FNS-REPRO South Sudan Key Findings Report

Key findings emerging from the FNS-REPRO generated studies and other sources as input for the sensemaking events and adaptive programming

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This report describes the key findings that emerged from the analysis of the studies generated by the Food and Nutrition Security Resilience Programme (FNS-REPRO) in South-Sudan and from and other relevant sources. The FNS-REPRO is designed to strengthen the resilience of food systems for food and nutrition security in conflict affected regions in the Horn of Africa and focuses on Somaliland, South Sudan and Sudan. These findings have been summarized and used as input for the annual sensemaking event, during which they were reflected upon by FAO & WUR staff and key stakeholders, so as to generate key suggestions for improvement of the program. The key suggestions for improvement serve as input for the next annual plan of FNS-REPRO and as such influence adaptive programming. The analysis of these findings and the facilitation of the sensemaking events have been carried out by Wageningen Centre for Development Innovation, Wageningen University and Research, as a key partner for FNS-REPRO for the knowledge agenda.

Keywords: conflict, environment, evidence, findings, seed system, food security, gender, nutrition, resilience, shocks, South Sudan, stressors, value chain, youth.

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Photo cover: FAO, 2021b

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List of abbreviations and acronyms

CoP	Community of Practice
FAO	Food and Agriculture Organization of the United Nations
FCS	Food Consumption Score
FIES	Food Insecurity Experience Scale
FNS	Food and Nutrition Security
FNS-REPRO	Food and Nutrition Security Resilience Programme
GA	Gum Arabic
GAPA	Gum Arabic Producers' Association
HDP	Humanitarian-Development-Peace
HDDS	Household Dietary Diversity Score
IPC	Integrated Phase Classification
IDPs	Internally Displaced Persons
INGO	International Non-Governmental Organization
NGO	Non-Governmental Organization
NRM	Natural Resource Management
RCI	Resilience Capacity Index
RIMA	Resilience Index Measurement and Analysis
USD	United States Dollar
WCDI	Wageningen Centre for Development Innovation, Wageningen University & Research
WUR	Wageningen University & Research

Summary

This Key Findings Report provides an overview and summary of the key information that emerged from FNS-REPRO's studies and reports, and other sources on South Sudan. The information and data presented in this report is disaggregated into key chapters, each representing the key thematic areas FNS-REPRO is focused on and which are relevant to the program, such as Food and Nutrition Security, Healthy Diets, Resilient Livelihoods, Seed Sector etc. This information has been summarized in presentations used during the sensemaking event and the subsequent annual review and planning meeting that took place in July 2021. The sensemaking of the key findings led to key suggestions for improvement of the program in the next annual plan. These summary key findings and suggestions for improvement are described in a separate report. Below is a summary of the key findings/data emerging from each of the main chapters.

Chapter 3: Food and Nutrition Security
Food insecurity in South Sudan has reached the most extreme levels since independence in 2011 (WFP, 2021). An estimated 7.2 million people, representing 60% of the country's population, are facing high levels of acute food insecurity (IPC Phase 3+) (IPC Analysis, 2021) (IPC, 2020). The main environmental & socio-economic drivers of food insecurity are: droughts and flood, pests and diseases, conflict/localized insecurity and related displacement, unemployment or shortage of money, high food prices and inflation, economic crisis and Covid-19. It is important to note that some of these drivers are interrelated and affect poor harvest and crop failure. On the whole there is room to improve on the diversity of foods eaten, especially in terms of protein and vegetables and fruits (FAO, 2021b).

Chapter 4: Healthy Diets
The role of FNS REPRO and other factors in stimulating healthy diets by targeted communities is yet to be determined but it is clear that currently wealth index, access to transfers, participation in association groups and number of income sources were found to be significant drivers of food insecurity. The main shocks that undermine food security (and therefore the ability to eat healthy diets) in the study area are crop failure and poor harvests, livestock diseases and death, serious illness and death of household heads and unemployment and shortage of food within the household. High prices for non-food items was also identified to undermine resilience among the households, and thus the ability to eat healthy diets. On the whole there is room to improve on the diversity of foods eaten, especially in terms of protein and vegetables and fruits (FAO, 2021b).

Chapter 5: Resilient Livelihoods
The two main factors affecting people's resilience is (1) Lack of good quality seed (dependent on imported, free seeds by I/NGOs) and (2) Lack of income & savings (CoP survey). Main shocks experienced by households are (1) Poor harvest and crop failure (2) Loss or death of livestock Maize, cassava, groundnuts and sorghum are most frequently mentioned crops cultivated in the last season. These crops are also main source of income and food. Approximately 30% of households have accessed some form of credit. The Female-headed households have a lower resilience capacity (32.6) than the Male-headed households (36.7). The Reduced Coping Strategies Index (rCSI) in study area is 11. Indicating that, in general, households are still able to afford essential food expenditures without engaging in severe coping strategies (FAO 2021b).

Chapter 6: Seed Sector
According to the Seed System Resilience Assessment (WCDI, 2020), there are three dominant seed systems in Ikwoto County: farm-saved seed system (74%)community-based seed system (16%) seed relief system (10%). The assessment also found that local varieties of crops are more resilient and well adapted to local conditions. The seed distributed in seed relief system were contaminated with new pests and diseases, of inferior germinating quality and distributed untimely. The poor road system makes the seed relief inaccessible to the local farmers communities. Adopting the concept of

Community Seed Bank will be necessary for recovery purposes and conservation of the local genetic resources (WCDI, 2020). In addition, the South Sudan Multidimensional Context Analysis (FAO, 2021a), found that although there are efforts to increase availability of and access to quality seeds of adapted varieties by NGOs and FAO, local seed production is still low in South Sudan (about 2 000 MT), while a significant amount of seed is imported from neighbouring countries (mainly Kenya, Sudan and Uganda). Another challenge is that research is constrained by limited funding, lack of ownership of released varieties and poor access to foundation seed. The absence of clear seed policy and regulation is obstructing the seed system to fully function to its potential (FAO, 2021a).

Chapter 7: Conflict and Stability

The main conflicts in South Sudan can be categorized into two main conflicts: (1) Conflict over natural resources: Particularly problematic in drier parts of the country such as Kapoeta in Eastern Equatoria State and during long dry seasons in the north-eastern part of South Sudan (Jonglei State); related to water, pastures, migratory routes, etc. These conflicts are continuously caused by cattle raiding, which is severe in dry seasons in search of grazing land and water. The other main conflict is (2) Ethnic and tribal conflict, which relates to problems between different ethnicities and tribes who have similar livelihood systems.

Chapter 8: Gender and Cross-cutting issues

There are a number of gender disparities present across South Sudan. The RIMA baseline study showed that male headed households (HHs) are better off than female HHs in a number of areas including: Resilience; Food & nutrition security (FCS) Agricultural assets index; Cultivated land; Income sources; Education. However, female HHs were found to be better off than male HHs in regards to: HDDS and access to safe water. The South Sudan Community of Practice (CoP) survey also revealed disparities in relation to access and control over resources. Results indicated how males dominate access to land, farm equipment, capital and education. Whereas, female youth have the least access and control to resources. The CoP survey also identified different gender roles in the seed system. Women more engaged in planting, processing, storing, marketing (slightly more than men) and selling. Whereas, men are more engaged in land preparation, bulking/multiplication, dealing with pests & diseases, transport, land negotiation and settling land disputes (both with older men). Overall, female-headed households are the most vulnerable socio-economic group as they are often excluded from the decision-making process in relation to access, use and control of resources.

1 Introduction

1.1 Background to this document

This Key Findings Report provides an overview and summary of the key generated information emerging from FNS-REPRO's studies and reports on South Sudan. A process of coding was undertaken, whereby key information was extracted and analysed from existing studies and reports including: South Sudan multi-dimensional context analysis, South Sudan RIMA baseline report, Seed System Resilience Assessment in Ikwoto County, South Sudan, FAO special studies. The key findings emerging from the Communities of Practice (CoP) events and online surveys are also included in this report. Some external reports were also incorporated to generate further information and knowledge on seed system in South Sudan.

Coding took place on the following key topics:

- Resilience
- Livelihoods of the gum Arabic value chain actors
- Food and Nutrition security (FNS) and related diets
- Conflict and stability
- Gender
- Youth

After coding, the information was analysed to generate key findings to be discussed during the sensemaking event, where key findings were discussed and suggestions for improvement given for adjustment of the next annual plan. The summary of the findings and key suggestions for improvement where then validated in the subsequent annual review and planning meeting.

The information and data presented in this report is disaggregated into key chapters, each representing thematic areas FNS-REPRO is focussed on (e.g. Food and Nutrition Security, Healthy Diets, Resilient Livelihoods, Seed Sector etc.). As a result, this Key Findings Report serves as a consolidation document, summarizing the key information emerging from FNS-REPRO's existing studies and reports during the Inception Phase. This information has been summarized in presentations used during the sensemaking events and the subsequent annual review and planning meeting. The sensemaking of the key findings led to key suggestions for improvement of the program in the next annual plan. These key findings and suggestions for improvement are described in a separate report.

1.2 Background to the FNS-REPRO programme

The Food and Nutrition Security Resilience Programme (FNS-REPRO) is designed to strengthen the resilience of food systems for food and nutrition security in conflict affected regions in the Horn of Africa and focuses on Somaliland, South Sudan and Sudan. The program is "funded by the Government of the Netherlands to the Food and Agriculture Organization of the United Nations (FAO) and is a four years programme of USD 28 million that contributes directly to the operationalization of the United Nations Security Council 2417 by addressing the "cause-effect" relationship between conflict and food insecurity, in Sudan (Darfur), Somaliland and South Sudan" (FNS REPRO Final Proposal).

"FNS-REPRO is the first programme in Eastern Africa specifically designed to foster peace and food security at scale, through a multi-year livelihood and resilience-based approach, in some of the least stable regions, where interventions are normally of humanitarian programming nature exclusively. Its design allows FAO and partners to set examples of building food system resilience in protracted crises.

The programme adopts an innovative area- and livelihood-based approach that looks at the multidimensional threats and risks that communities are exposed to, while identifying and utilizing opportunities for improved livelihood resilience. FNS-REPRO will promote coordination with relevant stakeholders involved in targeted areas to reach collective outcomes between multi-sectoral humanitarian and development interventions.

The programme is also unique in its approach to the Humanitarian, Development and Peace building Nexus, as it encompasses a serious and rigorous learning agenda along the Nexus – under the leadership of Wageningen University & Research (WUR) – that will start from the very beginning of programme implementation, contrary to normally applied post-factum learning processes. The uniqueness of the learning agenda lies with a grassroots and localised approach to learning where targeted communities and local institutions will be active participants in design and implementation of the intervention – rather than just being key informants. Furthermore, the learning agenda will contribute to quality programme implementation (through flexible and adaptive programming) as well as to policy dialogue as it will be linked to the Global Network Against Food Crises, through alignment of learning targets, processes and methodologies" (FNS REPRO Final Proposal).

"The proposed programme is an initiative by the Dutch Government to operationalise United Nations Security Council Resolution-2417, which forbids the creation of food crises and famine as an act or result of war, by investing in food system resilience in times of crises and situations of conflict". "The aim of the Dutch government funded Food and Nutrition Security REsilience PROgramme (FNS-REPRO) is to strengthen the resilience of food systems for food and nutrition security in conflict-ridden regions in the Horn of Africa (South Sudan, Sudan and Somaliland). This will be done through investing in initiatives that:

1. Strengthen sustainable management of the natural resource base;
2. Increase the resilience of agriculture- and livestock-based livelihoods and food systems, and;
3. Contribute to meeting medium to longer-term food needs.

The attention for the resilience of food systems is a systems approach which aims to strengthen the enabling environment in which livelihoods and food systems operate and resilience takes shape" (FNS REPRO Final Proposal).

The **FNS-REPRO Theory of Change** is illustrated on the next page.

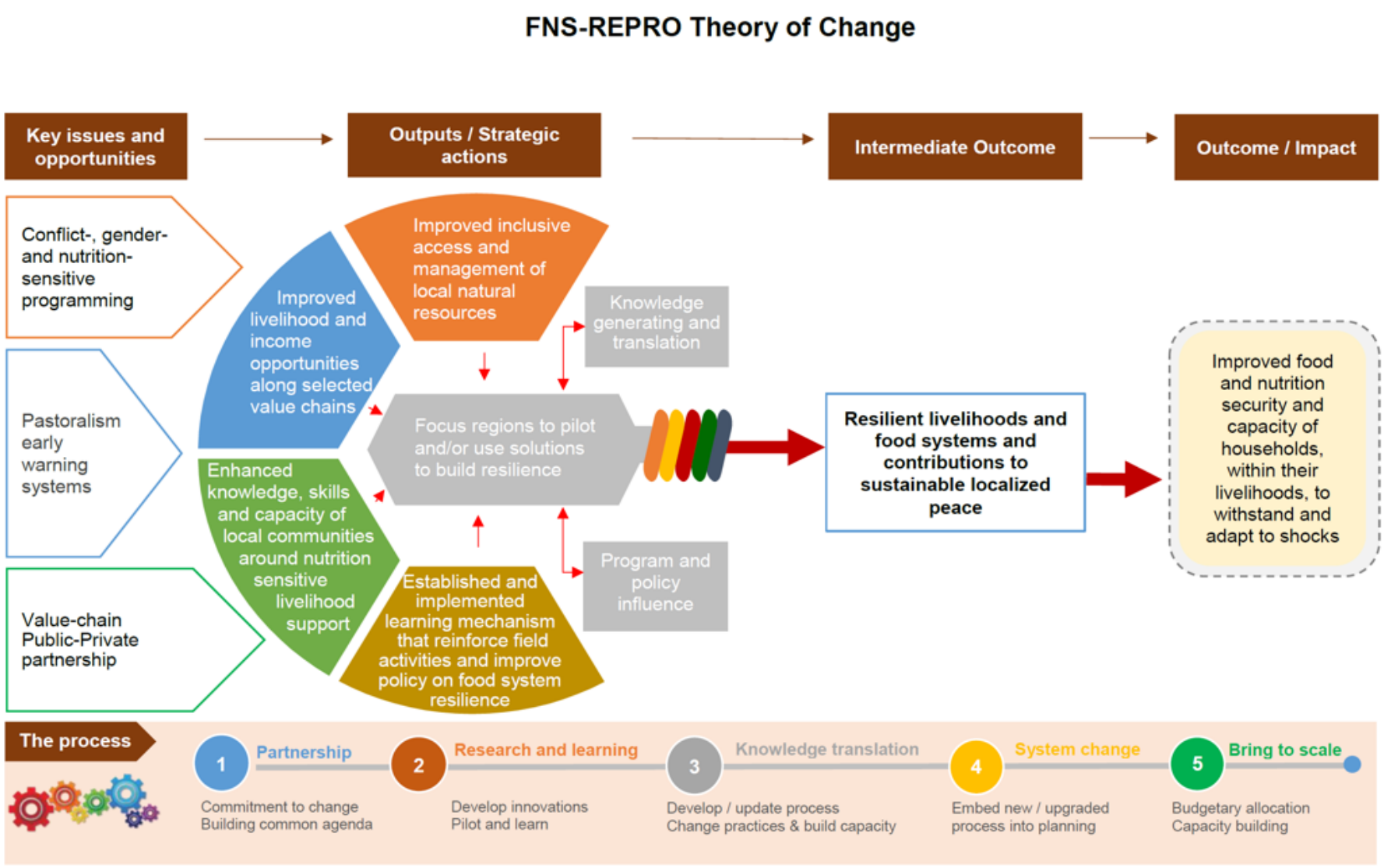


Figure 1 *FNS-REPRO Theory of Change.*

1.3 Background to FNS-REPRO in South Sudan

The FNS-REPRO Annual Plan (FAO, 2020a), provides an overview on what FNS-REPRO is focusing on in South Sudan:

"In South Sudan FNS-REPRO will focus on developing an integrated seed sector and seed systems therein. This sector has been pre-selected because shortages of quality seeds and planting materials necessary to enable farmers to produce sufficient food for their families and a surplus for sale have been a constraint for many generations in South Sudan. The situation of seed shortages and poor access has been exacerbated by the 21-year violent conflict. In addition, recurrent floods and drought have impacted the local seed supply significantly.

Because farmers recycle their harvested crop grain as seed, food shortages result in seed shortages, which may justify relief seed interventions. A small fraction of the total harvest is required to establish a new crop. For example, the seed requirement for sorghum is 5–10 kg per farm household, compared with an average annual household food requirement of 300 kg.

With the understanding that seed security contributes to food security, FAO and other partners have initiated few years ago the use of locally adapted crop varieties through a 'community-based production and seed recollection programme', in which selected farmers and farmer groups are supported to produce and supply seeds to the community members through recollection and seed fair approaches. A large number of NGO partners are normally sub-contracted to support implementation of local seed production, recollection and fairs through letters of agreement (LoA). However most of these initiatives were implemented through emergency projects, while seed system development requires a multi-year and well-structured approach that FNS-REPRO is planning to address along other complementary past and present initiatives such as Program for Africa's Seed Systems South Sudan (PASS-SS) from AGRA and Community-Based and Market Oriented seed production (COBAMA) implemented by MAFS in collaboration with WUR. The involvement of WUR in FNS-REPRO brings relevant experience from several other African countries in Integrated Seed Sector Development.

FNS-REPRO in South Sudan will cover situations that are typical/representative for protracted crises. This with the aim for REPRO (in particular through its learning and knowledge agenda) to develop seed sector pathways as relevant to local context and in line with that document lessons learned, good practice and policy recommendations to inform the debate at the Global Network Against Food Crises (which is an important element of REPRO's learning and knowledge management agenda).

FNS-REPRO will therefore not only be implemented in the so called 'Hubs of Stability' but also in: remote rural areas; areas characterized by recurrent conflict, displacement and return; cross border contexts (including return management), and; areas that suffer from climate change" (FAO, 2020a).

To this extend, FNS-REPRO priorities for the March 2020 – September 2021 implementation period in Sudan are the following:

"Output 1. Improved Inclusive access and management of local natural resources.

Output 2. Improved livelihood and income opportunities along selected value chains.

- ***Sub-output 2.1.*** *Government capacitated to effectively supply Early Generation Seed or EGS (breeder and foundation seeds) for selected crop varieties.*
- ***Sub-output 2.2.*** *A private sector-driven business model for producing quality seed established and made viable for small to medium community-based enterprises.*
- ***Sub-output. 2.3****. Established and implemented learning mechanism that reinforces field activities and facilitates improved policy and practice on seed sector resilience in South-Sudan.*

Output 3. Enhanced knowledge, skills and capacity of local communities around nutrition-sensitive livelihood support" (FAO, 2020a).

2 South Sudan Country Background

"Despite abundant natural resources, including arable and grazing land, water resources, oil and timber, South Sudan is among the poorest and least-developed countries in the world, in part due to persistent conflict in northern areas since December 2013 and the emergence of more widespread conflict in southern areas since July 2016. The country has only a few asphalt roads and limited electronic communications. Over wide areas, communications and trade rely on river transport on the White Nile, particularly between the ports of Juba, Bor and Malakal and with the Republic of Sudan. The national economy is overwhelmingly dependent on oil exports, which account for nearly all the country's exports, 90 percent of revenue and more than one-third of its gross domestic product (GDP). The country's GDP per capita was $1,111 in 2014, dropping to less than $200 in 2017" (FAO, 2021a).

