed that the long presence of VSFG and other NGOs build capacities of beneficiaries and enabled to them gain access to training skills, inputs and tools. However, Nyang payam did not have adequate skills, input and tools. Lack granary for crops storage in both areas highlight indicates less production and gaps in post harvest management and practices.

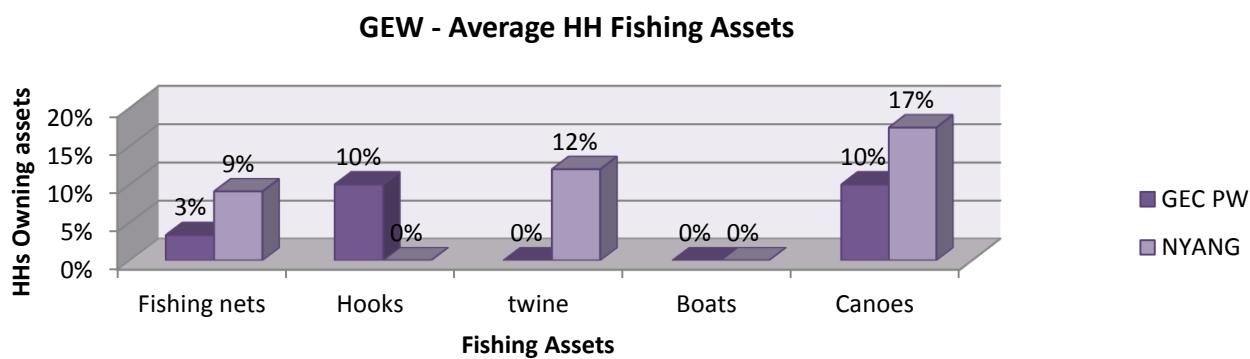
Graph: XIV-Production Asset GEC



The findings of the assessment on the level fishing equipment ownership in GWC indicated very limited capacity and access of Kuac South fisher communities to fishing production. Kuac North on the other hand has access to fishing nets with 44% of the members owning one. FESAP

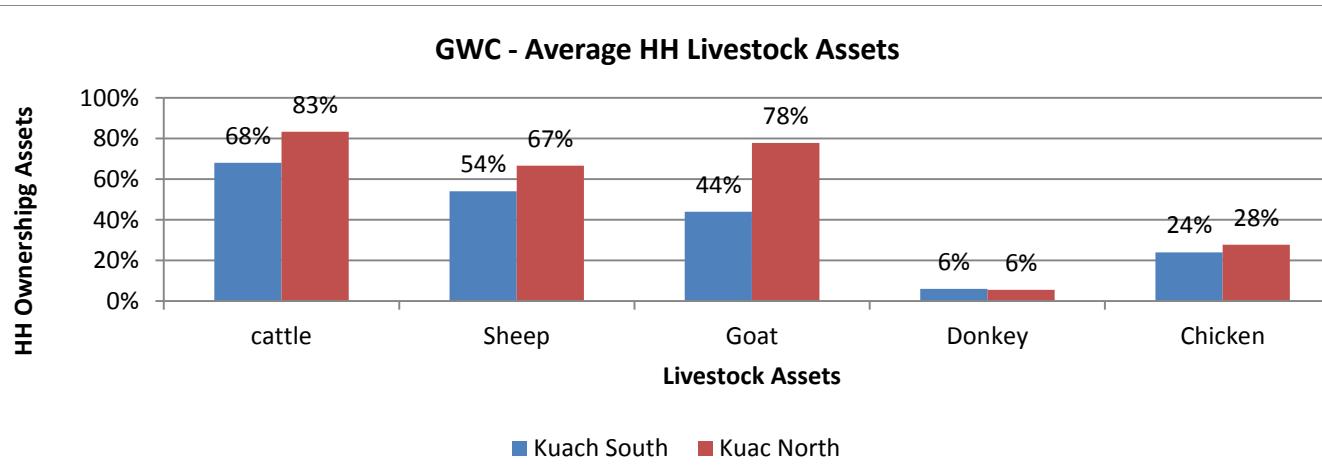
project need to focus on capacity needs assessment and building the capacities in improved fishing and access to fishing equipments.

Graph: XV-Production Asset GEC



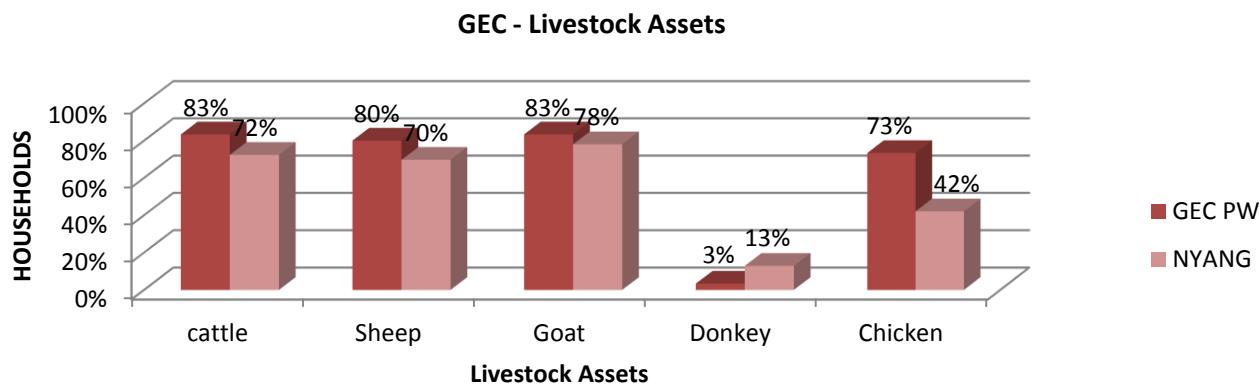
Focus group discussions and HH interview respondents expressed the need to provide mosquito nets, twines, hooks, and boats to improve fishing production. Though Nyang is more involved in fishing activities, it lack vital fishing materials compared to Pathuon west that benefitted from NGO and VSFG.

Graph: XVI-Production Asset GWC



GWC showed high cattle ownership of 68% compared to sheep and goat at 54% and 44% respectively in both payams, however the recent climate change posses more threat to livestock survival than shoats.

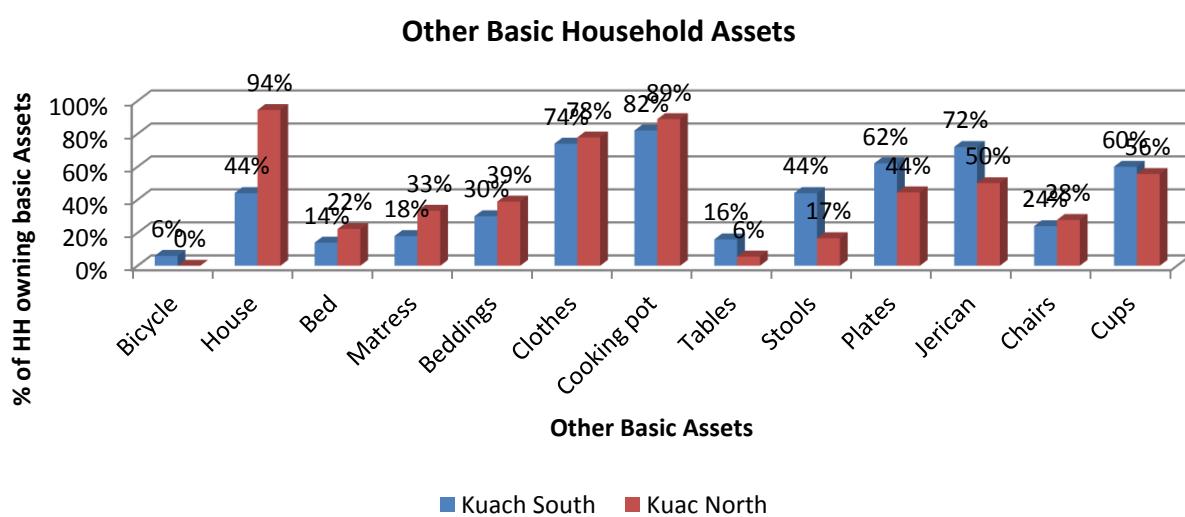
Graph: XVII-Production Asset GEC



GEC study findings on HHs ownership of livestock indicates an almost the same % of HHs ownership equal number of cattle, sheep and goat in Nyang and Pathuon. Donkey ownership is very low while Pathuon west has higher % of HH keeping poultry mostly resulting from the VSFG improve poultry breed farming project. The only disadvantage faced by Nyang is the number of few trained CAHWs and limited access to drugs and vaccinations services.