"Outside the oil sector, livelihoods are characterized by low productivity, unpaid agriculture and pastoralism coupled with economic mismanagement[2]. Livestock and timber are exported and there is informal trade, particularly in agricultural produce, across the country's borders with the Central African Republic, Democratic Republic of Congo, Ethiopia, Kenya, Sudan and Uganda. Staple foods, including food aid, account for the bulk of imports due to low production in some areas and limited internal transport, which restricts the transport of food from surplus to deficit areas, or to Juba and other urban areas within South Sudan. The most recent national census of 2008 estimated the population at 8.26 million; however, the Famine Early Warning Systems Network (FEWS NET)[3] estimates for late 2017 indicate a population of nearly 11.6 million" (FAO, 2021a).

"Populations are overwhelmingly rural and primarily dependent on subsistence farming (often shifting) and animal husbandry. The risk of food insecurity varies with the degree of conflict and scale of its impact and can deteriorate sharply when conflict persists in an area. Other factors that influence food security in South Sudan include climate (variability), soil types, topography, drainage, access to markets and access to wild plant foods, hunting and fi shing grounds, timber, gum Arabic and other natural resources. Larger-scale mechanized farming is limited to parts of Upper Nile, Unity and Northern Bahr el Ghazal states. While some rural populations do not have consistent market access, they tend to sell wild foods, fish, livestock or labour for extra income to purchase staple foods and can therefore be affected by high market prices" (FAO, 2021a).

"South Sudan has a humid equatorial climate that is hot and dry, with seasonal rains generally occurring during April through October[4]. The northeast is drier than other parts of the country, with average annual precipitation of 200–800 mm, while the southeast receives more precipitation, with average annual rainfall between 1 000 and 2 400 mm[5]. Seasonal rains are an important water source for agriculture, pastoralism and fishing, but also result in seasonal flooding in the floodplain agro-ecological zones[3]. The driest parts of the country are the semi-arid areas of the south-eastern region, which are also areas characterized with the highest food insecurity levels. Average temperatures are typically higher in January through May and cooler in June through September, ranging between 26°C and 32°C across the country" (FAO, 2021a).

[2] World Bank South Sudan Overview, 2020.

[3] FEWS NET, 2018.

[4] United Nations Environment Programme (UNEP). 2018. South Sudan First State of the Environment and Outlook Report.

[5] United Nations Environment Programme (UNEP). 2011. Food Security in the Horn of Africa: The implications of a Drier, Hotter, More Crowded Future.

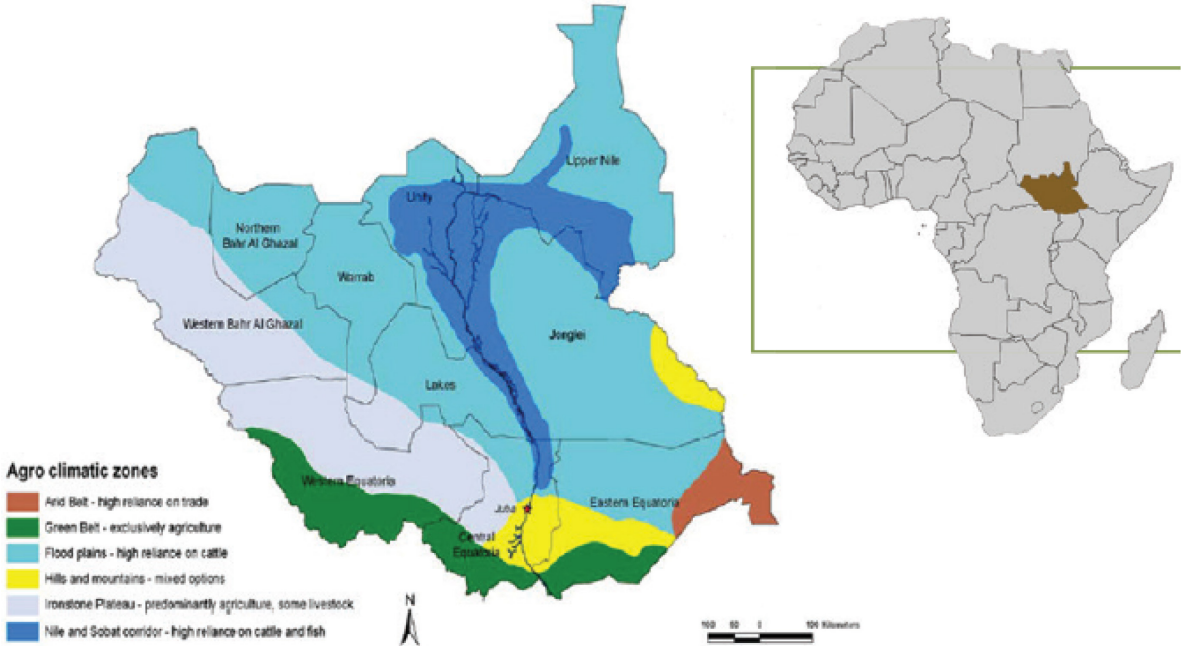


Figure 2 *Agroclimatic zones of South Sudan (FAO, 2021a).*

2.1 Description of FNS-REPRO target sites

The geographic focus areas of FNS-REPRO in South Sudan were selected with a view to ensure that all the major livelihood zones are represented (Figure 2). These include:

i. Equatoria maize and cassava livelihood zone (SS01), within the Green Belt zone
FNS-REPRO target areas: Yambio and Torit counties
"This zone is characterized by equatorial rain forest concentrated on South Sudan's borders with the Central African Republic, Democratic Republic of Congo and Uganda. This is the only part of the country with a typical bimodal rainfall pattern and two reliable seasons. Precipitation is about 1 100 mm to 1 500 mm per annum in both rainy seasons. First rains normally commence around March with a break in late June and restart in July through November. The zone is highly productive and considered a surplus area due to good soils and reliable rainfall, as well as market access – both local and cross-border – with essential trade links with neighbouring countries (Central African Republic, Democratic Republic of Congo and Uganda) which provide strategic access to external markets. Major crops include maize, beans, sorghum, groundnut, cassava and sweet potato. The identified project catchment areas for this zone are Yambio and Torit, although Torit catchment extends to zone SS03 as well" (FAO, 2021a).

ii. Ironstone plateau agropastoral livelihood zone (SS02)
FNS-REPRO target area: Wau County
"This zone cuts across the former Central Equatoria State (CES), Western Equatoria State (WES) Lakes, Warrap and Western Bahr El Ghazal state. The zone is characterized by a unimodal rainfall pattern which runs from April to October with an average annual rainfall of 950 to 1 300 mm. Cereal and legume crop production and cattle and small livestock rearing drive the local economy. The soils are moderately fertile and tend to be shallower towards the north of the zone, with low water-retention capacity. Predominantly cultivated crops are sorghum, groundnut and sesame. Other crops are maize, cowpea, green gram (Lakes), cassava and sweet potato. Surplus produce is transported by traders and sold in major towns including Juba. Livestock is also driven to auctions in the major markets and is increasingly being used to obtain cash. More than 80 percent of the households in this zone keep livestock. The zone will be represented by Wau area catchment in Western Bahr El Ghazal" (FAO, 2021a).

iii. Highland forest and sorghum livelihood zone (SS03)

FNS-REPRO target areas: Torit and Akobo counties

"This zone cuts across CES and Eastern Equatoria State (EES) but is located along the mountain ranges of the Greater Equatorial region and the border with Ethiopia and Uganda. Its topography is characterized by highlands and foothills with a mixture of forest, bush shrubs and grasslands. The zone has a unimodal rainfall pattern with average precipitation of about 1 100 mm to 1 300 mm per annum. There are two distinct seasons – a rainy season from April to November and a short dry season from December to March. The local economy is dependent on rainfed agriculture cultivation with less reliance on livestock. The main crops are sorghum and maize, with the latter growing mainly in the eastern parts of the zone. Other crops cultivated in this zone include millet, sesame, cowpeas/green grams, sweet potatoes, cassava and groundnut. The main markets are Juba, Torit and neighbouring Lafon and Kapoeta trading centres. Additionally, trade and exchange routes between Kenya and Uganda continue to thrive, facilitating movement of goods in and out of the zone. This zone will be represented partly by the Torit in EES and Akobo in Jonglei catchment areas" (FAO, 2021a).

iv. Western plains groundnut, sesame and sorghum livelihood zone (SS04)

FNS-REPRO target areas: Jur River and Wau counties

"This zone is located mainly in Western Bahr El Ghazal state and some parts of WES and Northern Bahr El Ghazal state. It is characterized by highlands, foothills and parts of the Ironstone plateau. It borders the Central African Republic to the west and Sudan to the north. Vegetation in the area is a mixture of forest and grasslands with mahogany and bamboo trees. The zone has a unimodal rainfall pattern, with an average annual precipitation of about 900 to 1 100 mm. There are two main seasons – the rainy season from April to October and the dry season from November to March. Soils are mainly relatively fertile sandy clays. The primary economic activity is rainfed subsistence agriculture, supplemented by gathering of wild foods and forest products, as well as livestock (goats and sheep) and poultry sales. The main food crops cultivated are sorghum, groundnut and sesame. Other crops commonly grown include cowpeas, sweet potatoes, cassava and vegetables. Sesame and groundnuts are mainly grown along the Lol River and are the main cash crops in the zone. All crops are grown over a single season from April to October. Small numbers of animals, mainly goats and poultry, are kept for household consumption (milk and meat) and occasional sales. This zone will be represented by Wau catchment area, with Jur River and Wau counties as potential areas for project implementation" (FAO, 2021a).

v. Eastern plains sorghum and cattle livelihood zone (SS06)

FNS-REPRO target areas: Bor South and Twic East counties

"This livelihood zone is located in the eastern floodplains in former Jonglei state. It can be described as a zone of short unimodal rainfall with annual precipitation ranging from 600 mm to 900 mm. The rainy season is normally between June and mid-October and the dry season from mid- October to May. The local economy is agropastoral. Crop farming and livestock rearing are important sources of livelihood. Crop performance tends to be unreliable due to poor agricultural practices, the difficulty of cultivating heavy black cotton soils and unpredictable weather patterns. Market access in this zone is relatively good due to improvements in road communication with Bor and Juba. The major crops grown include sorghum, groundnut and some maize in addition to cowpeas and groundnuts. The catchment area for this zone is Bor, with Bor South and Twic East counties as potential areas for project implementation" (FAO, 2021a).

vi. Western floodplain sorghum and cattle livelihood zone (SS07)

FNS-REPRO target areas: Aweil East, Aweil West and Aweil South counties

"This predominantly agropastoral zone covers former Warrap state, parts of Lakes and Northern Bahr El Ghazal states. It has a very short rainy season that often starts in June and ends in September, with annual precipitation being between 500 and 700 mm. The commonly grown crops are sorghum, groundnut and millet. Cowpeas, green grams and sesame are also grown at limited scale. Livelihoods in this zone depend on a combination of crop production (sorghum is the staple), rearing of cattle and other livestock, fishing, hunting and gathering of a range of wild foods and bush products, with the exact combination depending on the geography across the zone. The zone has a large population of cattle owned by an estimated 80 percent of households. The zone is deficit in producing cereals and imports a significant proportion of its staple foods from Sudan. In return, large volumes of cattle and

other livestock are sold to Sudan. Primary market-linking roads within the zone are fully accessible during the dry season, but only partially accessible during the rainy season. The catchment area for the zone is Aweil, with Aweil East, Aweil South and Aweil West counties being potential project implementation areas" (FAO, 2021a).

vii. Northern sorghum, sesame and livestock livelihood zone (SS011)

FNS-REPRO target areas: Renk and Melut counties

"This livelihood zone is located mainly in the former Upper Nile state. It has a short rainy season of about two and a half to three months starting from July, with an annual precipitation of approximately 300 mm. It is an agropastoralist zone where farmers grow sorghum and sesame in large acreages (Renk Mechanized Agriculture) ranging from 100 to 1 000 feddans. Other crops grown by farmers are maize, groundnuts and cowpeas. Being close to the border with Sudan results in strong market interactions in both directions. Given the zone's position as an important trade point, with the Nile River for domestic trade and export/import with Sudan, populations in this zone would likely have (or had) more engagement with markets than many parts of the country. The catchment area for this is Renk, with Renk and Melut counties being potential project areas" (FAO, 2021a).

3 Food and Nutrition Security

3.1 FNS situation South Sudan

Summary: Food insecurity in South Sudan has reached the most extreme levels since independence in 2011 (WFP, 2021). An estimated 7.2 million people, representing 60% of the country's population, are facing high levels of acute food insecurity (IPC Phase 3+) (IPC, 2020). The main environmental & socio-economic drivers of food insecurity are: droughts and flood, pests and diseases, conflict/localized insecurity and related displacement, unemployment or shortage of money, high food prices and inflation, economic crisis and Covid-19. It is important to note that some of these drivers are interrelated and affect poor harvest and crop failure. On the whole there is room to improve on the diversity of foods eaten, especially in terms of protein and vegetables and fruits (FAO, 2021b).

3.1.1 Integrated Food Security Phase Classification (IPC)

The results from the IPC situation analysis conducted in October and November 2020 is summarized below:

The October/November 2020 IPC situation analysis shows that, "the food security and nutrition situation has deteriorated and will remain elevated due to insecurity, the effects of COVID-19, persistent poor macroeconomic conditions, and the impact of flooding on livelihoods. This is because of pockets of insecurity that have led to population displacement, low crop production because of climatic shocks such as floods and droughts, the ongoing macro-economic crisis, the effects of the Covid-19 pandemic, pests such as Desert Locusts, and inadequate multi-sectoral humanitarian assistance. Compared to 2020, it is anticipate that the food security situation in 2021 will be worse because of these negative factors just listed." (adapted from IPC, 2020).

"According to the IPC situation analysis, between October and November 2020, an estimated 6.35 million people (52.6% of the population) faced Crisis (IPC Phase 3) or worse acute food insecurity, of which 2.102 million people faced Emergency (IPC Phase 4) acute food insecurity. During the same period, 24,000 people were likely in Catastrophe (IPC Phase 5) acute food insecurity, out of which 11,000 were in Pibor County, in Pibor Administration Area, and 13,000 were in Tonj North County, in Warrap State. The most food insecure states are Jonglei, Unity, Upper Nile, Lakes, Warrap and Northern Bahr el Ghazal where more than 50% of their respective populations are facing Crisis (IPC Phase 3) or worse acute food insecurity." (IPC, 2020).

"In the first projection period of December 2020 to March 2021, an estimated 5.82 million people (48.3% of the population) will likely face Crisis (IPC Phase 3) or worse acute food insecurity, with 11,000 people likely to be in Catastrophe (IPC Phase 5) acute food insecurity in Pibor County, in Pibor Administrative Area. During this period, an estimated 1.79 million people are likely to face Emergency (IPC Phase 4) acute food insecurity." (adapted from IPC, 2020).

"In the second projection period of April to July 2021, an estimated 7.24 million people (60% of the population) are likely to face Crisis (IPC Phase 3) or worse acute food insecurity. During the same period, 31,000 people are likely to be in Catastrophe (IPC Phase 5) acute food insecurity, with 11,000 people in Akobo County in Jonglei State, 7,000 people in Aweil South County in Northern Bahr el Ghazal State, and 13,000 people in Tonj North County in Warrap State. During this period, an estimated 2.47 million are likely to be in Emergency (IPC Phase 4) acute food insecurity." (adapted from IPC, 2020).

3.1.2 IPC Map for second projection (April-July 2021)

The data and results for the IPC Analysis from October 2020 – July 2021 are presented in Appendix 1. Below is a summary of the IPC Food Insecurity results emerging from the second projection period for April – July 2021.

What is on the map?

Figure 3 shows the IPC projections for South Sudan for the period of April-July 2021. "A total of 45 counties are classified in Emergency (IPC Phase 4), 27 are classified in Crisis (IPC Phase 3) and 6 are classified in Stressed (IPC Phase 2). Table 1 shows how acute food insecurity is predicted to increase over time in South Sudan". As stated above, "it was predicted that for the period of April-July 2021, 7.24 million or around 60% of the population are facing severe acute food insecurity (IPC Phase 3+)". (adapted from IPC, 2020).

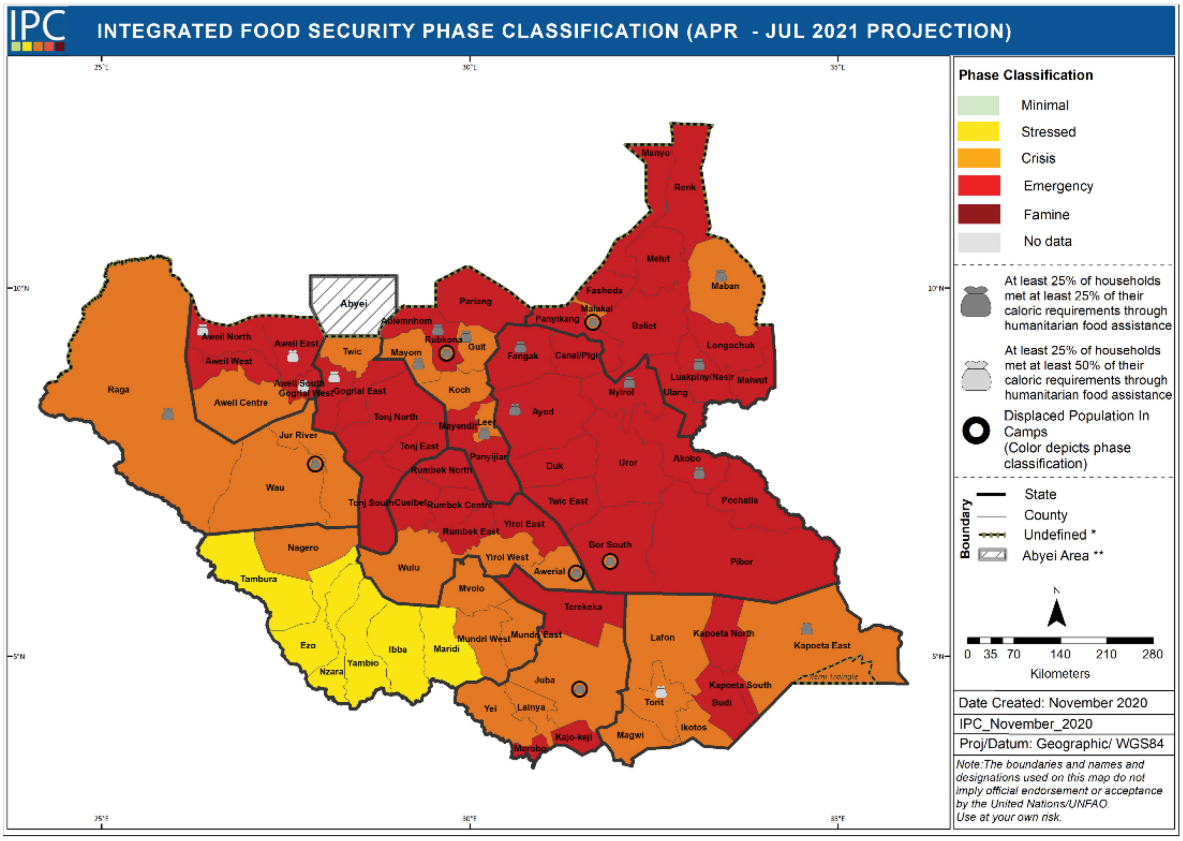


Figure 3 *IPC Acute Food Insecurity Situation Map for April-July 2021.*
Source: IPC Acute Food Insecurity Analysis for South Sudan, 2020.

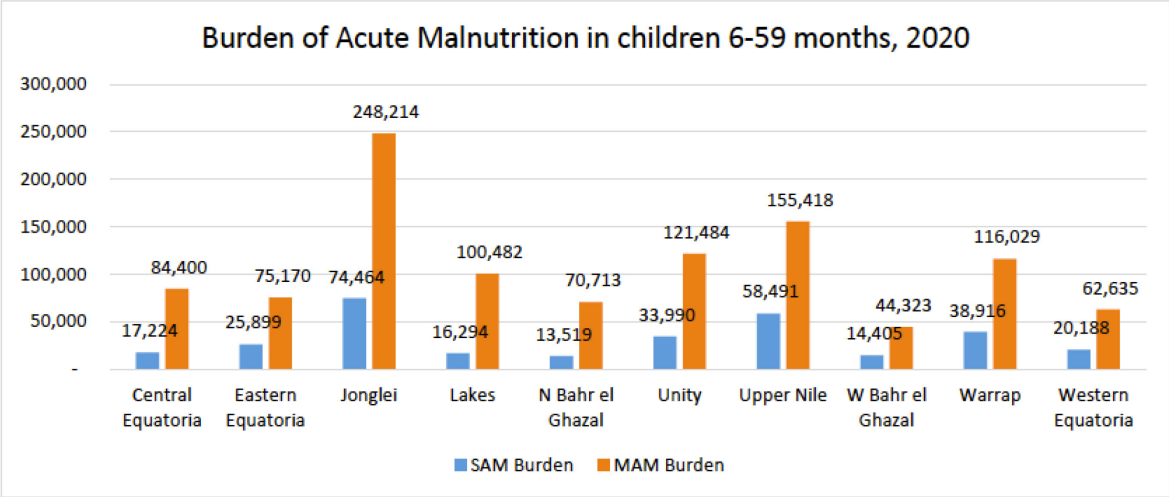
Table 1 *South Sudan IPC Acute Food Insecurity.*

ACUTE FOOD INSECURITY								
CURRENT (OCTOBER-NOVEMBER 2020)			PROJECTED (DECEMBER 2020 - MARCH 2021)			PROJECTED (APRIL - JULY 2021)		
6.35M (52.6% of the population) People facing severe acute food insecurity (IPC Phase 3+) IN NEED OF URGENT ACTION	Phase 5	24 000 People in Catastrophe	5.82M (48.3% of the population) People who will be facing severe acute food insecurity (IPC Phase 3+) IN NEED OF URGENT ACTION	Phase 5	11 000 People in Catastrophe	7.24M (60% of the population) People who will be facing severe acute food insecurity (IPC Phase 3+) IN NEED OF URGENT ACTION	Phase 5	31 000 People in Catastrophe
	Phase 4	2 102 000 People in Emergency		Phase 4	1 785 000 People in Emergency		Phase 4	2 467 000 People in Emergency
	Phase 3	4 222 000 People in Crisis		Phase 3	4 024 000 People in Crisis		Phase 3	4 743 000 People in Crisis
	Phase 2	3 602 000 People in Stress		Phase 2	3 873 000 People in Stress		Phase 2	3 144 000 People in Stress
	Phase 1	2 110 000 People minimally food insecure		Phase 1	2 368 000 People minimally food insecure		Phase 1	1 675 000 People minimally food insecure

Source: IPC Acute Food Insecurity Analysis for South Sudan, 2020.

3.1.3 Acute Malnutrition Overview

Table 2 *Burden of Acute Malnutrition in children 6-59 months, 2020.*



Source: IPC Acute Food Insecurity Analysis for South Sudan, 2020.

The key findings emerging from the IPC analysis report (2020) focusing on malnutrition:

"When it comes to nutrition, about 1.4 million children under five years are expected to suffer from acute malnutrition in 2021 based on same season historical data of the Food Security and Nutrition Monitoring System (FSNMS), SMART nutrition surveys, and admission trends for 2020. According to the IPC Acute Malnutrition scale, 53 counties are in IPC Acute Malnutrition Phase 3 (Serious) and above. Out of these, 29 counties are in IPC Acute Malnutrition Phase 4 (Critical), while 24 counties in IPC Acute Malnutrition Phase 3 (Serious). About 80% of the counties in IPC Acute Malnutrition Phase 4 (Critical) are in the Greater Upper Nile region, followed by 17% in Greater Bahr el Ghazal region." (IPC, 2020).

"However, seasonal deterioration of the acute malnutrition situation is expected during the lean season due to increased morbidity, high food insecurity, and poor infant and young child feeding practices. A total of 57 counties are projected to be in IPC Acute Malnutrition Phase 3 (Serious) and 38 are in IPC Acute Malnutrition Phase 4 (Critical). Based on the historical data trends used in this analysis, coupled with disruptions to basic health, nutrition and food security and livelihood services, Renk is projected to be in IPC Acute Malnutrition Phase 5 (Extremely Critical). Of the counties in IPC Acute Malnutrition Phase 4 during the projection period, nearly 70% are in Greater Upper Nile region followed by Greater Bahr el Ghazel with 18%." (IPC, 2020).

The IPC analysis report (2020), identifies **why** acute malnutrition is prevalent across South Sudan:

Why – "The major factors contributing to acute malnutrition include high prevalence of diseases (up to 36%), poor quality and diversity of food (Minimum Acceptable Diet: 7%, Minimum Dietary Diversity: 15%). Elevated levels of food insecurity (IPC AFI Phase 3 and above) in most counties also contribute to acute malnutrition. Furthermore, poor access to health and nutrition services due to heightened inter-communal conflict and flooding mainly in the Greater Upper Nile are also contributing to acute malnutrition. COVID-19 related disruptions, including those rightfully implemented to curb coronavirus infection rates, as well as changes in SAM and MAM referral protocols for children have exacerbated lack of access to services." (IPC, 2020).

3.1.4 IPC data over time

Table 3 *Proportion of population in IPC phases (January 2020, early and mid-2021).*

State	Phases 3-5 January 2020 (percent)	Phases 3-5 December 2020-March 2021 (percent)	Phases 3-5 April-July 2021 (percent)
Central Equatoria	40.4	27.9	51.6
Eastern Equatoria	31.9	37.9	46.2
Jonglei	65.3	78.3	84.7
Lakes	52.0	42.1	57.4
Northern Bahr-el-Ghazal	54.7	60.4	69.7
Unity	46.2	55.3	68.7
Upper Nile	53.3	58.8	70.8
Warrap	35.7	51.2	61.3
Western Bahr-el-Ghazal	31.0	29.4	43.3
Western Equatoria	15.0	9.0	13.5
Total	**45.2**	**48.3**	**60.0**

Source: IPC, 2020. Phase 3: "Crisis", Phase 4: "Emergency" and Phase 5: "Catastrophe".

Table 4 *IPC status of FNS-REPRO target areas over time.*

State	County	IPC phase over time							
		Oct–Dec 2014	Oct–Dec 2015	Oct–Dec 2016	Oct–Dec 2017	Oct–Dec 2018	Oct–Dec 2019	May–Jul 2020	Oct-Nov 2020
Eastern Equatoria	Magwi	Phase 1	Phase 2	Phase 2	Phase 3	Phase 3	Phase 2	Phase 3	Phase 3
	Torit	Phase 1	Phase 3	Phase 2	Phase 3	Phase 2	Phase 3	Phase 3	Phase 3
Jonglei	Akobo	Phase 3	Phase 2	Phase 2	Phase 3	Phase 3	Phase 3	Phase 4	Phase 4
	Bor South	Phase 2	Phase 2	Phase 2	Phase 2	Phase 3	Phase 3	Phase 3	Phase 4
Northern Bahr Ghazal	Aweil Centre	Phase 2	Phase 2	Phase 4	Phase 3	Phase 2	Phase 3	Phase 3	Phase 3
	Aweil East	Phase 2	Phase 2	Phase 4	Phase 3	Phase 3	Phase 3	Phase 3	Phase 3
Upper Nile	Melut	Phase 2	Phase 3	Phase 2	Phase 3	Phase 2	Phase 3	Phase 3	Phase 3
	Renk	Phase 1	Phase 2	Phase 1	Phase 3	Phase 2	Phase 3	Phase 3	Phase 3
Northern Bahr Ghazal	Jur River	Phase 1	Phase 2	Phase 3	Phase 3	Phase 2	Phase 3	Phase 3	Phase 3
	Wau	Phase 1	Phase 2	Phase 4	Phase 4	Phase 3	Phase 3	Phase 3	Phase 3
Western Equatoria	Nzara	Phase 1	Phase 1	Phase 1	Phase 2	Phase 2	Phase 2	Phase 2	Phase 3
	Yambio	Phase 1	Phase 1	Phase 2	Phase 2	Phase 2	Phase 2	Phase 2	Phase 3

Source: FAO, South Sudan Multidimensional Context Analysis (FAO, 2021a).

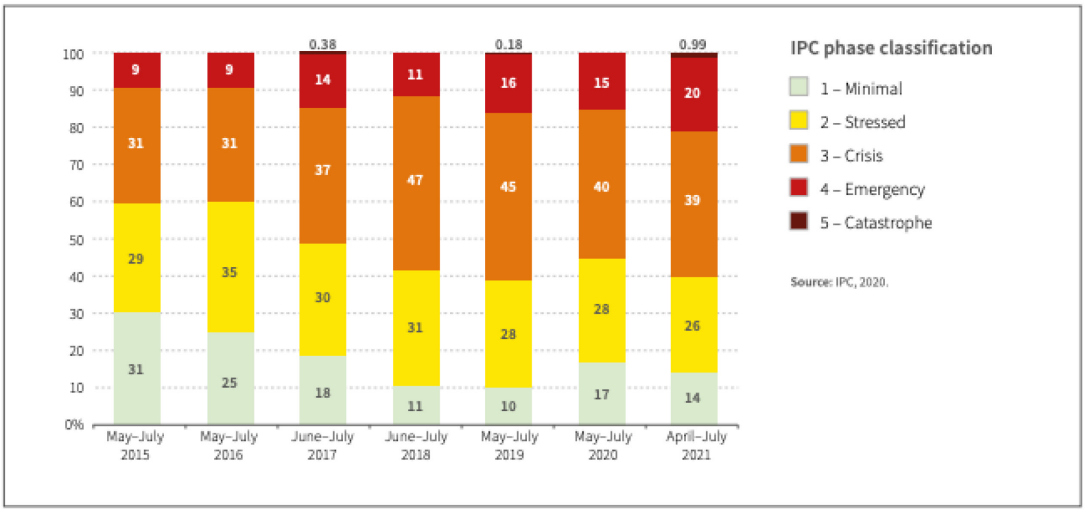


Figure 4 *South Sudan lean season trends (2015–2021).*
Source: IPC, 2020.

As can be seen in the above tables and figure, food insecurity in South Sudan is worsening over time. For example, Table 3 shows how the proportion of the population in IPC phases 3-5 has increased from 45.2 per cent of the population to an estimated 60 per cent of the population in mid 2021 (April-July. Furthermore, if we look at the longer term trends, as presented in Figure 4, the number of people in IPC phases 3-5 during the lean seasons has been incrementally increasing since 2015. This evidence is "an indication of the severe impact of protracted crises on livelihoods and nutrition, which can eventually lead to extreme consequences such as malnutrition and even death. The high numbers of people in Emergency (IPC Phase 4) and Catastrophe (IPC Phase 5) highlight an extremely serious situation in which acute malnutrition and mortality are expected to increase significantly among the acutely food-insecure population, should humanitarian intervention fail to reach them and help them meet basic food needs" (adapted from GRFC, 2021).

However, the IPC analysis predicts that ***"the food insecurity levels will remain elevated due to insecurity, the effects of COVID-19, persistent poor macroeconomic conditions, and the impact of flooding on livelihoods"*** (IPC, 2020).

Therefore, urgent action is required: "In order to save lives and avert total collapse of livelihoods in the affected counties, particularly those with populations in Catastrophe (IPC Phase 5) and Emergency (IPC Phase 4), there is urgent need for immediate scale-up of multi-sectoral humanitarian assistance. Furthermore, urgent action is also required for populations in Crisis (IPC Phase 3) to protect livelihoods and reduce food consumption gaps." (IPC, 2020).

3.2 Key drivers of acute food insecurity and malnutrition

The South Sudan Multidimensional Context Analysis carried out by FAO (2021a), identifies a number of the key drivers of the acute food insecurity and malnutrition in South Sudan. It is important to note, that while presented separately here, these key drivers of food insecurity are often inter-linked and affect each other in multiple ways.

3.2.1 Flooding

"Considerable flooding in 2019 triggered population movement and displacement in three counties – Akobo, Duk and Ayod. The floods destroyed houses and road networks and disrupted livelihoods. The most severe acute food-insecurity conditions were in the flood affected counties of Akobo, Duk and Ayod. In 2020, flooding began early and was more intense than in 2019, disrupting farming activities and resulting in low crop production in the most affected areas. The food-security situation generally deteriorated across all the analysis periods compared with 2019 as a result of **excessive flooding, insecurity, low crop production, the economic crisis, morbidity, and pests and diseases for crops and livestock, among other causes**." (FAO, 2021a).

3.2.2 Insecurity

"**Conflict is the most destructive of all the factors affecting food stability in South Sudan**, disrupting livelihoods and increasing displacement – an estimated 4.4 million people have fled their homes since the outbreak of violence in 2013, including 1.9 million internally displaced persons (IDPs)13. Many communities in the Jonglei, Upper Nile and Western Bahr el Ghazal States have been trapped in renewed and widespread conflict over the past months and were at times cut off from humanitarian assistance. Although South Sudan and Sudan signed a peace deal in September 2018 to end the five year conflict, it remains unclear whether the political process will contribute to improving the humanitarian situation in the coming months. Isolated insecurity incidents displace populations, disrupt livelihoods and impede households' access to other food sources such as wild foods, fish and livestock products." (FAO, 2021a).

3.2.3 Low agricultural production

"**Low agricultural production is also contributing to food insecurity,** with the 2019 cropping season only able to meet 63 percent of the 2020 national cereal needs. Flooding, prolonged dry spells and pest infestations (such as the outbreak of fall armyworm and stalk borers) have also hampered crop production, with only 60 percent of the 2018 national cereal needs met by the harvest. Cereal production has steadily declined since the start of the conflict in late 2013, and in 2017 was estimated at about 765 000 tonnes – approximately 25 percent below pre-conflict levels." (FAO, 2021a).

"**Supply-chain disruptions and poor transportation infrastructure** are persistent challenges to the **availability of food in markets** and the **stability of local market prices**. These have been exacerbated by the high demand for food from large numbers of returnees and internally displaced persons (IDPs), as well as **crop failures due to floods**. Cereal prices are expected to remain above average due to inflation, high fuel prices and a deteriorating economic situation in the country. **Food shortages, climate shocks, a deepening economic crisis, insecurity and insufficient agricultural production at household level have kept levels of hunger and acute malnutrition alarmingly high**." (FAO, 2021a).

"The cumulative effects of flooding and associated population displacements, localized insecurity, the economic crisis and prolonged years of asset depletion continue to drive the high levels of acute food insecurity in the country. Low crop production is also a contributing factor, with the 2019 cropping season production meeting 63 percent of the 2020 national cereal needs (by comparison, in 2018 cereal production met 57 percent of the 2019 national cereal needs). Isolated insecurity incidents displace populations, disrupt livelihoods and impede households' access to other food sources such as wild foods, fish and livestock products." (FAO, 2021a).

"The high food prices and continued currency depreciation have also consistently reduced the purchasing power of vulnerable households, who are reliant on market purchases for their food and other basic needs. Seasonal scarcity of food, coupled with a general reduction in humanitarian food assistance when compared with the recent past, will likely result in an increase in acute food insecurity during the projection periods." (FAO, 2021a).

"The high prevalence of household food insecurity highlights the need for immediate food assistance to be integrated with long-term development initiatives to prevent or mitigate potential food crises in both conflict-affected and more politically stable areas of South Sudan. While conflict, economic issues and climate variability cannot be underestimated, there are opportunities to develop value chains in the seed sector to meet the cereal needs and eventually provide more diversified products for local, national and export markets. The FNS-REPRO programme in South Sudan can contribute positively to the Sustainable Development Goals of No Poverty (SDG 1), Zero Hunger (SDG 2) and Life on Land (SDG 15) by taking an area-based approach and facilitating new networks and practices to tackle key challenges in strengthening the resilience of seed systems in South Sudan." (FAO, 2021a).

3.2.4 Dry spells

"**In 2020, prolonged dry spells were a key driver of food insecurity**, affecting crop performance, availability of pasture for livestock and reduced access to livestock products as the animals migrated in search of water and pasture. Below-average harvest in the affected areas was largely attributed to dry spells as well as floods. Additionally, conflict is likely to increase in pastoral areas as increased competition for resources is expected during dry spells." (FAO, 2021a).

3.3 Positive factors influencing FNS

3.3.1 Recommendations for action

The IPC Acute Food Insecurity Analysis Oct 2020 – Jul 2021, makes a number of key 'Recommendations for Action' which FNS-REPRO should consider in the design and implementation of the projects activities in South Sudan:

Food Security

"Humanitarian food assistance must be scaled up immediately to save lives and prevent total collapse of livelihoods in locations where populations were classified in Catastrophe (IPC Phase 5) and Emergency (IPC Phase 4). Furthermore, partners should collect food security, nutrition, and mortality data in the most affected locations to verify the situation in these areas. In all regions, the necessary conditions for addressing the food security crisis are:

- Continued **implementation of the peace agreement and addressing the root causes of insecurity** especially across Jonglei, Lakes, Warrap, and parts of Central Equatoria State.
- Scale-up provision of **humanitarian assistance (in kind and cash transfers)** to counties in Crisis (IPC Phase 3) and above.
- Provide livelihood support through **improved market access, provision of seeds and tools (farm inputs)** to stimulate production back to surplus levels, particularly in the greenbelt.
- Maintain **support to small scale subsistence producers** in locations with less agricultural potential and include **animal health support.**
- Scale up and improve access to basic services, **including WASH and health service delivery** throughout the year. This should also include **emergency nutrition, especially during the lean season.**
- Close monitoring of counties whose food security situation is already dire and is at risk of deteriorating further to a point where lives and livelihoods will be jeopardized." (IPC, 2020).