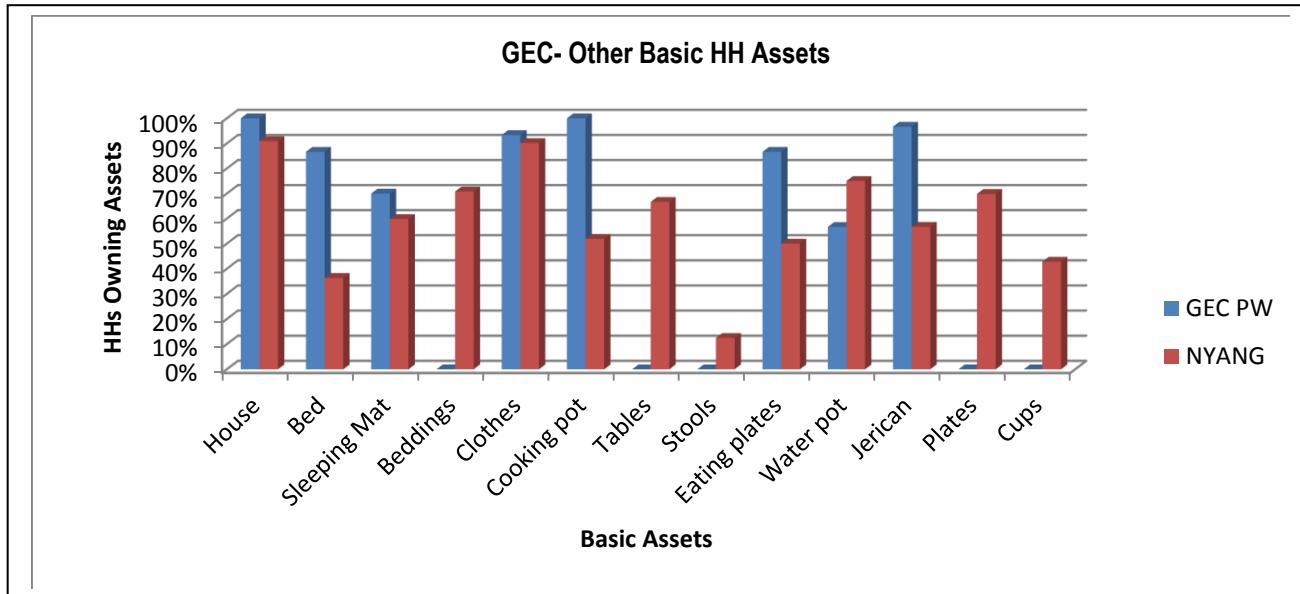
Graph: XVIII-Production Asset GWC

Basic Household Assets



luxurious necessities like Bed, Stool, chairs and Tables were left for the rick of able families.

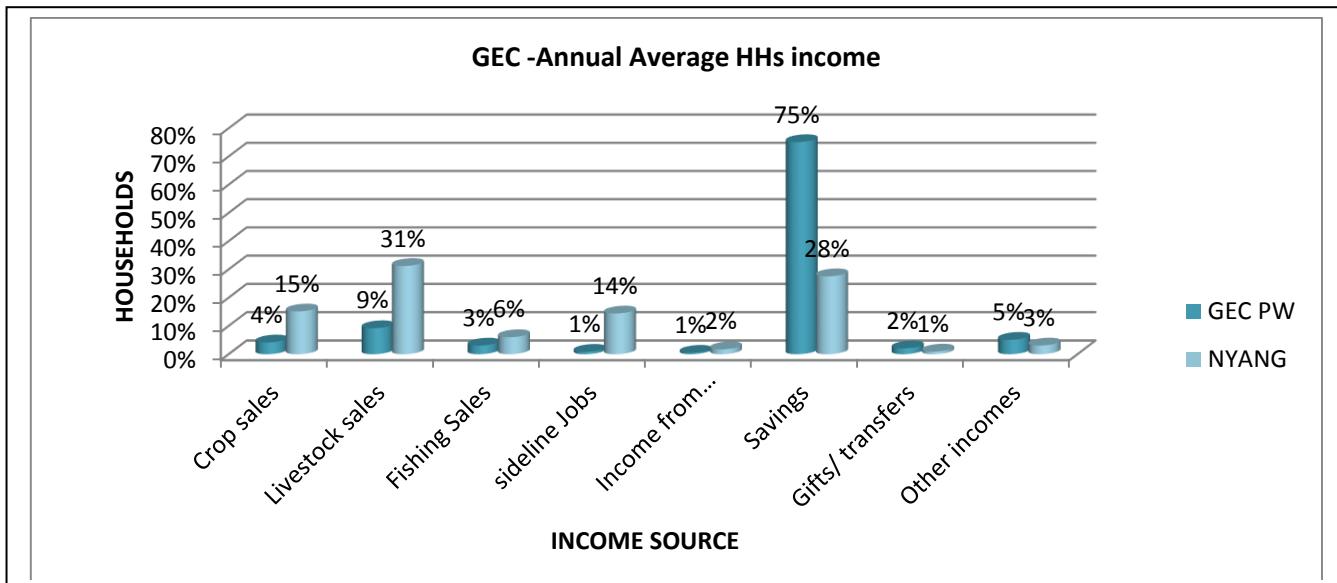
Graph: XIX-Production Asset GEC



1. Average available Household Income

This session captured the different sources of HHs net income (household income – expenditure), other earnings (sideline jobs), cash and in kind income (e.gg sales/barter trade).

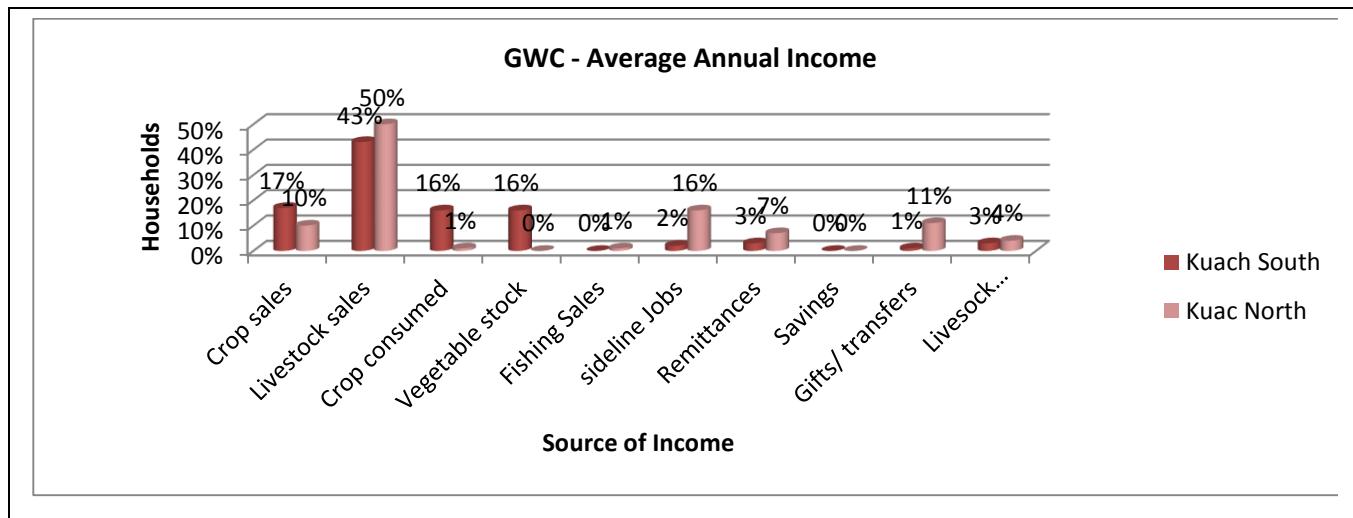
Graph: XX-Household Income GEC



In GEC, Pathuon west, the main source of income is from savings 75% and livestock 9% since 90% of those interviewed were VSFG beneficiaries involved in ASCA activities. Nyang community also indicate

savings 28% , sideline jobs 14% and livestock sales 31% and crop sales 15% due to fact that 90% of those interviewed were project beneficiaries.

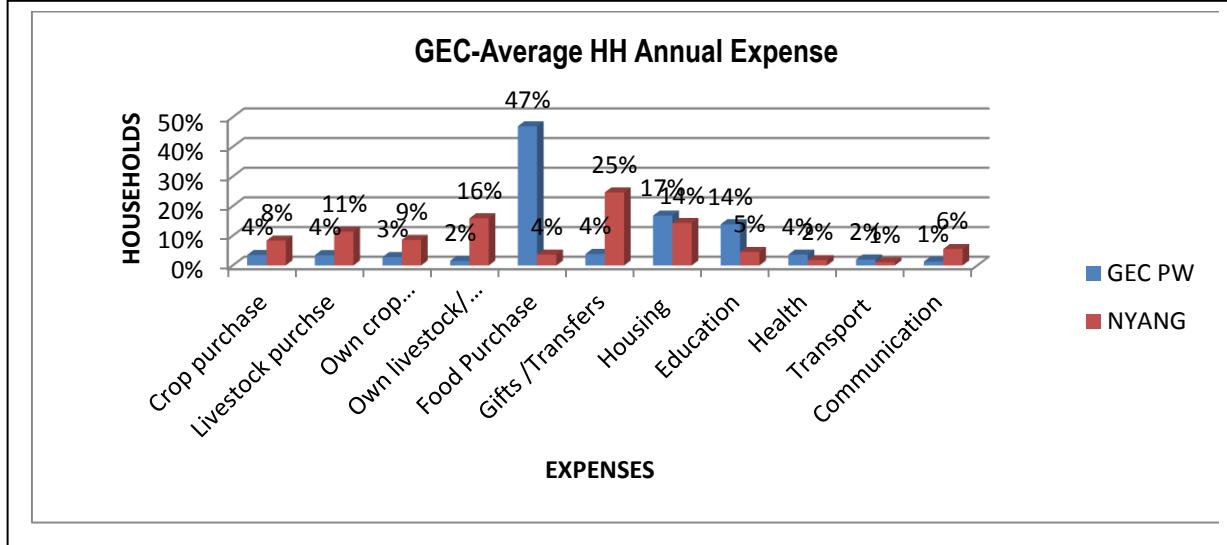
Graph: XXI-Household Income GWC



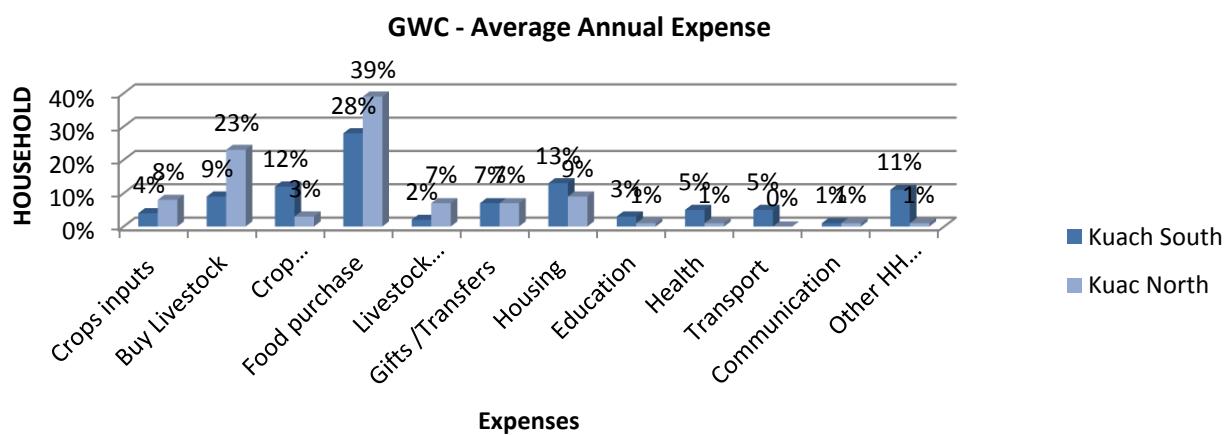
1. Household Expenses

This session captures most common expenses incurred e.g Investments, borrowing to friends and family, purchase of foods, rituals, medical school, transport etc housing, education, inputs, health care and nutrition, business, communication, transport, education, Savings, Remittance, pensions, credit, inputs.

Graph: XXII-Household Expenses GEC



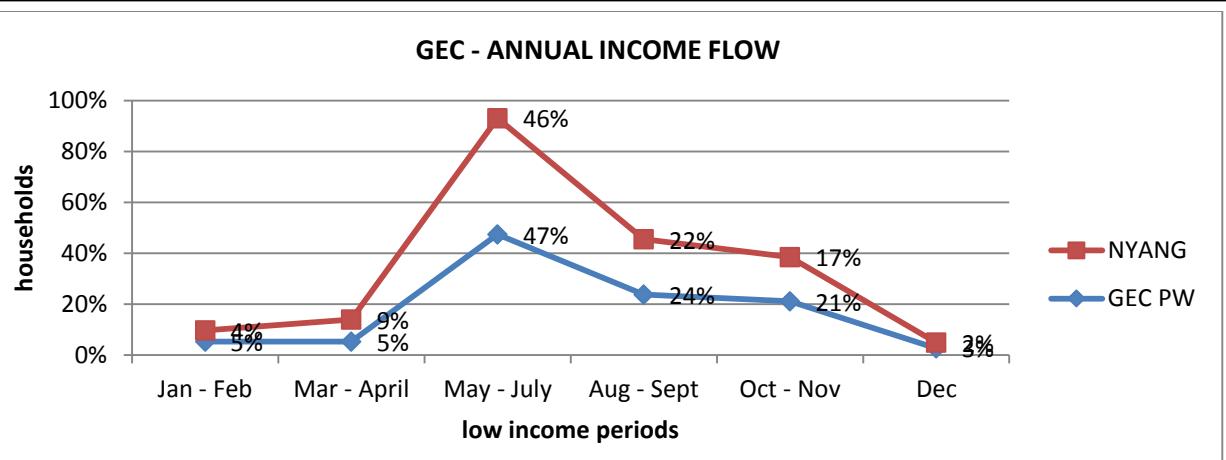
Graph: XXIII-Household Expenses GWC



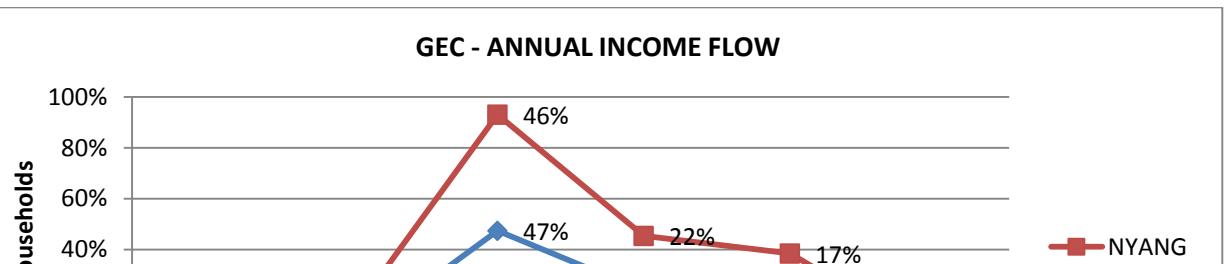
Well being - HHs wellbeing if the ability to collect more fodder, till land, do casual work, steady job, make savings for family diversified income, no lack of food, finance children education. Rich HHs spend more on education, transport and communication while poor and vulnerable HH spend more on food and medication. From the expense analysis above all the four Payams are all vulnerable.

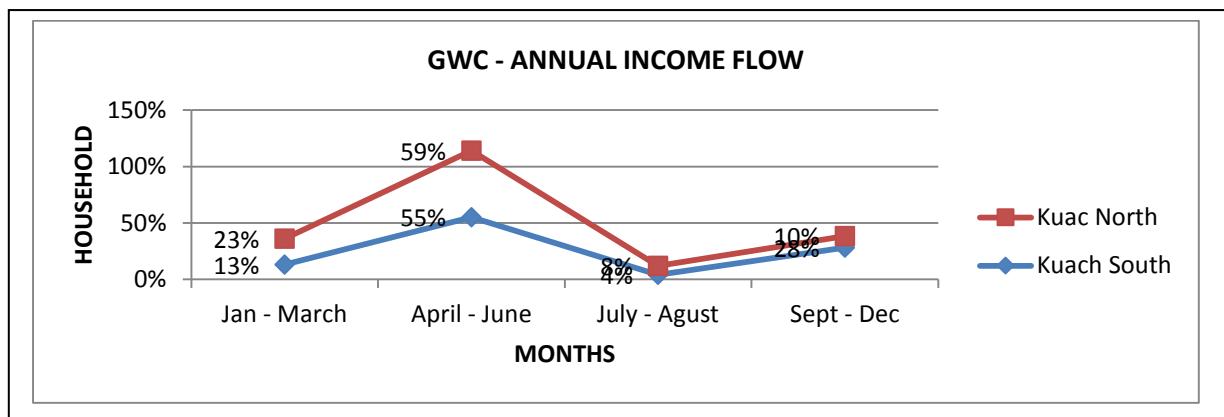
2. Season for Low income flow

Graph: XXIV-Household Income Flow GEC



Graph: XXV-Household Income Flow GWC





6.7.5 NATURAL CAPITAL

VA study analyzed the natural capital assets by identifying existing natural resource stocks which support the livelihoods, survival or success such as land, water, (rangeland for pasture and water), bio-diversity and environment, changes in resource use during stress moments etc. *Early Warning System - In Pathuon west, the community monitor level of rainfall by water level in river while in Nyang flooding level or mosquito – presence of mosquitoes by April is sign of flooding but if mosquito are not there till July then it means that there will be no flooding. Elders, spear masters and fishermen responsible for EWS monitoring.*

In Kuac North, flooding indicated by number of Jeri cans per HH, e.g. between May – Dec, normal HH water consumption is 5 Jeri cans per day, bad season is less than 5 Jeri cans a day. *Water – what water structures they use - Rivers banks, swamps, Hills, minerals, pasture and grazing areas.*