Nutrition

"Continued scale up of treatment of acute malnutrition targeting the current and future caseload is a high priority. Further expansion of services to previously insecure areas for both treatment of severe and moderate acute malnutrition is also important to reach the previously less accessible areas."…"The prevention efforts should focus on childcare practices including **improving quality of food consumed by children** and **treatment and prevention of childhood illness."**…"It is also recommended that a **response analysis** involving all nutrition, health, food security, as well as WASH stakeholders in the country be carried out to identify appropriate interventions to address acute malnutrition. This response analysis may initially focus on the Greater Upper Nile region, and Warrap and Northern Bahr el Ghazal states which have relatively elevated levels of acute malnutrition, but optimally, such response should be done for all regions. It is also recommended that resource mobilization efforts are taken to address treatment and prevention of malnutrition:

- Efforts to reduce malnutrition should include the broader goals of **improving knowledge related to childhood nutrition** and IYCF practices and health seeking.
- **Establishment of kitchen gardening for food diversification as part of the nutrition-sensitive agriculture agenda.**
- Cooking demonstration on complementary feeding using commonly available foods.
- Strengthen active case finding and integrated community outreach program.
- Increase surveillance in counties where the nutrition situation is critical and projected to deteriorate.
- Mother MUAC is tool that will be used in the coming months and years and therefore requires improvement in training of mothers on the appropriate use of MUAC for screening.
- COVID-19 guidelines need to be reviewed in view of enhancing program coverage.
- Adopt revised global guidance on population-based assessments so that real time data is available on the nutrition situation." (IPC, 2020).

3.4 Food Security Indicators from RIMA

"Household food security exists when all the people living in the household have physical, social, and economic access to sufficient, safe, and nutritious food at all times that meets their dietary needs and food preferences for an active and healthy life. The RIMA baseline study (FAO, 2021b) used the Integrated Phase Classification (IPC), Food Consumption Score (FCS), the Household Dietary Diversity Score (HDDS) and the Food Insecurity Experience Scale (FIES) as some of the indicators to measure the food security status across the project areas in South Sudan" (adapted from FAO, 2021b).

3.4.1 Food Consumption Score (FCS)

"FCS is a composite score based on dietary diversity, food frequency and the relative nutritional importance of different food groups. It is calculated using the frequency of consumption of different food groups consumed by a household during the seven days before the survey. Scores are clustered into three groups: poor, borderline, or acceptable food consumption. FCS is useful for categorizing and tracking households' food security across time, program monitoring and evaluation, and population-level targeting. Since it is a standardized measure, it can also be useful in comparing households in different locations, as well as tracking cyclical changes in household diet if collected repeatedly across seasons or years" (FAO, 2021b).

Overall, the food security status as measured by the FCS showed that **17 percent of the households had acceptable food consumption**, **40 percent had borderline while the rest were in the poor food consumption category**. The figure below shows this distribution by the different categories.

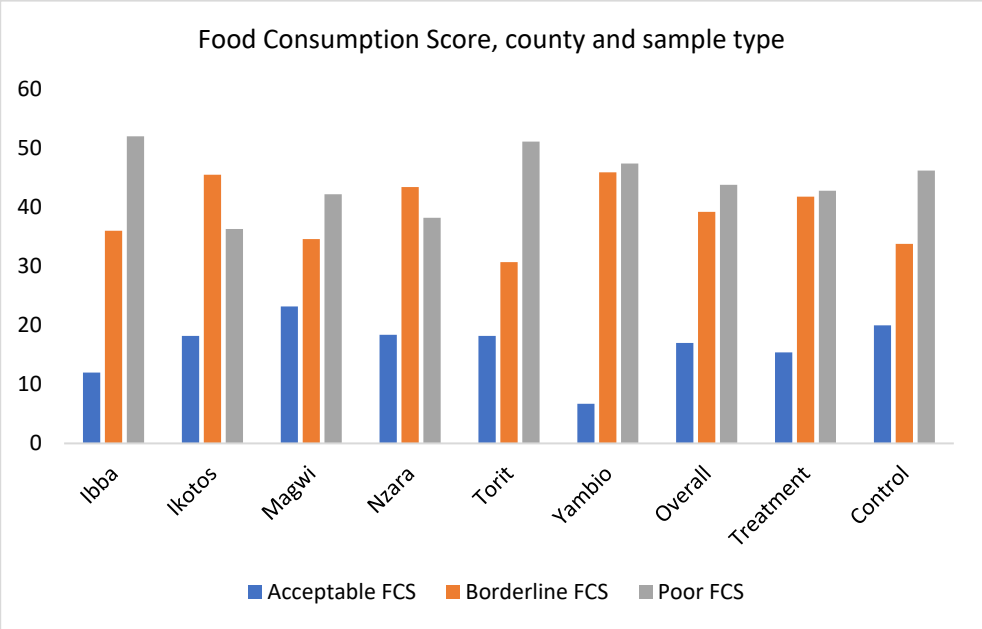


Figure 5 *FCS by county.*
Source: South Sudan RIMA Baseline Report (FAO, 2021b).

3.4.2 Household Dietary Diversity Score (HDDS)

"The Household dietary diversity Score (HDDS) is a qualitative measure of food consumption that reflects household access to a variety of foods. It consists of a simple count of food groups that a household has consumed over the preceding 24 hours and is meant to reflect, in a snapshot form, the economic ability of a household to access a variety of foods. Studies have shown that an increase in dietary diversity is associated with socio-economic status and household food security (household energy availability). In this regard, the respondents were asked to indicate the different food groups consumed by the household members during the 24 hours prior to the survey. **The average HDDS**

across the project areas was 6.465, with a lower HDDS for male headed households (6.21) compared to female headed households (7.01). This means that over the last 24 hours, the households ate about six different kinds of foods (out of the 12 food groups). The HDDS for the control group was slightly lower than that of the treatment group at 5.72 and 6.82 respectively." (FAO, 2021b).

Table 5 *Average HDDS by county.*

County	Average HDDS
Ibba	6.2
Ikotos	6.3
Magwi	6.3
Nzara	5.6
Torit	5.0
Yambio	8.6
Overall	6.4

Source: RIMA Baseline Report (FAO, 2021b).

3.4.3 Household Food Insecurity Experience Scale (FIES)

"FIES is a measure of household food insecurity based on whether they experienced certain aspects of food insecurity or not. The FIES module is made up of 8 Yes/No questions asked typically for the reference period of 12 months. Table 6 presents the 8 questions together with their raw score for the current study." (FAO, 2021b).

Table 6 *FIES raw questions responses.*

During the last 12 months, was there a time when, because of lack of money or other resources:	Percentage of households
1. You were worried you would not have enough food to eat?	78%
2. You were unable to eat healthy and nutritious food?	77%
3. You ate only a few kinds of foods?	79%
4. You had to skip a meal?	69%
5. You ate less than you thought you should?	78%
6. Your household ran out of food?	71%
7. You were hungry but did not eat?	65%
8. You went without eating for a whole day?	55%

Source: RIMA Baseline Report (FAO, 2021b).

"Figure 6 shows the raw score for the eight yes/No (binary) questions. The raw score represents the summation of the eight scores. For example, approximately 250 households reported that they had all the eight food insecurity experiences while approximately 100 households reported they had seven food insecurity experiences. This is indicative of high food insecurity in the study areas" (FAO, 2021b).

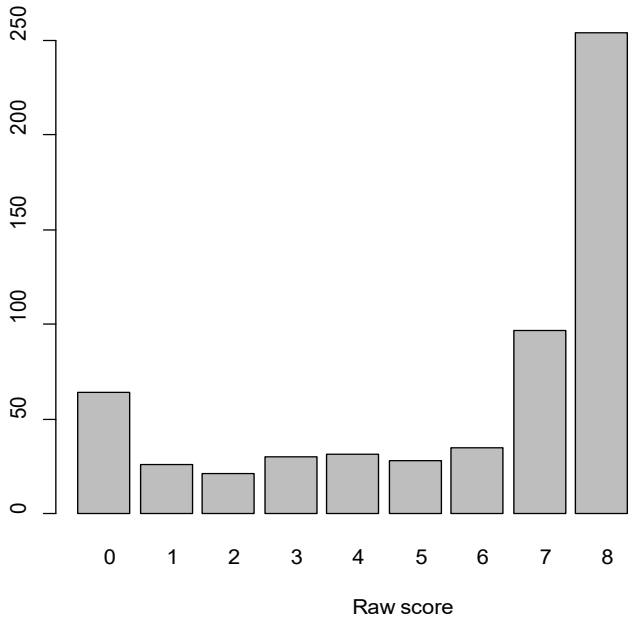


Figure 6 *FIES questions raw scores.*
Source: RIMA Baseline Report (FAO, 2021b).

"Based on the FIES global reference scale, South Sudan data was calibrated allowing for production of prevalence of food insecurity. The estimates of moderate and severe food insecurity were computed for both beneficiary and non-beneficiary groups of the sample as presented in Table 7" (FAO, 2021b).

Table 7 *FIES prevalence by beneficiary type.*

Food insecurity prevalence	Beneficiaries	Non-beneficiaries	Overall
Severe Food Insecurity	45%	48%	46%
Moderately food insecure	72%	78%	74%

Source: RIMA Baseline Report, (FAO, 2021b).

"Some **45% of beneficiaries felt severely food insecure**, compared to 48% for non-beneficiaries. About **three quarters (74%) felt moderately food insecure** (72% beneficiaries, 78% non-beneficiaries). These differences between beneficiaries and non-beneficiaries are not statistically different. Across the bord there is **much room for improvement needed for all the counties in terms of food and nutrition security**" (FAO, 2021b).

3.5 Community of Practice (CoP) survey results

The below factors were identified by South Sudan CoP participants during discussions held reflecting on the CoP survey results. The participants were asked to indicate negative factors that influence food and nutrition security of households within the seed system value chain. Factors were disaggregated into three separate categories, namely, (1) food system activities, (2) socio-economic drivers, and (3) environmental drivers. The results from the CoP online survey are displayed below.

3.5.1 Food system activities

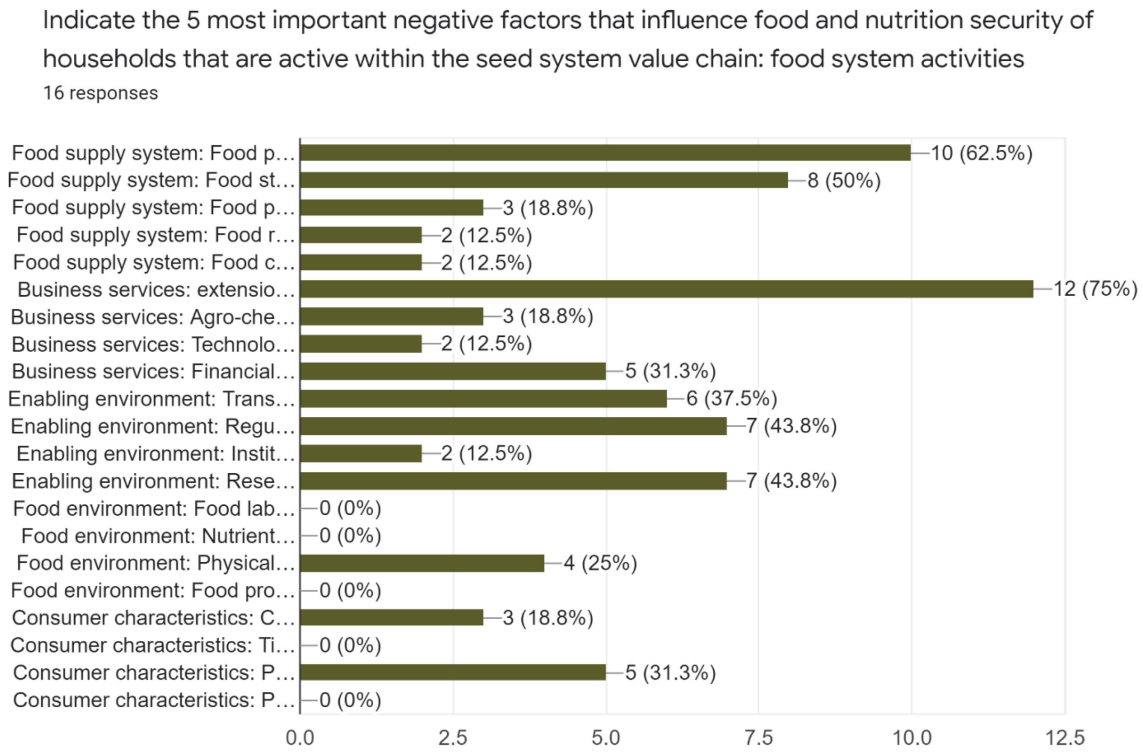


Figure 7 *Factors that negatively influence FNS of households within the seed system value chain. Source: South Sudan CoP survey, 2021.*

According to the CoP survey results (Figure 7), the main food system activities that are inadequate and thus negatively affect the FNS situation of households in the gum Arabic value chain are:

1. Business services: Inadequate extension services (75%)
2. Food supply system: Food production (62.5%)
3. Food supply system: Food storage, transport and trade (50%)
4. Enabling environment: Regulations (43.8%)
5. Enabling environment: Research infrastructure (43.8%)
6. Enabling environment: Transport networks (37.5%)

3.5.2 Socio-economic drivers

According to the CoP survey results (Figure 8) South Sudan CoP members identified the main socio-economic drivers negatively influencing FNS of households that are active within the gum Arabic value chain as the following: **conflict and insecurity**, **science & technology** (e.g. research, innovation and education), **markets** (e.g. market systems, prices, trade relations, incomes, profits, wages, labor availability, and **policy** (e.g. land rights, food production, the environment, labour, trade or food safety). These results are further presented below:

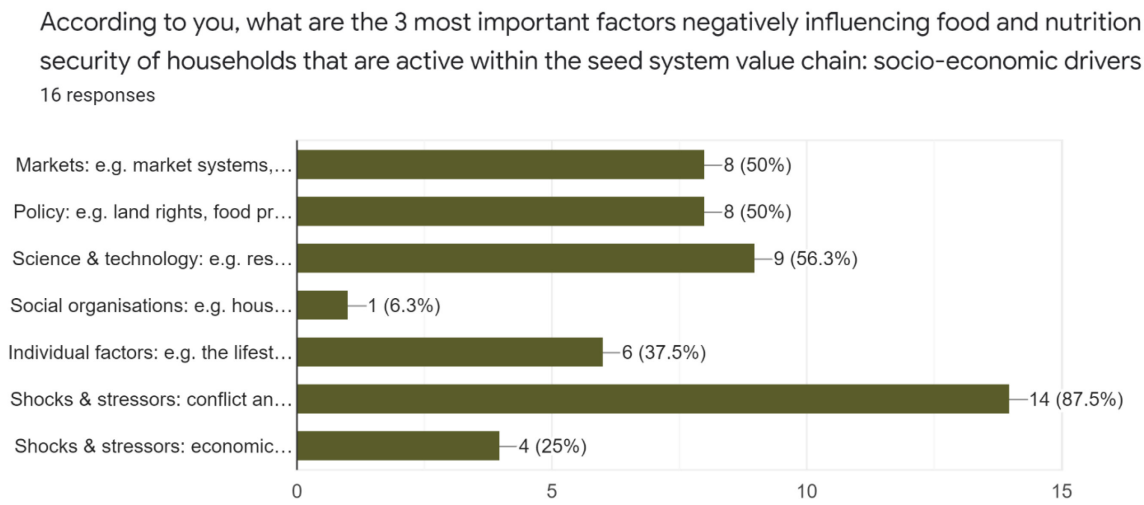


Figure 8 *Factors that negatively influence FNS of households within the seed system value chain. Source: South Sudan CoP survey, 2021.*

1. Shocks & stressors: conflict and insecurity (87.5%)
2. Science & technology: e.g. research, innovation and education (56.3%)
3. Markets: e.g. market systems, prices, trade, incomes, profits, wages, labor availability (50%)
4. Policy: e.g. land rights, food production, the environment, labour, trade or food safety (50%)
5. Individual factors: e.g. the lifestyle, norms, attitudes and cultures (37.5%)
6. Shocks & stressors: economic shocks (inflation, rising prices) (25%)
7. Social organisations: e.g. households, social movements, media, education & health care (6.3%)

3.5.3 Environmental drivers

Figure 9 shows that the key stakeholders that participated in the CoP survey identified pests and diseases, system among the most important factors negatively influencing FNS of households active within the gum Arabic value chain. These factors are further discussed below.

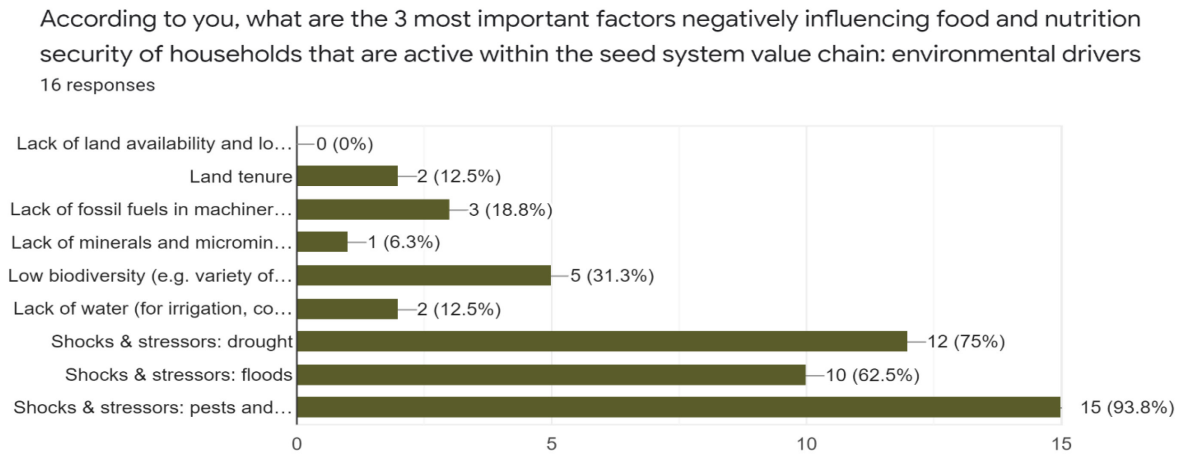


Figure 9 *Factors that negatively influence FNS of households within the seed system value chain. Source: South Sudan CoP survey, 2021.*

1. Shocks & stressors: pests and diseases (e.g. Fall Army Worm, Desert Locusts) (93.8%)
2. Shocks & stressors: drought (75%)
3. Shocks & stressors: floods (62.5)
4. Low biodiversity (e.g. variety of plant and animal life, biomass, soil biodiversity) (31.3%)
5. Lack of fossil fuels in machinery & equipment, storage, cooling, processing, transport (18.8%)

6. Lack of water (for irrigation, cooking, drinking, cleaning) (12.5%)
7. Land tenure (12.5%)
8. Lack of minerals and microminerals (e.g. to enrich soils) (6.3%)

3.5.4 Summary of drivers

Below is a summary of the key results emerging from the South Sudan CoP survey results and discussions.

Food system activities

- Inadequate extension services: People are not receiving enough training/information.
- Low food production: Essentially, not enough food being produced.
- Food storage, transport and trade: Poor road connections and transport services, which has contributed to the shortage of food; Lack of storage so perishable goods (vegetables) are lost; Trade is implicated due to above factors.
- Lack of regulations: Poor quality or lack of Seed Certification means that South Sudan seeds are less competitive; This negatively affects producers because their products are less competitive due to lack of regulation.
- Lack of research infrastructure.

Socio-economic drivers

- Conflict and insecurity.
- Science & technology: inadequate research, innovation & education. Acute shortage of seed extension workers leading to continuation of conventional agriculture. Absence of storage/processing facilities.
- Markets: rising prices & inflation (due to dependency on USD) affecting FNS; lack of regulation on market prices (whilst having sustainable businesses); high labor costs; poor access to markets; inadequate quantities of quality seed – dependent on free seed distribution by I/NGOs.
- Policy: especially on land rights (privatized from government; competition in urban areas) – policies needed on land rights in urban areas.

Environmental Drivers

- Droughts and floods are the main climatic stressors affecting crop yields and income.
- Pests: desert locust outbreak; fall army worm; and weed infestation (striga weeds).
- Outbreak of livestock diseases such as East coast fever, Anthrax, genuine worm.
- Conflicts continuously caused by cattle raiding, which is severe in dry seasons in search of grazing land and water.

4 Healthy Diets

Summary: The role of FNS REPRO and other factors in stimulating healthy diets by targeted communities is yet to be determined but it is clear that currently wealth index, access to transfers, participation in association groups and number of income sources were found to be significant drivers of food insecurity. The main shocks that undermine food security (and therefore the ability to eat healthy diets) in the study area are crop failure and poor harvests, livestock diseases and death, serious illness and death of household heads and unemployment and shortage of food within the household. High prices for non-food items was also identified to undermine resilience among the households, and thus the ability to eat healthy diets. On the whole there is room to improve on the diversity of foods eaten, especially in terms of protein and vegetables and fruits (FAO, 2021b).

4.1 Household Dietary Diversity Score (HDDS)

"The average HDDS across the project areas was 6.465, with a lower HDDS for male headed households (6.21) compared to female headed households (7.01). This means that over the last 24 hours, the households ate about six different kinds of foods (out of the 12 food groups). The HDDS for the control group was slightly lower than that of the treatment group at 5.72 and 6.82 respectively. Outliers are in Torit and Nzara whilst Yambio is relatively doing better" (FAO, 2021b).

Table 8 presents the HDDS. Basically it shows that the **majority of people eat carbohydrates**, especially the cereals/grains daily and about **half eat roots and tubers daily**. **Protein sources are more plant based than animal based**, and especially milk and milk products, eggs but also flesh meat are not eaten daily. **Fruits are less frequently eaten compared to vegetables** but vegetables are eaten daily by about ¾ of the households. **The diet is not balanced, but mainly starch based with few vegetables and fruits**. For the majority of food groups the control group eats less daily compared to the target group, especially for legumes and nuts the difference is considerable. Only oils and fats are consumed by more people in the control group compared to the target group (adapted from FAO, 2021b).

Table 8 *HDDS.*

Food Group	% of households consuming the food in the last 24 hours preceding the survey				
	Overall (n=602)	MHH (n=408)	FHH (n=194)	Target Group (n=407)	Control group (n=195)
Maize, Sorghum, Rice, Millet, Any Other Cereal / Grain	84.22%	83.09%	86.60%	87.71%	76.92%
Potato, Yam, White Sweet Potato, All Wild Roots Including Water Lilies And All Other Roots & Tubers	52.49%	51.23%	55.15%	58.48%	40.00%
Legumes/Nuts: Beans, Cowpeas, Peanuts/Groundnuts And Groundnut Paste, Lentils, Nut, Soy, Pigeon Pea Wild Nuts & All Other Nuts	62.13%	59.80%	67.01%	71.99%	41.54%
Milk And Other Dairy Products: Milk Fresh Or Sour, Yogurt, Cheese, All Other Dairy Products	22.09%	17.89%	30.93%	23.83%	18.46%
Flesh Meat: Beef, Lamb, Goat, Rabbit, Chicken, Duck, Other Birds	39.87%	36.27%	47.42%	44.47%	30.26%
Eggs	23.59%	19.36%	32.47%	28.99%	12.31%
Organ Meat: Liver, Kidney, Heart And/Or All Other Organ Meats	22.09%	18.14%	30.41%	25.06%	15.90%
Fish/Shellfish: Fish, Including Canned Tuna, And/Or Other Seafood	33.06%	28.92%	41.75%	34.40%	30.26%
Vegetables Rich In Vitamin A: Carrot, Orange Sweet Potatoes, Red Pepper, Pumpkin, Any Other Orange Vegetable & Okra	62.96%	61.27%	66.49%	64.86%	58.97%
Dark Green Leafy Vegetables: Sukuma, Spinach, Broccoli, Amaranth And / Or Other Dark Green Leaves, Cassava Leaves, Dark Green & Leafy Wild Foods	74.42%	73.53%	76.29%	78.38%	66.15%
Other Vegetables: Okra, Tomatoes, Onions, Cabbages, Etc.	76.41%	75.74%	77.84%	79.12%	70.77%
Fruits Rich In Vitamin A: Orange, Peaches, Papaya, Mango, Watermelon, Tangerine, Guava, Passion Fruit & All Other Vitamins A Fruits	41.86%	37.50%	51.03%	44.72%	35.90%
Other Fruits: Banana, Pineapple, Avocado, Apple, Etc.	49.83%	47.55%	54.64%	52.33%	44.62%
Oil / Fat / Butter: Vegetable Oil, Palm Oil, Shea Butter, Margarine, Other Fats/Oil	73.42%	72.55%	75.26%	70.27%	80.00%
Sugar & Sugar Products: (Sugar, Sugar Cane, Honey, Jam, Cakes, Candy, Cookies, Pastries, Cakes & Other Sweet (Sugary Drinks)	42.19%	39.95%	46.91%	46.19%	33.85%
Condiments / Spices: Tea, Coffee, Cocoa, Salt, Garlic, Spices, Yeast, Baking Powder, Tomato, Sauce, Including Small Amount Of Milk In Tea & Coffee	59.14%	59.56%	58.25%	59.46%	58.46%

Source: RIMA Baseline Report (FAO, 2021b).

In Table 9 below you can find relevant information on the different food stuffs eaten by male and female headed households. "Here one can see that **cereals are the most frequently eaten food stuffs**, but still not every day: 4.4 days in the past 7 days, and more by male headed households (4.6) than by female headed households (4.1). Most likely the other days **roots and tubers are eaten to fulfil the need for carbohydrates** (1.6), again more for male headed households (1.7) than by female headed households (1.4). Otherwise the difference between male and female headed households are small. **Vegetables and fruits rich in vitamin A are not consumed daily** (2.2 and 1.2 respectively), same for dark green leafy vegetables (rich in iron: 2.8) or other vegetables (2.7) but vegetables are not eaten daily. **Also protein rich food are eaten not every day: plant-based protein in legumes/nuts is eaten most frequently** (2.1/7 days), whilst animal based protein is

eaten less than 1 day for the different food types each (milk and milk products; eggs; fish, flesh meat and organ meat). **In total protein is eaten for a maximum of 2.1 out of the 7 days in a week**. **Basically both male and female headed households are not consuming balanced diets daily, as the diet is mostly starch based with vegetables on some days only**. On the whole **there is room to improve on the diversity of foods eaten, especially in terms of protein and vegetables and fruits**" (FAO, 2021b).

Table 9 *Food stuffs eaten in the past 7 days.*

Variable	Overall	FHH	MHH
Days eaten (MAIZE, SORGHUM, RICE, MILLET, ANY OTHER CEREAL/GRAIN) or food made of CEREALS/GRAINS IN THE PAST 7 DAYS	4.4	4.1	4.6
Days eaten (POTATO, YAM, WHITE SWEET POTATO, ALL WILD ROOTS including WATER LILIES and ALL OTHER ROOTS 7 TUBERS) or food made of ROOTS/TUBERS IN THE PAST 7 DAYS	1.6	1.4	1.7
Days eaten (LEGUMES/NUTS: BEANS, COWPEAS, PEANUTS/GROUNDNUTS AND GROUNDNUT PASTE, LENTILS, NUT , SOY, PIGEON PEA WILD NUTS & ALL OTHER NUTS) or food made of LEGUMES/NUTS IN THE PAST 7 DAYS	2.1	2.0	2.1
Days eaten (MILK AND OTHER DAIRY PRODUCTS: MILK FRESH OR SOUR, YOGURT, CHEESE, ALL OTHER DIARY PRODUCTS) or food made of MILK/MILK PRODUCTS IN THE PAST 7 DAYS	0.5	0.6	0.5
Days eaten (FLESH MEAT: BEEF, LAMB, GOAT, RABBIT, CHICKEN, DUCK , OTHER BIRDS) or food made of MEAT IN THE PAST 7 DAYS	0.8	0.8	0.8
Days eaten (EGGS) or food made of it IN THE PAST 7 DAYS	0.5	0.6	0.4
Days eaten (ORGAN MEAT: LIVER, KIDNEY, HEART AND/OR ALL OTHER ORGAN MEATS) or food made of ORGAN MEAT IN THE PAST 7 DAYS	0.5	0.5	0.5
Days eaten (FISH/SHELLFISH: FISH, INCLUDING CANNED TUNA, AND/OR OTHER SEAFOOD) or food made of FISH IN THE PAST 7 DAYS	0.8	0.9	0.7
Days eaten (VEGETABLES RICH IN VITAMIN A: CARROT, ORANGE SWEET POTATOES, RED PEPPER, PUMPKIN, ANY OTHER ORANGE VEGETABLE & OKRA) or food made of it IN THE PAST 7 DAYS	2.2	2.1	2.2
Days eaten (DARK GREEN LEAFY VEGETABLES: SUKUMA, SPINACH, BROCCOLI, AMARANTH and/or OTHER DARK GREEN LEAVES, CASSAVA LEAVES, DARK GREEN AND LEAFY WILD FOODS) or food made of it IN THE PAST 7 DAYS	2.8	2.7	2.8
Days eaten (OTHER VEGETABLES: OKRA, TOMATOES, ONIONS, CABBAGES, etc) or food made of it IN THE PAST 7 DAYS	2.7	2.7	2.8
Days eaten (FRUITS RICH IN VITAMIN A: ORANGE, PEACHES, PAPAYA, MANGO, WATERMELON, TANGERINE, GUAVA, PASSION FRUIT & all other VITAMINS A FRUITS) or food made of it IN THE PAST 7 DAYS	1.2	1.3	1.2
Days eaten (OTHER FRUITS: BANANA, PINEAPPLE, AVOCADO, APPLE, etc.) or food made of it IN THE PAST 7 DAYS	1.4	1.3	1.5
Days eaten (OIL/FAT/BUTTER: VEGETABLE OIL, PALM OIL, SHEA BUTTER, MARGARINE, OTHER FATS/OIL) or food made of it IN THE PAST 7 DAYS	3.1	2.9	3.3
Days eaten (SUGAR & SUGAR PRODUCTS: SUGAR, SUGAR CANE, HONEY, JAM, CAKES, CANDY, COOKIES, PASTRIES, CAKES & OTHER SWEET (SUGARY DRINKS) or food made of it IN THE PAST 7 DAYS	1.6	1.5	1.6
Days eaten (CONDIMENTS/SPICES: TEA, COFFEE, COCOA, SALT, GARLIC, SPICES, YEAST, BAKING POWDER, TOMATO, SAUCE, INCLUDING SMALL AMOUNT OF MILK IN TEA & COFFEE) or food made of it IN THE PAST 7 DAYS	2.6	2.2	2.8

Source: RIMA Baseline Report (FAO, 2021b).

4.2 Community of Practice (CoP) survey results

The South Sudan Communities of Practice (CoP) survey, further revealed a number of factors which hinder or prevent households that are active withing the seed system value chain to eat healthy diets. As seen in Figure 10, the main factors identified by CoP participants were: income to purchase healthy foods, production of healthy food crops, market access, and of equal importance; awareness of healthy diets (food choices), and availability of healthy and diverse foods.

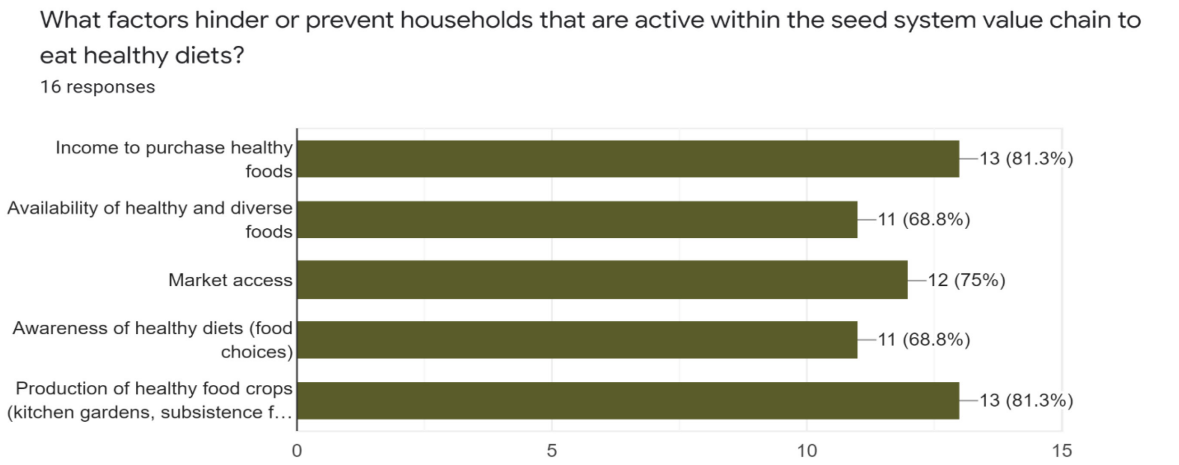


Figure 10 *Negative factors influencing healthy diets.*
Source: South Sudan CoP Survey, 2021.

As seen in Figure 11, the main positive factors influencing healthy diets, as identified by CoP participants were: income to purchase healthy foods, availability of healthy and diverse foods, awareness of healthy diets (food choices), market access, production of healthy food crops, and finally, dealing with consumer behaviour.

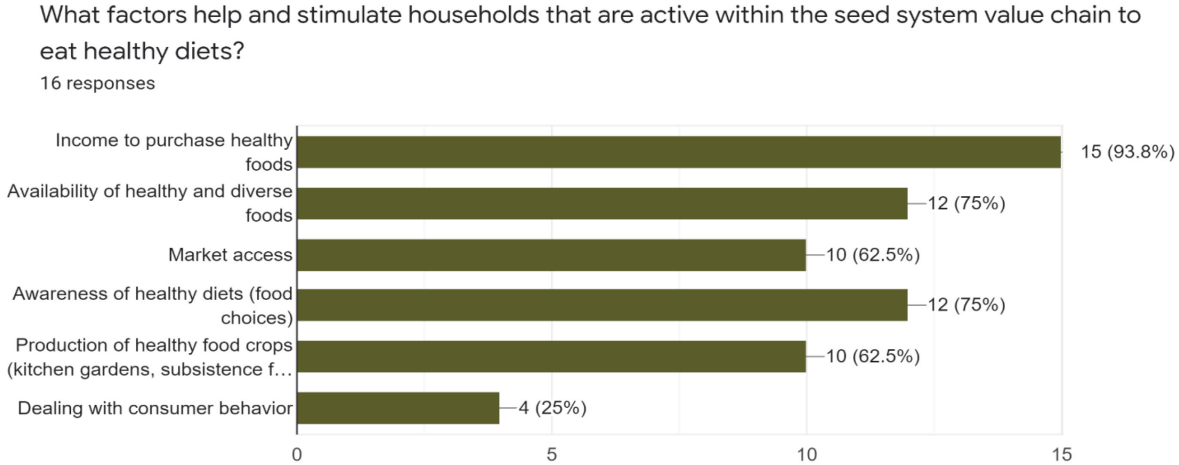


Figure 11 *Positive factors influencing healthy diets.*
Source: South Sudan CoP Survey, 2021.

During a discussion held with the CoP participants, the following factors/remarks were also identified:

- Income as most important factor. In other words, healthy foods can be expensive and are available limitedly.
- Many factors that negatively impact healthy diets in South Sudan.

- Importance of nutrition sensitive interventions. e.g. education on production of healthy foods by farmers. There needs to be improved production of vegetables and fruits by the farmers. Sometimes it's not accepted by communities to produce.
- Issue of food safety. People don't know how to handle food and produce is safely. How to produce safe and clean foods? (e.g. putting food to dry on the ground, micro toxins and other stuffs can get on the food).

5 Resilient Livelihoods

Summary: The two main factors affecting people's resilience is (1) Lack of good quality seed (dependent on imported, free seeds by I/NGOs) and (2) Lack of income & savings (CoP survey). Main shocks experienced by households are (1) Poor harvest and crop failure (2) Loss or death of livestock Maize, cassava, groundnuts and sorghum are most frequently mentioned crops cultivated in the last season. These crops are also main source of income and food. Approximately 30% of households have accessed some form of credit. The Female-headed households have a lower resilience capacity (32.6) than the Male-headed households (36.7). The Reduced Coping Strategies Index (rCSI) in study area is 11. Indicating that, in general, households are still able to afford essential food expenditures without engaging in severe coping strategies (FAO, 2021b).

5.1 Beneficiaries existing capacities

This section deals with the existing capacities of beneficiaries in South Sudan's FNS-REPRO target localities (as mentioned in section 2.1). The human, social, natural, as well as physical and financial capital assets is examined.

In terms of **human capital**, **more than half of the beneficiaries have received training on good agricultural practices** (55 percent). However, **many still lack capacity in terms of fertilizer, value addition, post-harvest handling, seed production and harvesting**. The social capital of beneficiaries is mainly in the form of self-help groups (42 percent), and cooperative society (25 percent). Yet, **very few are engaged in agricultural cooperatives or saving groups**, which could be an area of further investigation, in order to strengthen the collective action and organization of farmers (adapted from FAO, 2021b).

Beneficiaries also face challenges in accessing quality seed, as well as access to financial capital. The main sources of seeds relied on by the households are own seeds from previous harvests (69 percent), seeds procured in local markets (50 percent), seed assistance from humanitarian agencies including FAO (34 percent) and seeds obtained from social network (5 percent) such as relatives, friends or neighbours (adapted from FAO, 2021b).

5.1.1 Main sources of income

According the RIMA study, "The three main sources of household income are agriculture and sale of cereals, vegetables, and other crops (93 percent), casual labour related to agriculture (36 percent) and casual labour related to no agricultural activities (22 percent). Disaggregation by counties indicates that more than 90 percent of the households in the four Counties reported sale of agricultural produce as their main source of income, 35 percent reported casual labour related to agriculture while 22 percent reported casual labour related to non-agricultural activities to be source of household income" (FAO, 2021b).