Table: 25**7. COPING STRATEGIES AND MITIGATING MEASURES TO AGRO-PASTORALIST PRDUCTION ASSETS RISK**

CONSTRAINTS	COPING STRATEGIES	MITIGATION MEASURES / RESPONSE ACTION
1. FOOD AVAILABILITY		
Shortage of food at HH	Manage food Shortfalls by rationing. Eat dead, sick or thin livestock. Consume own livestock / crops. Buy food from market. Eat wild fruits, Change in consumption patterns but nutritionally acceptable foods. Reduce number of food dependence. Eat seed stock, exchange labour for food. Borrow, remittances, Buy cheap small amounts of foods, Sell harvested crops immediately in cheap prices. Sell firewood, charcoal and grass. Selling excess fresh milk or fermented milk during rainy season	Diversify livelihoods (Farming, Farming, Fishing, vegetable, side jobs, business etc). Sell livestock at end of rains for good prices to stock foods for stress period. Consume or sell products e.g (ghee, preserve meat, milk powder/long life etc). HHs who can slaughter goat or cattle purchase meat from butcheries. Provide labor for food or wage fees, Involve in group savings and loans activities. Remittance, School feeding programs, Bulk stock foodstuffs before rains. Involve in IGAs or business. Buy enough stock of food and keep for consumption in stress period. Training on skills to preserve long life or powder milk for hunger gap skills Training on milk value addition and marketing.
Shortage food in markets	Traders start microenterprise business with small capital without business skills. Traders buy food stocks in small quantities from neighboring towns (Kwajoc and Wau). Transport goods in cheaper public transport. Traders experience in trade not expertise, form trader groups to address common problems. Hire security for temporary shop stores	Establish and train trader associations. Link traders to credit facilities. Train on business, marketing, savings and loan skills. Support traders and progressive farmers with ox-ploughs and seeds to increase farm sizes and produce more food for market. Traders to mobilize savings or loans to purchase bulk local food products and stock for stress period. Promote cost effectiveness trader's association's joint procurement and transportation. Construction of permanent and secure shop structures to prevent theft of good / food stocks.
Food Prices Fluctuations (Local and international)	Traders form associations for savings and loans to access loans. Association members contribute money to cushion each other against high transport costs.	Traders associations trained in business skills, savings and loan skills and marketing skills. Traders linked to credit facilities and market information. Support traders organize themselves and negotiate cheaper bulk purchases and shared transport (vehicle hires) costs. Establish trader association networks linked to regional and

	<p>Traders' advice each other on how to face trade challenges.</p> <p>Moral support to during stress. Traders cultivate huge farms (sorghum, maize and groundnuts) to increase shop stock at lower costs. Traders buy cheaper locally produced food within county just after harvest. Traders buy imported international food products after consuming local food products at very highe prices. Traders sell their cattle or shoats to build capital to offset losses experienced due to losses, pay medication and school fees expenses.</p>	<p>international food supplies importers to better negotiate for better prices. Provide inputs for local food crops and vegetables production to farmers groups, progressive farmers and traders farming groups with (seeds, manure, pesticides, insecticides, ox-ploughs for cultivation, planting, weeding and winnowing, preservation and storage equipment). Support livestock marketing groups with business and marketing skills and link to credit. Establish butcheries. Establish pilot fattening grounds (buy weak animals at cheaper prices and hold weak animals for 3 months). Construct livestock holding grounds. Fodder harvesting and production skills to improve livestock feeding. Resolve conflict for conducive environment for trade.</p>
2. LIVESTOCK		
In accessible vaccinations	<p>Vaccinations campaign done for between one to 2 weeks.</p> <p>Payams without vaccines cold chains have vaccines kept in neighboring Payams. Few available CAHWs jointly work with vet doctors during vaccinations. Farmers are mobilized for a half a day before vaccinations campaign starts. Vaccinations planned according to funds and vaccines. Do vaccinations with available vaccines and funds. Vaccinate before flood block roads</p>	<p>Regular vaccination and treatment conducted for between 2 weeks to 21 days in strategic satellite cattle camps locations in grazing areas</p> <p>Mobilization for vaccinations should not take less than 1 week to reach livestock owners and herders in scattered areas.</p> <p>Vaccinations to be conducted thrice a year in mutually selected satellite cattle camps. Mobilize livestock owners to sign payment commitments for cost recovery fees before Establish an operational cold chain in every Payam. Review of payment amount of CAHWs from 20SPP to 50 SSP per day to cater for inflation.</p>
Lack of or fewer drugs and vet stores	<p>Drugs purchase from CAHWs and Agro-vet stores in Payam</p> <p>Drugs brought from traders in market in Payam</p> <p>Livestock treated by CAHWs, farmers or</p>	<p>Construct and equip more vet shops. Train more CAHWs and equip with drugs. Mobile pharmacies, sell of drugs through cash and barter. Teach farmers on disease symptoms and drugs to be used. Regular and sufficient time for treatment and vaccinations campaign. Increase number of strategic drug stores to meet demand in each payam. Create awareness on significance of modern than traditional medicine or</p>

	herbalist Nyang and Kuac South buy drugs from neighboring locations vet stores or CAHWs, Herbal treatment, Treatment and vaccinations at Toc grazing areas.	treatment. Do livestock diseases surveillance.
Poultry diseases and predators	Trained poultry auxiliaries. Community awareness on poultry treatment Keeping both traditional and improved chicken for food and sell. Construct houses to protect predator. Watch over predators	Train more poultry Auxiliaries. Train on how to diagnose diseases and treatments. Conduct poultry vaccination. Avail Poultry drugs and vaccines in agro-vet shops Training on how to improve poultry house structure that protects predators. Poultry feed making (Ants, grass, sesame, worms, livestock bones, sorghum, and fish bones). How to control poultry predators during scavenging
3. FISHING		
Limited skills and inputs on fishing livelihood	Sun-dry fish traditional fish to preserve. Harvest fish for food, sell fish for income. Use local fishing equipment such as used are canoes, twines, hooks, nets, spears etc.	Organize fishermen and fish traders into groups. Conduct trainings on improved fishing, preservation, business, ASCA, and value addition. Provision of fishing gears such as boats, twines, hooks, nets, fish drying racks. Trainings on boat, nets and drying rake making and repairs.
4. AGRICULTURE		
Limited capacity in modern farming methods	Individual hand tilling of less than 2 feddans farms. Trades association farming. Few people practice ox-plough and tractor farming. Progressive farmers. Small scale households farming. Trainings on ox-plough farming. Dry season vegetable farming	Train farmers on modern farming techniques. Support trader group's farming to increase farms feddans from 30 to 50. Food for work for labor to poor and vulnerable households farms (farm clearance cultivation, weeding, harvesting). Trainings on ox-plough use and ox-ploughs to groups, progressive farmers and poor HHs. Establish vegetable and crop seed planting demonstration centers. Provide less labor intensive equipment (solar pump and drip irrigation). Train on business, savings and loans, and marketing skills.
Farms destructions by livestock	Fence farms using thorns. Household members of farmers watch over farms. Cultivate smaller farms for easy management Identify farms far from livestock migration areas	Cultivate farms far from livestock migration routes, early preparation of farms and fences, plant live fences, co-management committee composed of farmers and livestock herders to resolve conflicts and manage joint water use. Develop penalties for livestock destruction. Train on improved farm fencing, provide live fence seeds and pilot planting (Babul Acacia, Pencil Euphorbia, Eucalyptus, sisal, pigeon peas).

Lack of access to adequate farming inputs, tools / equipment, spares, Spare parts	Keep seed stock for next season. Borrowing of seeds from friend or relatives. Buy seeds and tools from market or local farmers. Use local black smiths or personally use old farm tools and equipment spare parts to repairs broken down tools Use ropes or wires to tie broken tools or equipment. Hire tools and equipment e.g. Ploughs. Full reliance on rain fed crop agriculture only	Train farmers on crop and vegetable pest and diseases to inform inputs decision. Train and equip local blacksmiths tools and equipment making, maintenance and repair (Axe, maloda, wheel barrow, watering cans, hammers, rake, sickle) Organize local black smiths into groups and link to financial providers. Establish local shops for farm equipment, tools spares and spare parts in each payam. Trainings of farmers on minor repairs and maintenance. Distribution of seeds, tools and equipment. Supply of resilient short maturity seeds through seed banks. Access to credit to buy inputs, tools and equipment. Subsidize prices of inputs, tools, equipment or transportation. Link farmers to black smith supplies. Establish at least 2 seed banks in each County for short maturity variety quality seeds; Legumes/tuber like cassava, sweet potatoes, bananas, Pineapple, water melon and yams, Vegetables like ("janjaro beans", local beans, cowpeas, groundnuts, Rice, Maize, millet, sorghum, egg plant onions, seasm, maize, tomatoes, pumpkins, kales, pepper, sweet potatoes, okra, Kudhra, Rigla), fruit trees (mangoes, guava, lemon, neem, moringa), and live fences seeds like Babul Acacia, Pencil Euphorbia, Eucalyptus, sisal, pigeon peas; and commercial trees like Mahogany, Tic, Eucalyptus, gum Arabic and umbrella thorn acacia, neem and moringa. Timely distributions of seeds and tools for harvests on time e.g. Maize – July to September, Local Beans – May to June, Sorghum – May to June, Ground nuts – May to June.
Loss of crops to pest and insects in grain stores	Dry crops and store in wood and mud granary. Ash pesticide.	Training on crop and vegetable post harvest management. Durable storage facilities. Train on crop pest, and diseases management. Value chain and innovation trainings
Lack of regular and reliable EW information	Access EW on rainfall and flood by local government. Cleansing. Alternative incomes. Traditional EW information by monitor river water levels and banks water flooding).	Strengthen early warning information on rainfall and temperatures. Strengthen informed decision on Early Warning information. Develop systems for EW information surveillance and dissemination for foods, drought and conflict.
Lack of access to productive or fertile land	Residential and Farm land inherited from family /clans. IDPs acquire Residential and farm land	Families allocate land for residence and farming to members Families without good farmland identify unused communal land suitable for farming and request community council of elders to allocate to them.