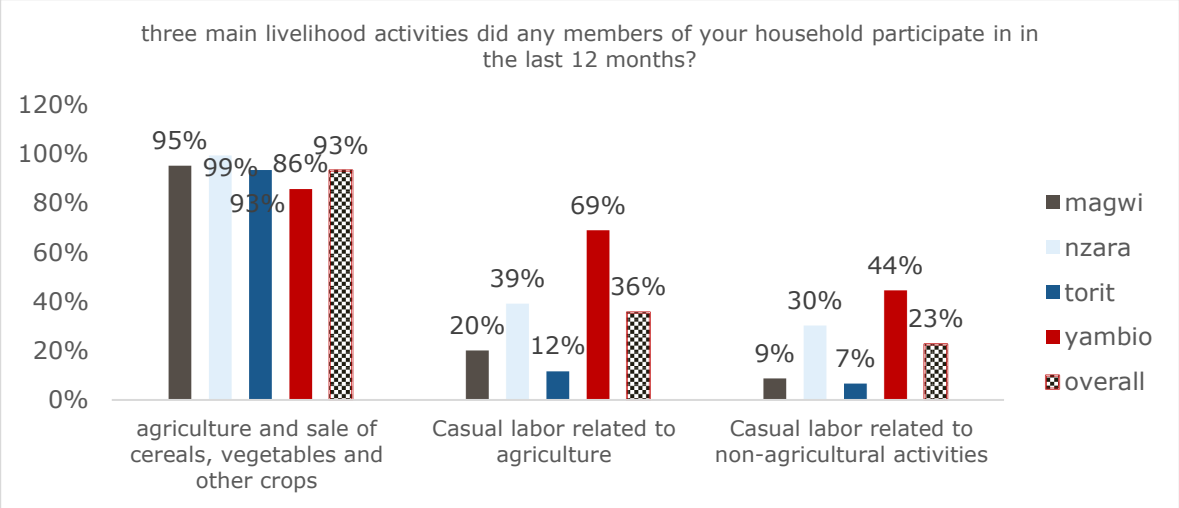


Figure 12 *Main livelihood activities.*
Source: South Sudan RIMA Baseline Report (FAO, 2021b).

5.2 Assets and access to basic services

5.2.1 Human capital

The study looked at the household's human capital including knowledge, skills, training, and education, which are available to the household. "The highest formal educational level for the household head is completion of primary level (10.13 percent), completion of secondary level (9 percent), completion of tertiary level (4 percent) while three quarters (77 percent) of the household heads neither had been to school or did not complete both primary and secondary education levels" (FAO 2021b).

"Further, the surveyed households reported having some knowledge on improved seed varieties such as high yielding, high nutrient content, and drought tolerant seeds (83 percent), cultural practices such as spacing, seedling production & transplantation, mulching (21 percent). They reported receiving training on good agricultural practices (55 percent), seed production and multiplication (27 percent), Natural Resource Management (NRM) (14 percent), Participatory Land & Natural Resource Management (10.4 percent)" (FAO 2021b).

"More than half (55 percent) of the respondents have received training on good agricultural practices over the last 12 months preceding the survey. The figure below shows the distribution of the GAP specific trainings received. The most prevalent topics covered in the GAP trainings include land preparation (88 percent), pests and disease control (57 percent), weeding (53 percent), harvesting (39 percent) and seed production (33 percent)" (FAO 2021b).

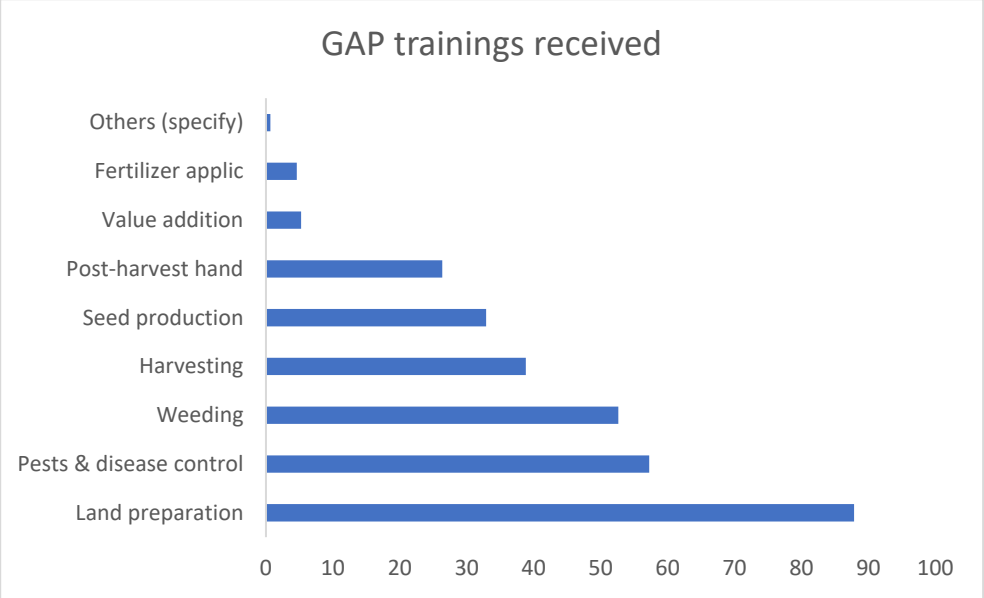


Figure 13 *GAP trainings received.*
Source: South Sudan RIMA Baseline Report, 2021.

5.2.2 Social capital

The baseline further explored the various social networks and assets that are available to the households in the cattle camps which they can rely on in times of difficulty to prevent them from depleting their assets through the adoption of damaging coping strategies.

As is indicated in the Figure 14 below, self-help groups (42 percent), cooperative society (25 percent), women group (13 percent) and savings groups (12 percent) are some of the main networks and groups that the households are members of and can rely on in terms of need. Moreover, they have at least one relative, friend or family whom they can rely on in times of need (adapted from FAO, 2021b).

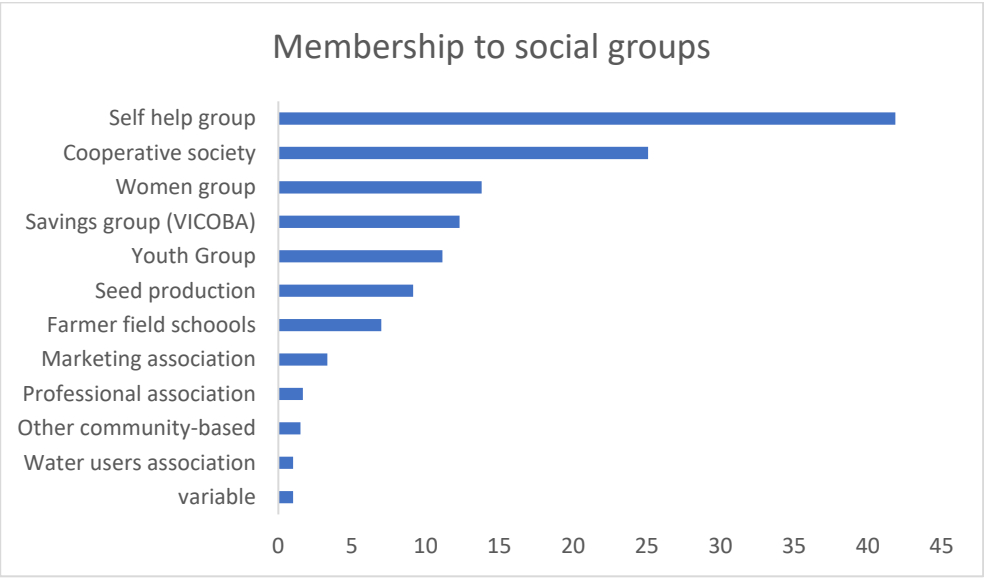


Figure 14 *Membership to social groups.*
Source: South Sudan RIMA Baseline Report (FAO, 2021b).

5.2.3 Natural capital

"Majority (98.1 percent) of the households have access to land for cultivation with average size of land own approximately 1 ha. They cultivated an average of 3 crops mainly maize, cassava and groundnuts as the most frequently mentioned crops cultivated in the last season. These are the same crops that are mainly used as a source of income and food. Some of the challenges attributed to low cultivation include inadequate quantity of seeds, tools and labour".

"Majority of the households (89 percent) planted maize with Nzara and Yambio leading with 96 and 93 percent respectively. Furthermore, cassava is mostly cultivated in Yambio and Nzara compared to Magwi and Torit while sorghum, local vegetables, sesame and green grams are the least cultivated crops in all the surveyed areas. Cultivation of maize, cassava and groundnut in sufficient quantities suggests availability of the seeds in the localities of implementation, preference of the seeds by the locals or suitability of the seeds to the context" (FAO, 2021b).

Table 10 *Main crops planted last season.*

Counties	Maize	Cassava	Groundnut	Sorghum	Local vegetable seeds	sesame	green grams
Magwi	88%	57%	35%	28%	26%	37%	38%
Nzara	96%	84%	99%	10%	17%	16%	6%
Torit	79%	23%	22%	74%	31%	8%	1%
Yambio	93%	89%	96%	11%	21%	24%	29%
Overall	**89%**	**64%**	**62%**	**30%**	**24%**	**23%**	**21%**

Source: South Sudan RIMA Baseline Report (FAO, 2021b).

"The main sources of seeds relied on by the households are own seeds from previous harvests (69 percent), seeds procured in local markets (50 percent), seed assistance from humanitarian agencies including FAO (34 percent) and seeds obtained from social network (5 percent) such as relatives, friends or neighbours. The seeds are stored in traditional granaries (30 percent) or gunny bags (42 percent) or hanging over the fireplace (12 percent). For those who purchase seeds, they reported to be sourcing them from within the Bomas (66 percent) or from nearby Bomas within the Payam (24 percent). Over 80 percent of respondent households from Nzara (83 percent) and Yambio (80 percent) reported own seeds produce as source of their seeds. While a half of the respondents from Magwi and Torit reported local market as source of their seeds. From the above findings, evidence shows that seed production is high in Western Equatoria compared to Eastern Equatoria while there is access to the markets for supply of local seeds in both Eastern Equatoria (53 percent) and Western Equatoria (45 percent)" (FAO, 2021b).

Table 11 *Main sources of seeds*

County	Own seed	Local Market	Seed aid (NGO/FAO/RRC)	Social Network (relatives/neighbours/friends)
Magwi	65%	61%	69%	7%
Nzara	83%	43%	10%	3%
Torit	46%	45%	45%	3%
Yambio	80%	46%	6%	6%
Overall percent	**69%**	**50%**	**34%**	**5%**

Source: South Sudan RIMA Baseline Report, 2021.

According to the Seed System Security Assessment (SSSA) in South Sudan, "Overall, most households cultivate for food, however the importance varies from crop to crop with more than 80 percent of sorghum, millet, maize and cowpea cultivated for food. Rice is an important crop and is considered by 75 percent of those who planted as an income crop" (SSSA, 2021).

"Similarly, about 50 percent of those who planted green grams (Lakes state and Mvolo and Mundri Counties) and vegetables consider these crops as important income generating crops (Fig.). Although cassava is grown mainly in the SS01 and SS02, and to some limited extent in SS03, it is an important food and income crop in these livelihood zones" (SSSA, 2021).

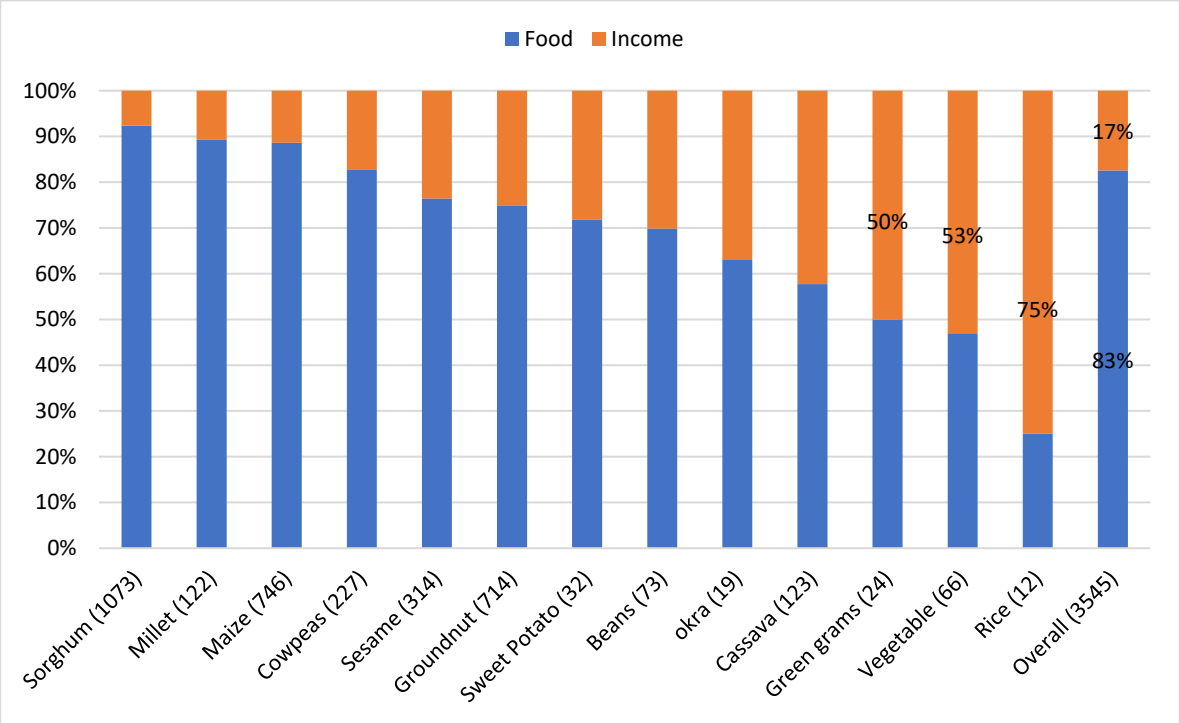


Figure 15 *Importance of crops as food and income sources*
Source: Seed System Security Assessment in South Sudan (SSSA, 2021).

The Seed System Security Assessment (SSSA) in South Sudan, also presents data on the reasons why farmers would plant less or more. It reveals that "For those households who intend to plant more in 2019 (n=227), seed related reasons such as availability of seed, affordability of seed, access to new varieties and good quality seed account for 38 percent.

Table 12 *Reasons why farmers would plant more in 2019.*

Category	Reasons	Frequency	Percent
Seed related	Seed is available	227	17%
	Seed is affordable	92	7%
	Access of new variety	91	7%
	Seed aid	75	6%
	Good seed	15	1%
	Sub-total	***500***	***38%***
Non seed related	Better market	197	15%
	Access to more labor	173	13%
	fertile land	145	11%
	Access to credit/loan	121	9%
	Good weather/rainfall	79	6%
	Good security	60	5%
	Access to tools	43	3%
	Access to other inputs	14	1%
	Sub-total	***832***	***62%***
	GRAND TOTAL	**1332**	**100%**

Source: Seed System Security Assessment in South Sudan (SSSA, 2021).

On the other hand, non-seed related factors such as better market for produce, availability of labor, fertile land, access to credit/loan for production, good weather, security and access to tools and other inputs account for 62 percent of the reasons for planting more (Table 12).

Table 13 *Reasons why famers would plant less (stress) in 2019.*

Category	Reasons	Frequency	Percent
Seed related	Lack of seed	37	22%
	High seed prices	19	12%
	No money to buy seed	16	10%
	Poor seed quality	8	5%
	Lack of preferred variety	7	4%
	Sub-total	***87***	***53%***
Non seed factors	Insufficient labor	25	15%
	Limited land	13	8%
	Pests & disease	11	7%
	Poor weather	8	5%
	Insecurity	7	4%
	Limited tools	6	4%
	Lack of Markets	5	3%
	Others	3	2%
	Sub-total	***78***	***47%***
	GRAND TOTAL	***165***	***100%***

Source: Seed System Security Assessment in South Sudan (SSSA, 2021).

5.2.4 Physical capital

In this section, we discuss two kinds of assets that are important in the survey area: livestock and productive tools. Livestock ownership is an important indicator of wealth as well as social status in South Sudan with all households interviewed during the survey reporting to own livestock. Half of the respondent households reported ownership of five types of livestock (i.e., cow, ox, sheep, goats and chicken). When it comes to household assets, the most frequently owned household assets were chairs, beds and mosquito nets as illustrated in the Figure 16 (adapted from FAO, 2021b).

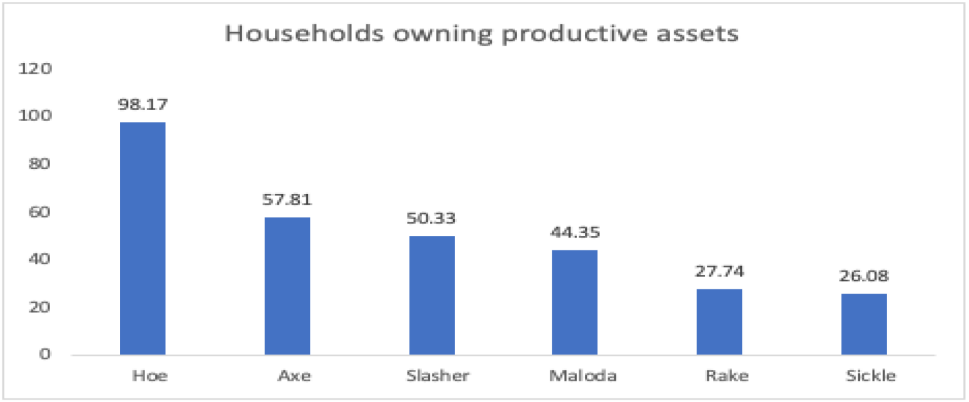


Figure 16 *Household owning productive assets.*
Source: South Sudan RIMA Baseline Report (FAO, 2021b).

"The survey revealed that almost all the households owned at least one farm tool/asset including panga/hoes (98 percent), axe (58 percent) and slashers (50 percent) as the most owned. Figure 16 above shows household ownership of productive assets for the top six assets" (FAO, 2021b).

5.2.5 Financial capital

Household access to credit plays an important role in improving their daily productivity, increase in knowledge, improve well-being and an avenue to escape from poverty. Approximately 30 percent of households reported to have accessed some form of credit in the last three months preceding the survey. This was higher among the treatment group (34 percent) than the comparison (25 percent). The three main purpose of seeking credit are purchase of food (33 percent), access to health care (29 percent), and payment of tuition fees (9 percent). Given that most of the accessed credit is used for daily food consumption and health care needs, the households are likely to sink into deeper poverty levels and reduce their creditworthiness in their social circles. The source of the accessed credit was mainly from friends, neighbours, and relatives (82 percent) and from local cooperatives/savings groups (16 percent). This is an indication of low access to formal financial services and especially credit" (FAO, 2021b).

The RIMA assessment also explored the types of formal transfers (e.g., relief food, food for work, cash assistance, livestock support and services, seeds and tools assistance, beehive support, safety net programmes, fishing support) received in the last 12 months by members of the respondent households from non-governmental organizations (NGOs), UN agencies, civil organizations, or government. "About 14 percent received assistance from the government/NGO/UN inform of cash transfer (e.g., unconditional cash transfers, cash for work, pension). The average amount of formal in-kind transfers (e.g., relief food, food vouchers, input subsidies, fuel subsidies, asset transfers, etc.) in the last 12 months comes to approximately 14000" (FAO, 2021b).

5.3 Community of Practice (CoP) survey results

The South Sudan Communities of Practice (CoP) survey, identified some of the main needs of households that are active withing the seed system value chain to improve agricultural production and income. As seen in Figure 17, the main factors identified by CoP participants were: tools and equipment (87%), training on good agricultural practices (68%), climate smart agricultural practices (62%), feeder roads (56%), storage facilities (50%), good soil health (50%), conflict resolution mechanisms (50%).

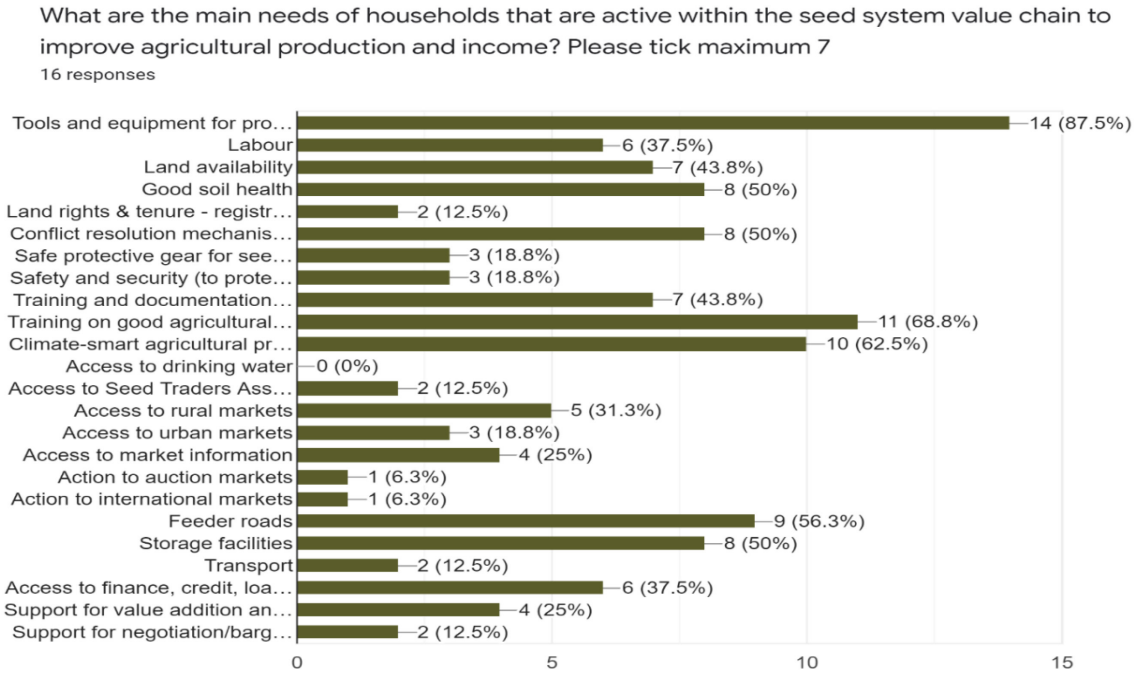


Figure 17 *Main needs of households to improve agricultural production and income. Source: South Sudan CoP Survey, 2021.*

5.4 Shocks and coping strategies

South Sudan is highly prone to shocks, from economic downturns and conflict-driven crises, to natural hazards such as floods, drought and food chain crises owing to outbreaks of crop and animal pests and diseases. The cumulative effect of these shocks, coupled with structural risk factors, exacerbate prevailing food insecurity, and undermine agriculture-based livelihoods. Table 14 shows the main shocks experienced by households over the course of the 12 months preceding the survey.

Table 14 *Showing relevant shocks reported by the household.*

County	Poor harvest/ crop failure	Loss/death of livestock	Serious illness or accident of household members	Unemployment/ shortage of money	Unusually high food prices (for consumers)	Death of working household member/head of household/ spouse	Floods	Drought
Magwi	42%	40%	31%	29%	37%	9%	4%	3%
Nzara	26%	10%	13%	29%	19%	20%	4%	34%
Torit	43%	7%	30%	29%	11%	14%	45%	10%
Yambio	53%	74%	44%	18%	20%	24%	18%	15%
Overall	41%	36%	30%	26%	23%	16%	16%	14%

Source: South Sudan RIMA Baseline Report (FAO, 2021b).

The key findings to emerge from the RIMA Baseline Report (FAO, 2021b), in relation to shocks and coping strategies are listed below:

- "The most prevalent shocks reported by the households include poor harvest or crop failure (41 percent), loss or death of livestock (36 percent), serious illness or accident of household members (30 percent) and unemployment (26 percent). On average, 42 percent of the households in both Magwi and Torit reported poor harvest as shock affecting crop production. Similarly (39 percent) of the households in Nzara and Yambio reported the same issue. In terms of climatic shocks, Torit had the highest (45 percent) incidences of flooding while Yambio had (18 percent). Additionally, Nzara (34 percent) had higher incidences of drought compared to Yambio with 15 percent" (FAO, 2021b).
- "Approximately 89 percent of the households in the survey area reported that in the past 7 days there have been times when they did not have enough food or money to buy food. To ensure smoothing of food availability, households applied various coping strategies to avert shortage of food in their households. Of the households experiencing shortage of food or money to buy food, each household on average relied on less preferred and less expensive food for two days out of the last seven, similarly they resorted to limiting the portion sizes during mealtimes and reducing meal frequencies for averagely 1.9 and 1.7 days respectively" (FAO, 2021b).
- "The average reduced coping strategy index (rCSI) in the study area is 11, measured on a scale of 0 to 56. This indicates that the households are still able to afford essential food expenditures without engaging in severe coping strategies. The rCSI developed by CARE is an experience-based indicator collecting information on household use and frequency of five different food-based coping strategies over the past 7 days. It is thought to be most useful in early onset crises when households change their food consumption patterns to respond to shocks" (FAO, 2021b).
- "Approximately 10 percent of the households reported that they received assorted assistance from various government/partners in the last 3 months. The main forms of assistance received by the household include agricultural inputs (79 percent), free health care (30 percent) and training on crop production and management (15 percent)" (FAO 2021b). These are elaborated in Table 15 below.

Table 15 *Assistance from the government/NGO/UN within the last 3 months.*

Did the household receive any of the following assistance from the government/NGO/UN within the last 3 months	%
Agricultural inputs e.g. seeds, fertilizers other farming inputs	78.9
Free health care	30.7
Training on crop production and management	16.9
Free vaccination of children	14.8
Cash transfer (e.g. unconditional cash transfers, cash for work, pensions)	13.1
Livestock vaccinations	9.5
Bee keeping inputs e.g. hives	5.8
Extension services	5.8
Free food ration	5.5
Animal feeds e.g. mineral blocks, range cubes	5.2
Food subsidies	5.3
livestock treatment	4.5
Training on livestock production and management	3.5
live animals	1.7
Water subsidies for home and livestock feeding	1.5
Maternity waiting home	1.5
Loans for agricultural inputs	1.2
Marketing advice and services	0.8
Fodder seeds	0.7

Source: South Sudan RIMA Baseline Report (FAO, 2021b).

5.4.1 Key negative factors emerging from CoP survey

The South Sudan CoP survey further identified a number of negative factors that influence a household's capacity in the seed system value chain to withstand shocks and stressors (Figure 18). The six most negative factors identified (in order of significance) include: lack of good quality seed, lack of income and savings, climate prone agriculture (shortage of water and monocropping), insufficient food and food storage, undiversified livelihoods, crop loss/harvest failure.

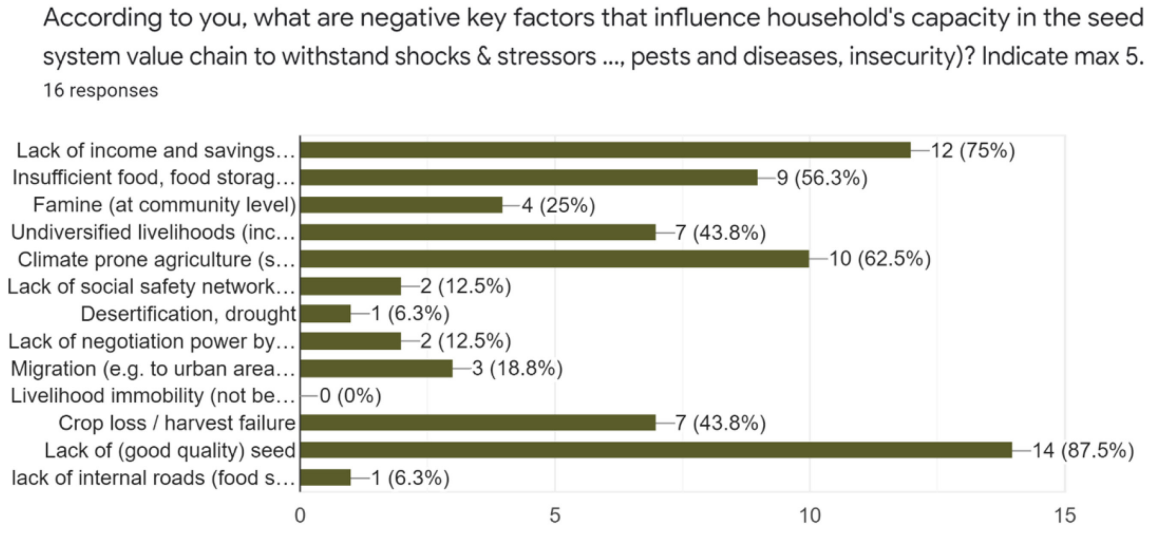


Figure 18 *Key negative factors (CoP survey).*

The South Sudan CoP participants further explained the above negative factors during the learning event. This serves as supportive information, which re-enforces the the CoP survey findings:

Lack of good quality seeds

- Many seeds used / distributed and planted in South-Sudan are not from South-Sudan. They do not match climatological needs and are for different agro-ecological zones. Seeds come from Uganda and Kenya and are not necessarily fitted to South-Sudan climate.
- No institutions that produce good quality seed to provide the country.
- The role of farmers and communities in producing seed? What is the role of the informal system?
- No crop improvement system in South-Sudan. No seed policy in place.
- All seed in South-Sudan is important or distributed by humanitarian agencies.
- People perceive spending money on good seeds as a waste. They rather receive their seeds for free from the agencies, but the seed is not good and low quality. Role of the humanitarians in the South-Sudan seed system. S-Sudan depending on seed distributions for more than 30 years.
- Different seeds have different values. Different seeds are supporting different cropping system. Not lumpsum all seeds.
- Imported seeds don't fit the ecological conditions of South Sudan. This results in low crop yields. However, imported seeds, given proper certification mechanisms etc., can complement local seed systems. Moreover, hybrids can play an important role for economic development in-country. Perhaps hybrids do not make sense for all farmers, but they can make an important and tangible difference for others. The important thing is to give farmers options and let them choose which seeds make most sense for them to use.

Other key challenges which emerged from the learning event discussion were:

- **Value addition to improved seed varieties.** How can you show farmers that better seed provides better yield (improving FNS and income) and thus showing its worth buying good seed. How to show this?
- **Lack of knowledge**: the farmers are not aware on how to use the improved varieties in most of the cases. There is also a need for improved understanding of current performance of formal/intermediary and informal seed systems - an integrated seed system development fit to local context and dynamics. In more remote areas there is a need for locally improved seed varies that fit agro-ecology.

5.5 Resilience Capacity

The South Sudan RIMA Baseline Re (FAO, 2021b), developed the resilience capacity index (RCI) "based on the four pillars of resilience (assets, social safety nets, adaptive capacity, and access to basic services)". The RIMA analysis indicated that the mean RCI of households surveyed during the baseline assessment was 35 with no significant variation between the /treatment (35.3) and non-beneficiary/control (35.2) groups. The Female-headed households have a lower resilience capacity (32.6) than the Male-headed households (36.7). The figure below shows the difference in RCI between the categories (FAO, 2021b).

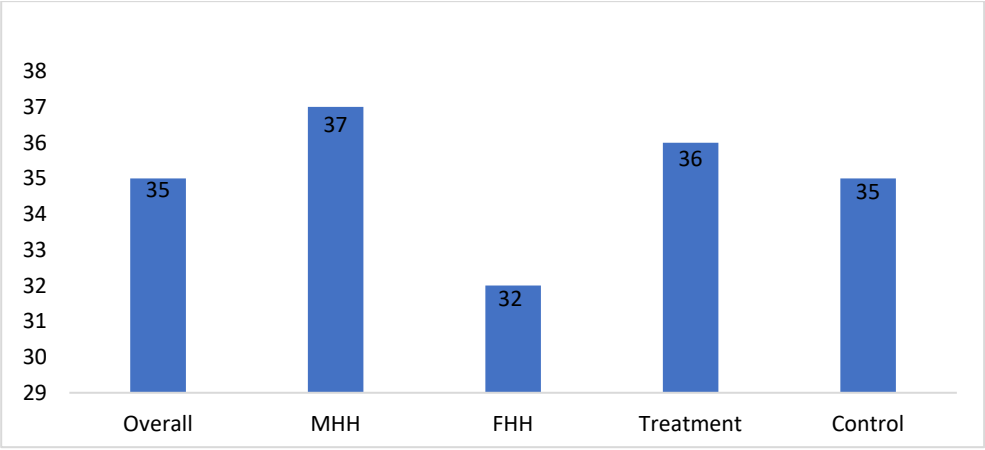


Figure 19 *RCI by gender and sample type.*
Source: South Sudan RIMA Baseline Report (FAO, 2021b).

Figure 20 below shows the spatial variation of RCI by county administrative units. As can be seen, "Yambio (RCI = 40), Ikotos (RCI = 40) and Torit (RCI = 38) are the counties with the highest resilience capacity. Magwi (RCI = 33) and Nzara (RCI = 30) have the lowest resilience capacity in comparison to the other counties" (FAO, 2021b).

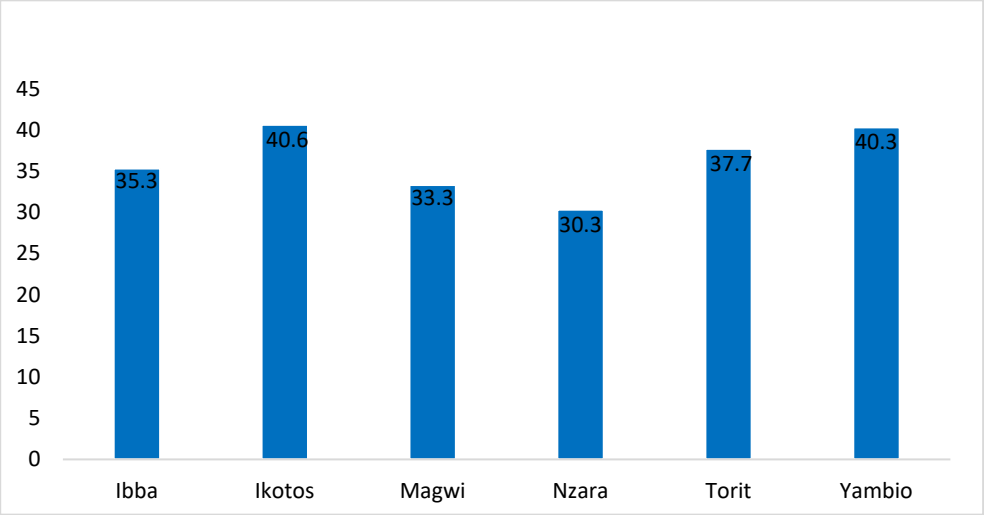


Figure 20 *RCI by county.*
Source: South Sudan RIMA Baseline Report, 2021.

The RIMA study also found that "the main shocks in the study area that had a significant negative effect on the resilience of households included: **unusually high prices of fuel, transport, and other non-food items (for consumers)" (**FAO, 2021b).

5.5.1 Resilience capacities emerging from CoP survey

The South Sudan Community of Practice (CoP) further identified resilience capacities that households within the seed system value chain need to deal with recurring shocks and stressors (Figure 21). These can be summarized into the following capacities:

- **Human capacities & assets**: knowledge and skills (on good quality seed production, post-harvest, marketing), access to labour.
- **Physical capacities & assets**: infrastructure (feeder roads), transport, storage facilities, tools, (clean) energy, clear water.
- **Financial/economic capacities & assets**: (access to) micro-finance and pre-finance (from banks), savings & credit.
- **Social capacities & assets**: being part of a group, seed traders association (STASS), or network.
- **Disaster-risk management strategies** (preparedness, mitigation, response, recovery) by institutions, government, communities, etc.
- **Natural capacities & assets**: e.g. access to land, water, forest etc.
- **Technology related capacities:** access to (market) information, internet, phone, radio.

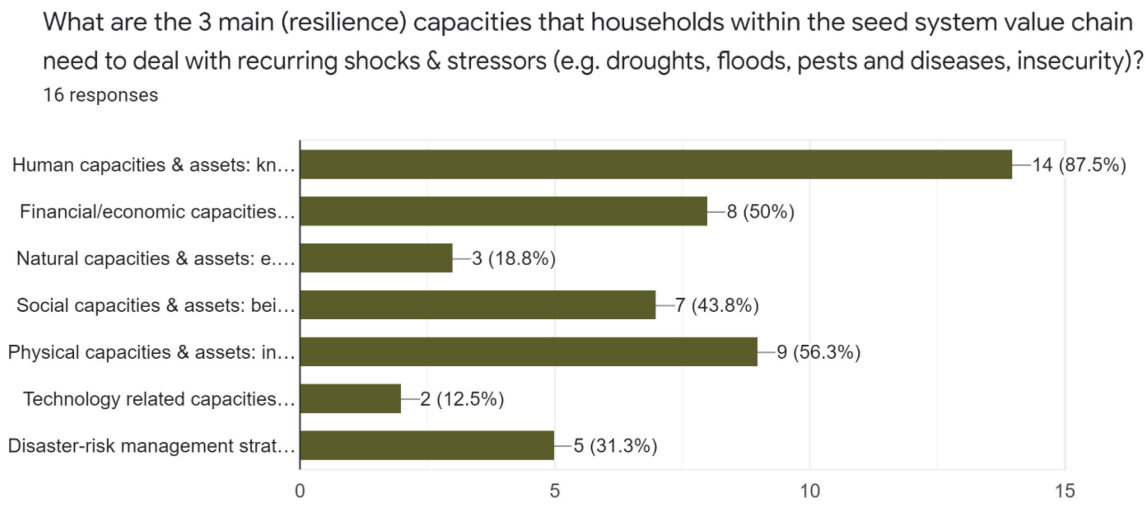


Figure 21 *Key resilience capacities of households (CoP Survey).*

5.5.2 Conclusions from RIMA study

The assessment generated a rich quantitative dataset with comparison between independent treatment and control samples which will provide a robust measurement of change in beneficiary welfare that could be attributed to the project interventions. The similarities between the beneficiary and non-beneficiary households in their basic profiles suggests that the assumptions governing the sampling, i.e. that the two populations are currently equivalent in their structure and characteristics providing a good starting point for measuring the impact of the project later on. Moreover, the assumptions (in the theory of change) have been confirmed by the findings of this assessment. **Access to seed is very crucial in diversification of food and livelihood sources which also contributes to decrease in negative effects of shocks on a household.**

Livelihood diversification enables household to generate income through variant sources and aid in solving reliance of household on one source of income. **From the survey results, households reported sale of agricultural produce, casual labour related to agriculture and non-agriculture to be main sources of income. This also validates the targeting criteria of the project in terms of focussing on seeds and agriculture** (adapted from FAO, 2021b).

6 Seed Sector

Summary: According to the Seed System Resilience Assessment (WCDI, 2020), there are three dominant seed systems in Ikwoto County: farm-saved seed system (74%)community-based seed system (16%) seed relief system (10%). The assessment also found that local varieties of crops are more resilient and well adapted to local conditions. The seed distributed in seed relief system were contaminated with new pests and diseases, of inferior germinating quality and distributed untimely. The poor road system makes the seed relief inaccessible to the local farmers communities. Adopting the concept of Community Seed Bank will be necessary for recovery purposes and conservation of the local genetic resources (WCDI, 2020). In addition, the South Sudan Multidimensional Context Analysis (FAO, 2021a), found that although there are efforts to increase availability of and access to quality seeds of adapted varieties by NGOs and FAO, local seed production is still low in South Sudan (about 2 000 MT), while a significant amount of seed is imported from neighbouring countries (mainly Kenya, Sudan and Uganda). Another challenge is that research is constrained by limited funding, lack of ownership of released varieties and poor access to foundation seed. The absence of clear seed policy and regulation is obstructing the seed system to fully function to its potential (FAO, 2021a).