	allocated by relatives, friends and customary elders. Mulching and compost manure to improve soil fertility. Trench and canals to prevent erosion.	Improve soil fertility (mulching, compost manure), land reclamation (ridges, canals, dykes, plant trees /grass). Train on Modern farming and cultivation. Innovation to improve land tilling (ox-ploughs). Soil fertility (cultivation, mulching, and compost manure). Trench, canals. Plant trees. Intercrop, rotational farming (vegetables, legumes, cereals).
Lack of capital or access to capital / credit	Communities borrow credit from relatives, savings groups and traders to buy farm foods, meet house needs, fishing and farm inputs.	Formation and training ASCA groups. Train existing groups on savings and loans. Trainings on business skills. Link farmers to existing credit facilities.
Limited access to water	Reliance on rain fed agriculture Rain. Small scaled dry vegetable farming using existing boreholes Farming done on flood areas	Provision of climate resilient seeds Training on dry season vegetable farming. Adopt labor friendly solar pump irrigation and bore hole linked drip irrigation system, sack conservation farming Use flood and swamp areas for Rice farming. Alternate both dry season irrigation and rain fed farming. Rain water harvesting for dry season farming – dams, roof, ponds, tanks Strength capacity of Bore hole and Boma water committees Rehabilitate or repair broken down and new boreholes for farming
Shortage of labor force	Communal labor support to HH that can provide food and wine Children drop out of school to help in farms and grazing. Reduce farm size or neglect farm	Sponsor communal labor services for vulnerable HHs (subsidize food/wine) Provide food or cash vouchers for labor force to Vulnerable HHs during cultivation, weeding, harvesting. Savings and Loans for paid farm labor service Promote less labor intensive Small scale solar irrigation and drip irrigation for vegetable production. Promote innovative tools (ox-plough, malodas, rake, axe, sickle, watering cans). Establish savings and credit for labor hire.
Limited capacity for diversified livelihoods	Business activities from experience but no formal training on business management. Formation of savings and loans groups (ASCA groups, cooperatives and associations) for savings and credit services Labor wage income from Agriculture, Livestock and casual employments.	Support establishment and trainings of ASCA groups. Trainings on income generation activities, business and marketing skills. Support vocational trainings – Masonry, Tailoring, carpentry, arts and craft, bakery, Catering, Welding, driving, computer, and crotched bed sheets. Promote Life skills trainings - milk and meat processing, savings and loans, honey production, fish processing, TBA, fodder production, bead making, brick making, peace building, soap making, cottage industry, hunting etc. Construction of women centres. Training on preservation and value addition for crops, vegetables,

	<p>Livestock marketing. Fish selling, crops selling, vegetable selling, livestock products sale (milk, meat, ghee/butter)</p> <p>Income from skilled services – Teaching, Masonry, Tailoring, carpentry, arts and craft, bakery, Catering, Welding, driving, computer, crotched bed sheets, Brick making, soap making.</p>	<p>meat and fish. Link Trader associations, ASCAs and cooperatives with financial service institutions. Training on how to know good business to do (IGA selection, Planning and Management)</p>
5. HEALTH & NUTRITION		
Malnutrition	Survival on less preferred and food consumption portion during stress period without consideration of balance diet	<p>Capacity building of women on how to mix family foods for balanced diet.</p> <p>Train on how to make children feeds and preparation</p> <p>Educate on appropriate healthy food consumption practices</p>
Inadequate health facilities, Drugs and personnel.	Rush for health services during time medicine is available in hospital. Travel long distance to access drugs in hospitals. Periodic drug supplies to hospital	<p>Construct additional Health facilities in strategic location to fill current gap</p> <p>Equip the existing health facilities with enough personnel to meet health needs</p> <p>Regular supplies of drugs to guarantee quality services meetings</p>
6. WATER AND SANITATION		
Pressure on existing borehole and high breakdown of boreholes	<p>Volunteer Bore hole and Boma Water management committee manage bore holes. Depend on Government and NGOs assist in construction of boreholes and repairs. Community dig scoop holes in river beds for water. Walk longer distances in search of water, Household contributions (cost recovery). Share boreholes for domestic, agriculture and livestock. Use existing functional water structures (borehole, shallow wells, pond, river)</p>	<p>Establish Borehole Water Users Associations (WUAs) at Boma. Train and Support existing WUAs with skills on borehole cleaning, manage surrounding, repairs, maintenance. Strengthen cost recovery system. Government motivation of water staffs (employment/improve wages) to improve performance or privatize borehole management. Establish local spare parts shops. Co-management (community and government) for water structure and cost recovery. Government supervise</p>

Water borne diseases prevalence	Treat and filter water, protected water sources, water and hygiene education, Guinea work campaigns water treatments, seek medication	Increase number of protected water sources. Water Hygiene Education, Practice and behavior change, Construction of latrines, Hygiene promoters, Sustainable water use education, Trainings by water users.
Limited funds / Allocations	GWC procured Rick being hired out for borehole digging to raise income and increase boreholes Government allocation for water activities, HH cost recovery.	Procure Rick in GEC for digging boreholes and develop a public-private partnership to manage and use of income from hires (spare parts purchase, incentives to WUAs, maintenance, logistics, to up limited government fund allocation). Develop stringent measures to regulate HH monthly cost recovery contributions commitment
7. INSECURITY		
Conflict over grazing resources (pasture and water) and cattle raids, Revenge attacks	Migration to far grazing areas like Tonj. Split herds dig borehole for watering, slaughter weak animals & dry meat. Sell livestock any time of the year. Separate female and male animals to prevent mating Traditional cleansing, sell livestock. Cut down tree leaves or browsers to feed weak animal. GEC and Unity peace declaration for peaceful resource in Tonj. Established Cattle Keepers unit in cattle camps to manage grazing conflicts and protect herds	Plant fodder trees, grass and browsers, harvest fodder pods and browsers and bulk to feed weak and milking animals during food deficiency in dry season. Support development of grazing plans and map migration route and patterns Training on livestock marketing. Dig more bore hole in strategic grazing areas and in homestead for home herds. Livestock feed preference according to quality (herd class). Establish inter-County and state peace committee to resolve conflicts Train on Natural resource management and support old and new Natural Resource management committees. Train and support activities of peace committees in grazing areas, Boma, County and State levels. Support inter-community peace dialogue meetings and joint initiatives
8. EDUCATION		
High illiteracy levels	Awareness to community on importance of education for boys and girls. Early marriages of girl child. Parent preferences selection of boys to attend schools to girls.	Support FFW or CFA for school rehabilitation / construction of temporary schools (classes, toilets, stores, dining halls, teacher's houses and water structures). Adult Education. Mobile schools targeting cattle camps. Promote PTA employed teachers. Promote school own food production, PTA business skills trainings to make informed decision for IGAs for school materials. Youths (female/ male) school drop outs in poultry, vegetable production and vocational trainings. Schools for crop, poultry and vegetable production through pupils

		agriculture clubs, and labour for fees programs by parents to produce food for school feeding programs and increase pupils retention
Low school enrolments /retention	Community awareness by leaders and administrators to allow children go to school. Motivation of schools with high number of Girls enrollment (food support to schools).	School feeding programs. Boarding school for distance pupils Campaigns and awareness creation to parents and children on importance of education and girls education. Mobile education. Support school based food production (ox-ploughs, labor for fees. CFW, FFW).
Inaccessible school facilities	Temporary schools closer homes. Cross rivers using boats to reach blocked schools	Construct strategically located schools. Construction of bridges and roads. Increase pupils enrolment to sustain schools
Inadequate trained and non-trained teacher (past 5 years of non – admission into TTC)	PTA employed teachers to fill gap. PTA do fundraising for learning materials and payments of untrained teachers. Form 3 and 4 school leavers volunteer as untrained teachers - school drop outs (form 2-4) Special support to schools with girl's enrolment in terms of school feeding programs supplies.	Support in service teacher training programs. Advocate and lobby decision and policy makers on significance of quality teachers training, deployment and motivation. Strengthen PTA to improve their capacity for running education institutions and employment of more PTA teacher's. Lobby and advocacy for government to increased and regular funding. Promote local fundraising for PTA employment
9. INFRASTRUCTURE		
Inaccessible locations (destroyed or blocked roads)	Use of canoes and boats transport facilities to cross the river Migration from flood prone areas to highlands	Construction or rehabilitation of roads Bridges through cash for work or food for work. Technical skills and inputs for Roads and Bridges repairs Use of boat for transportation
High cost of transportation	Traders rely on experience on business not marketing skills. Traders contribute money for members to cushion high transport expenses Traders' preference for public transport which is cheaper to transport small portion of goods.	Support traders Association through organizations development capacity building, trainings in savings and loans, increase access to credit, marketing skills and business skills training, consolidation of procurements for bulk purchase savings. Consolidation of transportation for more cost effective private transport.

Lack of secure shop facilities for traders	Rent few existing semi-permanent housing structures. Rent makeshift structures for shops which are more prone to and hire security officers for protection	Link trader's capacity to credit facilities providers to expand their capital and trainings on business skills to improve business performance. Support market facilities through construction of shops for rental. Link trader association to armed security services
8. CLIMATE CHANGE		
Environmental degradation	Migrate from degraded grazing areas to fertile grazing areas with water and pasture like tonj swamp. Migrate to fertile land areas.	Education and assistance to do natural resource management Plant grass and trees Mulching of infertile farmlands to improve fertility
Scarce pasture and water resources conflict and revenge attacks	Cattle keepers to protect livestock and herders, hunt culprits, resolve conflict in grazing areas. Conduct community and inter-community dialogues conducted to resolve conflict and prevent conflict. IDPs migrate to safe areas to relatives, friends or trusted people. Resolve conflict incidences. Community police and cattle keepers enforce law and order in grazing areas	Established joint inter-community peace committee between GEC and GWC consisting 12 members mandated to solve conflict, monitor and arrest cattle theft, resolve elopement issues, handle penalties, apprehend culprits and liaise with police. Established Inter-State between Dinka and Nuer, and inter-county and inter-community peace committees between GEC and GWC to monitor peace, resolve conflict cases, conduct peace dialogues, enforce penalties and facilitate joint activities in order to improve trust and cohesion. An inter-state police team established and based in Mayenjur tasked to work with inter-state peace committees to resolve conflict in Tonj grazing area. Established cattle keepers teams defend herders at grazing areas, cattle keepers' leaders mandated to resolve conflicts and hunt culprits
Prosopis tree	Use for charcoal and firewood. Clear trees along paths and livestock migratory routes to avoid piercing of body and hooves. Stop livestock from eating tree (remove teeth)	Teach and support community on how to commercialize prosopis tree products to better utilize products and increase income generation from its products.
9. FLOOD		
Inaccessible Payams GWC	Make high wooden framed beds hanged to top of houses above flooded water to avoid destruction properties and cereals, and to protect humans from snakes and worms bites. Raise homestead ground levels using	Evacuate community members living in lowland areas Migrate people, livestock and farm produce to highland areas Use of boats to cross to other Bomas and access to basic services providers People use the flood receded areas for farming Construction of canals, dykes, ridges around homesteads and farms

	murrams	
Inaccessible Payams in GEC	<p>Tie properties to the roof part from inside the house. Sleep on hanged beds in houses in flooded areas to protect properties assets left against thieves. Temporary relocation to higher grounds and return after floods</p> <p>Use canoes to cross river to schools, hospitals,</p> <p>Raise homestead ground levels using murram</p>	<p>Relocate households from flood prone areas to higher grounds. Do early farming in order to harvest before floods. HHs has lowlands for drought and highland homesteads to relocate during floods. Migration to dry lands. Construction of canals, dykes, ridges around homesteads and farms</p>

8. LESSONS LEARNED FROM THE ASSESSMENT PROCESS

8.1 PEACE BUILDING

The communities, government and stakeholders in the region do not have a common understanding of the conflict context and measures taken to resolve them which makes the ability of the communities involved in conflict to resolve the conflict and generate sustainable measures impossible. Some very key actors in conflict were excluded and majority of community members' did not participate in dialogue meetings to incorporate their views, needs and interests process for sustainable resolutions. Current Peace declaration or decree to promote peaceful grazing resource sharing in Toch swamp was made between commissioner of GEC and governors of Gogrial and Unity State to contain conflict and maintain peace in the area. The declaration decision was a top/down approach without adequate consultation and involvement of the affected communities which compromises the sustainability of the peace declarations

8.2 LIVESTOCK

Livestock disease outbreaks occur in three main seasons per year, meaning that the vaccinations and mass treatment campaigns should be conducted thrice a yearly. Currently vaccinations and treatment campaigns mobilization last $\frac{1}{2}$ a day per site while campaigns exercise last one week per site. This is not sufficient to reach diverse livestock owners and herder in scattered inaccessible grazing locations thus contribution to less number of livestock herds turn out and more cost recovery defaulters. Operational cold chain for keeping vaccines in each Payam guarantees vaccine's quality stability and reduce logistical costs (transport, time, vaccine quality) during campaigns. The amount paid to CAHWS during vaccinations is not sufficient considering inflation which demoralizes and de-motivates them.

8.3: AGRICULTURE

Mulching and composed manure practices improve soil fertility for farms while ox-plough use reduces labor force on land tilling increasing number of tilled land feddans and quality in production. Need to replicate and train both oxen's and donkeys draught use maximization. More labour force need in watching crops farm against predators and livestock and vegetable watering. Crop and vegetable farmers have limited capacity to preserve their farm produces infested by pests and insects in less than 3 months from storage time destroying bulk stock food before stress period. Vegetable production is higher during rainy season than dry season yet the demand for vegetables and high prices experienced in dry season. There is high demand for ox-plough or ox-plough and oxen's for hire by many farmers therefore vulnerable HHs and groups who benefited from the ox-plough distributions could be capacitated to maximize the income generation as alternative source of income. Besides training of oxen for ox-plough additional training for donkeys on animal draught (ox-plough) would fill the draining of oxen power.

8.4 ASCA

Traders start business with very minimal capital and no formal skills in business limiting their capacity to grow the businesses and effectively address challenges faced. Traders procure food

stock in small amounts therefore unable to meet market food demand while use of public transport result to very high overhead costs. ASCA groups approach, designs and implementation meet women needs and priorities

8.5 COORDINATION OPPORTUNITIES - VSFG could contribute to weekly County staff planning meetings every Thursday at commissioner's office by making prepositions to county departmental heads.

9. CONCLUSIONS AND RECOMMENDATIONS

The following are conclusions and recommended preparedness and mitigating measures proposed by the target beneficiaries and stakeholders for consideration in current VSFG FESAP Project adjustments and future VSFG programming to reduce level of vulnerabilities, degree of risk and enhance the most at risk vulnerable groups' adaptive capacities to common hazard disasters.

9.1 SOCIAL COHESION AND PEACE BUILDING.

The changing conflict context and dynamics within Gogrial State (GEC and GWC) and across the neighboring Unity State complicates security. The communities, government and stakeholders in the region do not have a common understanding of the conflict context and measures taken to resolve them.

VSFG needs to support conflict context analysis through supporting dialogue and reflections with different communities from GEC, GWC and Gogrial State followed by joint dialogue and reflection meetings over the conflict in order to come up with a common action. Identify key actors in conflict (actors for peace and actors against peace) between Dinka and Nuer conflict in Toc, GWC and GWC, Apuk and Aguok conflicts for appropriate targeting, strategic engagement implementation in FESAP peace building activities.

VSFG should prioritize awareness creation, outreach education on Tonj swamp use declaration at local level for all community stakeholders to have common understanding of conflict context, participate in the outcomes (inputs and feedback), ownership of understanding of conflict contents, resource sharing and penalties for violators, enforcement of modalities to mitigate future escalations of conflict.

VSFG should support forums for dissemination of peace process, outcomes and feedback through peace committees', COTALs, Peace ambassador's e.g inter-clan, inter-county, inter-state and national level.

Critical need for strategic targeting following in peace initiatives cattle keepers, Local Authorities, Executive Chiefs, traditional leader, herders (men and women), Elders, youths, traders, community police, security forces, politicians, state governors, commissioners, men and women leaders.

VSFG should expand peace building activities to include all actors in Tonj swamp grazing area conflicts which involves Nuer and Dinka communities (Gogrial and Unity state level), Aweil East, Aweil South, Western Bar-el Ghazel, Tonj North, South Aweil, GEC and GWC. Training should focus on conflict resolutions, conflict transformation; Do no Harm, non-violent communication, sports and cultural festivals for peace, conflict Natural resource management and how to start inter-community joint activities.

Support construction of strategic water points in pasture lands with no water outside Toc (majok, Kurnyuk, Lilmaut, Makoi, Ajok, Wajabak, Karich, Udo, Lilayen, Thurnyang, Kol Bamit, Thong Loc, Luth, Riew, Nuai Nuai, Sumic, Mayan Kor, Maker, Arkach, Kot, Urel, Agwar, Aduktik, and establish joint inter-community management to prevent resource conflict and revenge attacks, and reduce pressure in Tonj.

Support peace activities of an established joint inter-community peace committee between GEC and GWC consisting 12 members mandated to solve conflict, monitor and arrest cattle theft, resolve elopement issues, handle penalties, apprehend culprits and liaise with police.

Support established Inter-State between Dinka and Nuer, and inter-county and inter-community peace committees between GEC and GWC to monitor peace, resolve conflict cases, conduct peace dialogues, enforce penalties and facilitate joint activities in order to improve trust and cohesion. An inter-state police team established and based in Mayenjur tasked to work with inter-state peace committees to resolve conflict in Toch grazing area. Support communities involved in Toch grazing area conflict dialogue and negotiate community owned mutually agreed inter-community grazing plan, reciprocal agreement and migration pattern.

9.2 LIVESTOCK

Train more farmers on Animal traction for oxen and donkeys using different types of ox-ploughs. Monitor the sustainability and challenges faced by previous beneficiaries of distributed ox-ploughs. Train donkey for ox-drawn. Conduct regular livestock and poultry disease surveillance for poultry. Facilitate three phases of vaccination campaigns per year as per disease outbreak calendar and increase mobilization days from 4-5 days to reach grazing areas, set up strategic satellite cattle camps sites for vaccinations campaign activities lasting not less than 2 weeks.

Invest in both animal health, Tick control on livestock and rangeland tick management.

Decentralize cold chain in each Payam to guarantee vaccines stability and reduce transport and logistical costs. Support livestock farmers to pilot animal feed production and fodder harvesting for dry season supplementary feeding and income generating activities (fodder that could be piloted include Sudan grass, Pangola grass, Bermuda grass, pigeon peas and apple ring acacia etc.). Promote value addition through access to critical facilities such as butcheries, Auction, cold chain and private drug stores where none or very few exist that don't meet needs.

Lobby for cross border animal health service coordination's (GEC/GWC, Gogrial and Unity states e.g. coordinated vaccinations. Train livestock farmer's groups on livestock marketing and

business skills Support livestock marketing and ASCA groups develop innovative ideas or projects and link to market e.g. purchase of cheap thin and weak livestock, fatten in established fattening grounds for 3 months and sell at good prices. Train more CAHWs at least 4 per per Boma to meet the local needs. Support farmers and marketing groups with business and marketing skills and link to market / traders.

9.3 FOOD AVAILABILITY

Cost effective food availability in market; Support traders' to access finance services (organization into associations, train on ASCAs, and link to suppliers and credit facilities). Strengthen capacities of traders for cost effective transport through consolidated procurements and transportation services, and negotiated contracts with transporters to avail food stuffs in market at affordable processes.

HH food availability – support HHs increase their food productivity, access to diversified HH incomes, improve savings and access to loan facilities, cash for work, food for assets/labor. Build capacities of progressive farmers, traders groups and farmers groups on modern farming techniques, short term variety seeds, access to innovation tools and equipment to increase food productivity and improved storage for longer food security months.

Support in building capacities to enable prepositioning food stuffs by relief agencies, government and traders in food insecure areas, floods blocking roads, boats for river transportation, and household to store bulk food before flooding and hunger gap period starts.

9.4 AGRICULTURE

Adaptive Animal Traction – Metal ploughs are not locally generated as the traditional ploughs were wooden. Farmer's inadequate skills in maintenance, repairs, lack of spare parts locally results into a good number of broken down and unused ox-plough. Black smiths are at Wau and Kwajok. VSFG to consider training more local black smith and cost recovery spare shops to improve access to innovative tools, spare parts, repairs and maintenance services. Priority for at least 2 operational shops in most vulnerable Kuac South and Nyang Payams.

Technology and Innovation

FGDs in 4 payams with vegetable farmers indicated that they water farms between 11am – 12noon and 10.00pm- 11.30pm at night when pressure on boreholes is lower. Watering cans and foot pumps irrigation systems takes between 30 minutes to 1 hour 30 minutes. This extends women working hours and increases work load during dry season vegetable farming. Over 95% of dry vegetable farmers groups water from boreholes used by livestock and domestic which are given priority forcing them to cultivate smaller farm sizes to reduce workload from irrigation systems and hand digging tools.

VSFG to consider distribution of different types of ox-ploughs for less labor intensive, increase number of cultivated feddans and production e.g. cultivation ox-plough, planting ox-plough for

ground nuts and beans, weeding ox-plough, winnowing ox-plough targeting farming groups (vegetable, traders, youths). Other less labour intensive innovation include small scale solar irrigation equipment, drip irrigation, green house, sack farming on trees at homesteads (e.g. eggplant, kales, tomatoes, cow peace guided with ropes), construct vegetable farmers oriented boreholes with co-user rights management system between (agriculture and livestock farmers) to reduce workload and increase farm sizes. Commercialization of ox-ploughs as source of income through hiring of ox-plough, ox-plough and oxen/donkeys

VSFG could focus on supporting cottage industries targeting groups for processing groundnut, sesame, milk, vegetables and tomatoes in addition to trainings of crop and vegetable farmers on innovative methods to develop local fertilizers and pesticides for sorghum, vegetables, maize and groundnuts diseases.

Seeds and tools

Land fertility levels, vegetable and crops, and fruit trees productivity capacity variations needs to be considered with high, medium and low production areas zoned out in order to inform seed selections priorities to maximize production VSFG need to consider crops, vegetable, fruits, fodder, live fences and trees production potentials assessment and zoning within the four (4) Payams instead of blanket seeds and tools distribution. Ensure timely distribution of seeds and tools for early cultivation of farms and planting. Promote school gardening clubs through food/cash for labour, seeds, tools and ploughs to increase own food production for school feeding. Promote fruit tree farming by distributing seeds and pilot demonstrations of Mango, Lemons, guava, tamarind, papaya, dates, dove palm and pigeon peas seeds. To expand HH food basket, VSFG need to do vegetable seeds distributions in wet and dry season to extend longer food availability to minimize hunger gap period. Beneficiaries also expressed need to include seeds for legumes/tuber like cassava, sweet potatoes, bananas, Pineapple, water melon and yams and vegetables seed for tomatoes, onions, eggplant, kales, pumpkins, pepper, Kudhra, okra, rigla, okra “Janjaro” beans and cow peas. Provide seeds for live fences Babul Acacia, Pencil Euphorbia, Eucalyptus, sisal, pigeon peas; and commercial trees like Mahogany, Tic, Eucalyptus, gum arabic and umbrella thorn acacia, neem and moringa. Seed banks provide privacy for informed decision on preferred seeds during selection is lost when farmers use vouchers to buy seeds during seed fairs. The farmers compromise seed preference and quality at the expense of building relationship by purchasing from people known to them, relative and friends at seed fair

Crop and Vegetable treatment and Preservation

VSFG need to invest in crop and vegetable diseases and pests management in farms and improve quality of preservation and storage facilities for targeted progressive farmers and vulnerable HHs

Land Fertility - Fertile land that is suitable for farming is constantly diminishing due environmental degradation in the four Payams. For example in GEC only few areas remain with fertile land for farming in Ajogo, Panachier, Ulit, Pendit, lietnom. Current VSFG interventions on

fertility improvement such as mulching and composted manure should be accompanied by land reclamation intervention for long term.

Improve farm fencing against livestock

Train farmers and provide inputs to improve farms fences against destruction by livestock. VSFG to invest on joint feasibility research in collaboration with Ministry and agriculture and forestry, FAO and other interested actors to determine adaptive trees (both indigenous and exotic) for live farm fence according to adaptive capacity zoning on 4 Payams.

Improve farmers' knowledge and skill of protection and re-seeding of traditional and exotic climate change resilient adaptive seeds for live fences such as Babul Acacia, Pencil Euphorbia, Eucalyptus, sisal, pigeon peas etc. could be piloted.

Insufficient Labour capacity

VSFG could consider interventions like; Cash for labour or food for labour (meat, sorghum, beans, sesame, groundnuts products) for food production to vetted vulnerable households during cultivation, weeding and harvest activities e.g. assign 10 people per feddan per day for cultivation and 7 people per feddan per day during weeding and harvest target at least 4 feddan per HH while contracted labour providers must provide proof that own HHs have sufficient labour to cultivate at least 4 feddan farms; Treadle pumps faster than watering cans in dry vegetable farming irrigation but tiring therefore small scale solar irrigation pumps and drip irrigation systems are a better option.

Water for Dry Season farming

VSFG need to invest on water as a key resource for agriculture production in terms of; Awareness campaigns on dry season farming to change attitude and practices that demean; identify strategic water points far from livestock migration routes to improve water yield, increase depth or construct new structures to prevent livestock destruction of irrigated farms; establishment of water user co-management structure consisting of farmers and livestock farmers spelling out mutually agreed user rights and schedules for each, stringent penalties and enforcement by laws for selected water points (bore holes, dams, show wells, tanks etc); monitor use of irrigation kits or assets with stringed penalties and enforcement systems; work with to refresh train BMCs; monitor performance and reward system; strengthen cost recovery for maintenance and repairs of boreholes; establish Payam level private water spare parts shops on revolving grants, support school water structures for gardens under PTA management

9.5 FISHING

Fish production potentials areas to be mapped and zoned at Payam levels and geographic proximities. It was seen that vulnerable HHs involved in fishing activities in rainy season as a

copping mechanism, food shortage during hunger gap or stress period neglecting farming which offered them more long term livelihood option. VSFG need strengthen fishermen capacity through fishing, fish preservation and value addition, skills training, organization of fishermen groups, train groups on savings and loans skills, business and marketing skills, provide fishing kits and link fishing groups with market and credit facilities to increase surplus fish production for food and sale. The fishermen need capacity building on fish marketing and to invest income on expanding business and procure food stocks, vegetable and livestock products during lower prices to bulk for stress period. Fishing kits to HHs to include fishing nets, twines, drying rakes while Fishing groups ASCA trainings and grants, links to market and boats for fishing.

9.6 NATURAL RESOURCE MANAGEMENT

The level of land and environmental degradation is rapidly increasing due to land use, disasters risks and climate change effects. VSFG should consider following recommendation; Conduct climate and economic analysis on indigenous and recommended species to determine agro-forestry varieties adaptive options; *Invest on construction and rehabilitation of water harvesting structures such as bore holes, ponds, rivers, swamps and run offs to support livelihood options.*

Economic dimensions – Mitigate deforestation due to cutting of grass for housing and livestock feeds, trees for charcoal, poles and firewood and construction as source of income. Raise awareness on agro-forestry, adaptive farming potentials to improve living standards, income diversification, improve livestock fodder production. Promote adaptive commercial trees like mahogany and tic for construction, wood work and furniture. Production of bricks and promote brick housing to reduce number of trees cut for housing and clay soil for mudding wall. Promote prosopis Julio flora product utilization as animal feeds, fuel and charcoal at household and income level (e.g PENHA Somalia Prosopis project - prosopis honey, pod nutrients for animal feeds, syrup and flour, flooring tiles and carvings and other crafts made from prosopis wood, firewood and charcoal from prosopis wood, wood for paper and medicine.

Reduce farmers vulnerabilities to full dependency on rain fed agriculture which is unsustainable due changing climatic conditions by adapting other farming methods e.g. small scale irrigation, inter-cropping (trees and legumes), diversify farming (livestock, fishing and agriculture).

Support Vulnerable HHs to venture to alternative income generating activities instead of those impacting negatively on environment and environmental friendly fuel, charcoal and firewood tree production e.g prosopis, bio-gas, solar power, solar lights and conservation jikos etc.

Environmental dimension – VSFG should invest on interventions that conserve and reclaim land, rangeland and environmental reclamation such as agro-forestation (crop and trees inter-cropping, dykes construction, double replacement of trees during farming). Afforestation of indigenous and exotic adaptive trees that are climate resilient like; fruit trees e.g. mangoes, guava, pigeon peas, papaya, lemon, tamarind, dates and dove plums; Live fences Babul Acacia,

Pencil Euphorbia, Eucalyptus, sisal, pigeon peas; and commercial trees like Mahogany, Tic, Eucalyptus, gum arabic and umbrella thorn acacia, neem and moringa.

Support groups with seeds for seedling production by inputs and skills on production, business and marketing. Support local efforts and capacities to maximize prosopis products. Promote rangeland conservation and reseeding of resilient grass and soil cover vegetation. Establish and strengthen conflict management, natural resource use and water management structures to reduce resource based conflicts and unsustainable use. Encourage community participation on socio-economic feasibility and socio-environmental impact, informed decision making, involvement in design and management of strategic Infrastructure developments like markets, roads, water, public transportation, Health, education and electricity.

9.6 POULTRY PRODUCTION

VSFG needs to give special attention on capacity building of poultry farmers on vaccinations, training of more poultry auxiliaries and prepositioning of vaccines. Work together with poultry groups to develop controlled poultry scavenging system and feed production to prevent predators. Introduce incubators /hatcheries at Payam level to increase improved poultry eggs fertilization to meet demands and establish a demonstration site for hatched chick management for one month for farmers within and outside target payams to buy and learn management skills. Allow local breeds to hatch improved eggs to nurture improved chicken breeds parenting skills of protecting chicks against predators.

9.7 ASCAS

Access to credit

Target and train Fishing, black smiths, livestock groups, youth, women, forestry, progressive farmers and traders groups on savings and loan, business and marketing skills and link to cooperatives and community banks. Promote contractual farming (e.g farmers-traders, fishermen-traders)

Support credit service providers (ASCA, community banks, Cooperatives and SACCOs) develop business strategic plans, credit products that meet local context and needs of livestock farmers, fishermen, youth groups, women groups, forestry groups and trade groups e.g ox-ploughs, tools , goods, transport, spare parts shops, seeds, vet shops, capital, inputs etc .

Contextualize ASCA to local situation and needs e.g strategies, constitution, schedules that support women needs (policies,products and decision making)

Diversified livelihood

Promote access to alternative income through vocational training interventions for youths and women like Vocational trainings in Masonry, Tailoring, carpentry, arts and craft, bakery, Catering, Welding, driving, computer, crotched bed sheets, energy savings jikos, and Life skills trainings in savings and loans, honey production, fishing, TBA, fodder production, fruits and

vegetable production, bead making, brick making, peace building, soap making, cottage industry, hunting, sports, clay pot making, value addition to arts and crafts.

Value Addition

Build capacities for value addition and innovation on products such as repairs and maintenances of irrigation equipment, ox-ploughs, farming tools, fishing equipment, and granary stores, milk and meat preservation (long life/powder), vegetable preservation, fish preservation, peanut and seasim paste processing, Bulk fodder processing and storage, poultry meat preservation, cereals treatment against pests, fruit preservation, innovative brick making using makiga machine, crop and vegetable pest and disease control, animal health disease and treatments, water structures repair and maintenance, exposure visits to successful sites and soil fertility treatment.

Training ASCA groups on IGA selection, planning and management, business and marketing skills

Build capacities for enterprise skills e.g. numeracy, business, marketing, savings and loans.

10. APPENDICES

To attach in final report

11. MULTI-STAKEHOLDERS COORDINATION

10.1 Gogrial East County - GEC

Agency	Interventions	Pathuon West	Nyang
RRC	Contribute to design and monitoring of program implementation, inputs to beneficiaries, NGOS staffs security, coordination between beneficiaries and government, coordinate NGO activities ,mobilize host to accept refugees,	x	
ICRC	Relief food, animal health and water		
World Vision	Non- food items (plastic, utensil, blankets, tents, immunization, milk preservation, drugs, Salaries of CHWs	x	x
AAA	Health, TB	x	
NRC	Ox-plough, unconditional cash, traders support	x	
INFRAID	Food security, Forestry and Environment in General	x	x
SEDA	Food security, Education	x	x
VSFG	Seeds and tools, ox-plough, animal health, savings and loan, PFS, Agriculture production,	x	x

10.2 Gogrial West County - GWC

AGENCY	Interventions	Kuac North	Kuac South

RRC	Contribute to design and monitoring of program implementation, inputs to beneficiaries, NGOS staffs security, coordination between beneficiaries and government, coordinate NGO activities, mobilize host to accept refugees,	x	x
ICRC	Training in Health and community health workers		x
World Vision	Nutrition Non- food items (plastic, utensil, blankets, tents, immunization, milk preservation, drugs, Salaries of CHWs	x	x
SMARD	Water intervention		x
NRC	Ox-plough, unconditional cash, traders support	x	
TOCH Company	Capacity Building		x
Safer World	Peace building		x
KUADA	Kuac Area development agency – emergency response, agriculture, security	x	
LEAD	Lukluk community association for development – Emergency, health, water, Health		
FADA	Food and Agriculture for development agency – houses of prisoners, vegetable farming, seeds and tools distribution	x	
INFRAID	Ox-plough, PFS, Vegetable farmers, seed banks, seed fair, poultry	x	x
SEDA	ASCA, vegetable farmers, seeds and tools, poultry	x	x
VSFG	Seeds and tools, ox-plough, animal health, savings and loan, PFS, Agriculture production, seed fairs, PFS, Water.	x	x