6.1 Seed System Resilience Assessment (SSRA)

"The Seed System Resilience Assessment (SSRA) is a diagnostic and planning tool employed by the knowledge and learning component of the REsilience PROgramme (REPRO) implemented by FAO and partners in South Sudan. The SSRA has been developed by Wageningen Centre for Development Innovation (WCDI) and University of Juba in close consultation with the Integrated Seed Sector Development Africa initiative." "The report presents the key findings of the seed system resilience assessment and the multi-stakeholder dialogue conducted in September-October 2020 in Ikwoto County, South Sudan." Below is a description of the two assessment sites used for the study:

6.1.1 Assessment sites

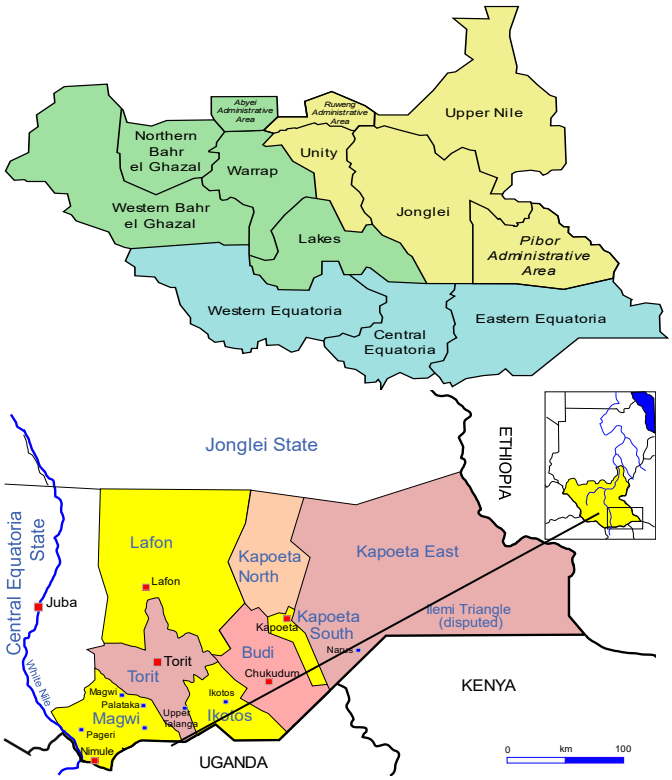


Figure 22 *Map of counties of Eastern Equatoria, South Sudan.*

"Ikwoto County lies in Eastern Equatoria state which shares borders with Torit and Budi counties, and also shares international boundaries with Uganda. The county's total land area is 3,531 sq km and has an estimated population of 84,649. The county comprises of low land and highland areas. The major livelihood is production of basic/staple crops such as sorghum and maize and livestock; and around 97% the crop production is self-consumed. The communities continue to face disputes because of uncontrolled grazing of livestock on crops, livestock stealing and land boundary issues. One of the major problems in the county is also related with water and health. The county consists of highly illiterate population with 63% of them never went to school. Most of the population do not seek for any coping strategy during crises while some 23% tend to cope by consuming the seeds and borrow cash for food. By the date of March 2021, 20% of the people relocated (15% IDPS and 5% Returnees) in the county reporting hunger as main reason. In Ikwoto only 36% and in Chahari only 52% of the population had access to nutritious food" (WCDI, 2020).

"For the assessment, Ikwoto Payam considered as cluster 3 and Chahari Payam considered as cluster 4. Ikwoto Payam is somewhat part of highlands with fertile land while Chahari Payam is lowland area which is an arid region. Both of the Payam have unique realities, Ikowoto with agro pastoralist reality and Chahari with border and refugee dynamics. Chahari Payam is one of the poorest and low food insecure region with high migration rate" (WCDI, 2020).

The below key findings and results were obtained from the SSRA report.

6.2 Key results from SSRA

Understanding the use of crop diversity, availability, and preference:

- "Over the period of last thirty years from 1990 to 2020 Ikwoto County suffered from major hazards such as drought, heavy rainfall, flood; Conflicts continuously caused by cattle raiding, rebels (SPLA, LRA, Ugandan troops, Split group), exchange of weapon; outbreak of livestock diseases such as East coast fever, Anthrax, genuine worm; disease and pest infestation for instance desert locust outbreak, fall army worm; and weed infestation (striga weeds). These adversely disturbed the livestock, crop, diversity and seed system. The farming communities' lost crops such as finger millet, pearl/bulrush millet and other staple crops, forcing them to exchange their livestock with the seeds/foods as a coping strategy.
- One of the major reasons of conflict is because of the cattle raiding, which is severe in dry seasons in search of grazing land and water.
- Some international and national agencies distributed seeds, provided training to the community livestock technician, water harvesting points for livestock.
- Lost crops/varieties in Ikwoto Payam: *Hyptis spicigera* (Nino), Bambara nut, Long Millet, Groundnut (Moru) and in Chahari Payam: Nyino (*Hyptis spicigera)*, Groundnut (Akabiri/ Abusere).
- There over twenty crops; four strategic fruits and more than thirty nine varieties of different field crops and tubers currently used by the farming communities in Ikwoto County level.
- In Ikwoto Payam most male preferred crops were Sorghum, Cassava and Sweet potatoes whereas female preferred Sorghum, maize, groundnut and cassava.
- In Chahari Payam most male preferred crops were Pearl millet, okra, cassava, groundnut and female mostly preferred sorghum, groundnut and cassava" (WCDI, 2020).

Analysis of climate resilient crops and varieties preference

- "The severe climatic hazards reported in Ikwoto Payam were drought, excessive rainfall (resulting into flood), high temperature, weed infestation, pest & disease infestation in both livestock and crop. These resulted into huge loss of crops and livestock which lead to years of famine and in response the communities took refuge to neighboring county Torit and country Uganda.
- According to the farmers preference the most resilient crops in Ikwoto Payam were Sorghum and maize and in Chahari Sorghum, cassava, pearl millet and cow pea; and the least resilient crops in Ikwoto Payam were watermelon and collards and in Chahari was collards (sukumawiki).
- It was found that the local varieties of the crops were more resilient, and this could be attributed to the fact that they are well adapted to the local conditions.

- Adopting the concept of Community Seed Bank will be necessary for recovery purposes and conservation of the local genetic resources" (WCDI, 2020).

Social seed network analysis

- "In Ikwoto Payam, 47.4% of the exchange is between seeds, 5.6% for free, 10.7% in exchange of labour, 6.5% is purchased, 6.2% is from vouchers/coupons and remaining is other mechanism.
- In Chahari Payam, Free exchanges represent 77.9% of transactions while cash purchase represents 18.3%. Only small percentage of exchange was between the crop's seeds.
- In Ikwoto Payam, the large portion of exchange is taken by sorghum 50%, followed by maize 13.7%, millet 11% and siimsim 7.1%.
- In Chahari Payam, Sorghum (37.3%), maize (12.2%) and groundnut (10.7%) are the three most exchanged crops in the network. They represent 60.2% of all exchanges.
- According to the social seed network analysis, the local farmers played a significant role in exchange of seeds (top 17 nodes with highest degree scores were all local farmers) in Ikwoto Payam. However, the largest nodes by far in terms of number of connections (degree score) were 'AVSI' (176) and the 'Chahari market' (120) in Chahri Payam.
- In Ikwoto Payam, Female (22.05%) usually preferred to exchange/barter seeds with different crops whereas cash purchase was higher for male (16.03%). 27.92% of the exchanges with this payam involve more than one type of crop.
- In Chahari Payam, there is no significant difference between genders and categories related to the number of exchanges they were part of. The proportion of Groundnuts' seeds given by market traders (32.59%) is higher than any other category" (WCDI, 2020).

Seed system Analysis

- "Three dominant seed systems were documented in Ikwoto County; farm-saved seed system, community-based seed system and seed relief system with estimated seed supply of 74%, 16% and 10% respectively. However, each of these systems do suffer from climatic hazards such as drought, flood, high temperature, erratic rainfall and introduction of new pests and diseases as result of undocumented seeds. The interaction between conflict and instability and climatic hazards resulted into loss of seeds of indigenous crops, reduction in yield, migration of farmers to refugee camps in Uganda, internal displacement because of famine and death associated with low yield and unbearable climatic condition.
- There is absence of clear seed policy and regulation which is obstructing the seed system to fully function to its potential. The seed distributed in seed relief system were contaminated with new pest and disease, of inferior germinating quality and distributed untimely. The seeds in the system were also deteriorated due to poor storage facilities. The poor road system which is usually destroyed by floods and insecurity due to conflicts makes the seed relief inaccessible to the local farmers communities." (WCDI, 2020).

Seed Value Chain analysis

- "In the farm seed system, the farmers within the county have enough seeds to fill the seed gap. Women take responsibility of seed selection and conservation of the seeds without any seed certification of the procedures. The indigenous knowledge is adopted from generation to generation and every process is done manually making it labour intensive and expensive. The challenges such as presence of seed borne pest and pathogens, poor storage facilities and lack of knowledge on safety measures impact the system. Farmers are not aware about existence of seed bills and the final draft of seed policy.
- In the community-based seed production system, the main challenges are: climatic hazards drought, flood, pest and diseases and poor varietal performance. Women takes the responsibility of selecting and maintain the vines, but some level of certification procedures is applied in this system. There is poor linkage between the plant breeders and seed extension. Farmers are not aware about the contribution of this seed system, how it should operate; whether their interest are captured in the draft seed policy and conservation of local genetic materials.
- In relief seed system, there is involvement of farmers and I/NGOs along with the distribution of free seeds there is introduction of new pest and diseases, distribution of fake seeds poor adaptability of the imported seeds and delay in the delivery of the seed." (SSRA, 2020).

6.3 Factors affecting participation in seed system VC activities

The survey undertaken in the CoP showed that the **positive factors** that stimulate households to actively engage in seed system value chain activities (in order of priority) are:

1. Technical competencies (e.g. in production, processing) (75%);
2. Access to and control over resources (gender based): finance (68.8%);
3. Access to and control over resources (gender based): inputs (62.5%);
4. Access to markets (56.3%);
5. Level of education of household members (50%);
6. Decision-making power of men and women at household level (37.5%);
7. Business competencies (37.5%);
8. Social factors: (cultural, religious), e.g. in relation to women participation (25%);
9. Access to land (25%).

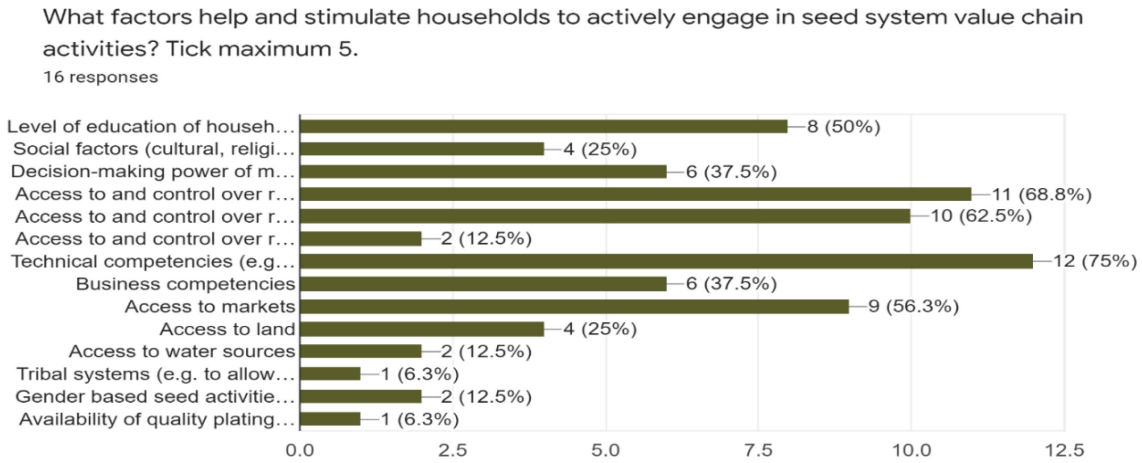


Figure 23 *Positive factors (CoP survey).*

The CoP survey also identified a number of **negative factors** which prevent participation in seed system value chain activities:

1. Access to markets (68.8%);
2. Access to and control over resources (gender based): finance (62.5%);
3. Technical competencies (e.g. in production, processing) (62.5%);
4. Level of education of household members (56.3%);
5. Access to and control over resources (gender based): inputs (50%);
6. Business competencies (43.8%);
7. Social factors: (cultural, religious), e.g. in relation to women participation (25%);
8. Decision-making power of men and women at household level (25%);
9. Access to and control over resources (gender based): transport (25%);

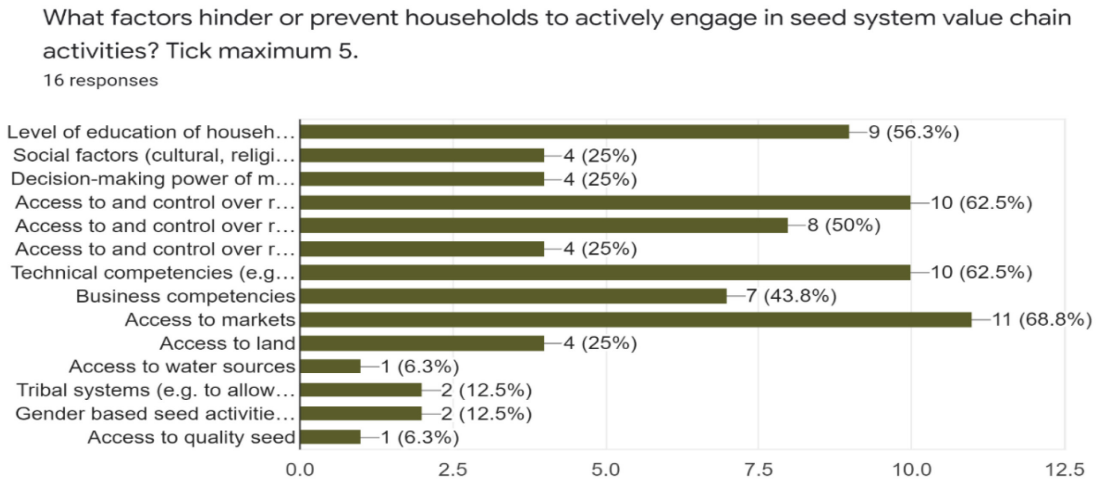


Figure 24 *Negative factors (CoP survey).*

7 Conflict and Stability

Summary: The main conflicts in South Sudan can be categorized into two main conflicts: (1) Conflict over natural resources: Particularly problematic in drier parts of the country such as Kapoeta in Eastern Equatoria State and during long dry seasons in the north-eastern part of South Sudan (Jonglei State); related to water, pastures, migratory routes, etc. These conflicts are continuously caused by cattle raiding, which is severe in dry seasons in search of grazing land and water. The other main conflict is (2) Ethnic and tribal conflict, which relates to problems between different ethnicities and tribes who have similar livelihood systems. These are further explained below.

7.1 Main types of conflicts

The South Sudan Multidimensional Context Analysis (FAO, 2021a), states that "conflicts are increasingly related to reduced availability of natural resources caused by land degradation, population pressure or climate variability, among other causes. Reduced availability of natural resources (such as grazing land and access to water) in turn increases the likelihood of conflicts erupting, as pastoralists temporarily migrate to areas where more resources are available. With increased competition over scarce natural resources, conflicts often erupt in violence, cattle raiding and disputes over divergent material claims" (FAO, 2021a).

Table 16 summarizes the various types of conflict prevalent in South Sudan. The categories represented in the table have been simplified, as in reality the nature of the types of conflict are frequently interrelated.

According to the South Sudan Multidimensional Context Analysis (FAO, 2021a), there are multiple effects of these conflicts, including:

- "...reduced access to and utilization of key assets such as grazing land, fields, forests, water bodies and markets."
- "…fear prevents people from undertaking normal production activities such as planting, harvesting, seeking pasture and trading."
- "…household food security is often affected to some degree. Access and utilization will return to a "normal" level once the population of the area assesses that it is sufficiently safe to re-engage in livelihood activities."
- "With the increase in intensity of war since 2013, increasing numbers of women have been abandoned by husbands and sons either joining the conflict, or fleeing to avoid being forced to join the conflict."
- "The decrease in the availability of male labour for production activities can have an impact on the food and cash earned by a household in a very short period."
- "Increased fragmentation caused by the current localized conflict situations, and interrupted social hierarchy, reciprocation and kinship networks caused by long-term displacement and scattered populations, are compounding factors that aggravate the situation even more." (FAO 2021a)

The report, also indicates that "FNS-REPRO will promote interventions that seek to establish or strengthen platforms for communities to mediate conflicts and develop joint agreements to prevent future occurrences" (FAO, 2021a). This will be practically done through the following activities:

- "By promoting resilience of food systems, sustainable development through the creation of economic and equal opportunities and through a conflict-sensitive approach, this programme will address the drivers of destabilization, forced displacement and irregular migration."
- "FAO will collaborate with Interpeace to promote conflict-sensitive programming and sustaining peace, while additional support and guidance may be sought by regional or country-specific institutions such as the Conflict Sensitivity Resource Facility South Sudan."

- "The programme will support efforts in improving land access and land tenure policy and regulation, particularly regarding pastoralists' rights and access to grazing land and water. It will also improve social networks and understanding of how climate may contribute to shifting dynamics of power between genders" (FAO, 2021a).

Table 16 *Types of conflict in South Sudan.*

Category of conflict	Description
Livelihood resources conflict	• Intra-ethnic, inter-ethnic. Particularly problematic in drier parts of the country such as Kapoeta in Eastern Equatoria State and during long dry seasons in the northeastern part of South Sudan (Jonglei State); related to water, pastures, migratory routes, etc. Includes nomadic peoples originating within South Sudan and from other countries. Usually localized but occurs in many parts of the country. Often reciprocal and ongoing. Low intensity. • Ongoing for centuries, throughout the two Sudanese civil wars, the Comprehensive Peace Agreement (CPA), to the present. Generally seasonal. • Affects production for short periods (unless repeated) in specific areas. • Deeply ingrained cultural and 'mindset/perceptions' of 'the other'. Livelihood systems have developed over time with and through this conflict.
Land conflicts	• Land disputes related to border demarcations, for example between the Madi and Acholi tribes in Eastern Equatoria. • Land conflicts triggered by increased migration and population pressure. • Disputes over land ownership and increased land grabbing by 'powerful people'. Often the widows and orphans are the most vulnerable to land grabbing.
Ethnic and tribal conflict	• Relates to problems between different ethnicities and tribes who have similar livelihood systems (and therefore need to access similar resources such as livestock and pasture), as well as across ethnicities who range from herders to farmers to hunter-gatherers. Historically determined by above-mentioned category of livelihood resources conflict. Often reciprocal and ongoing. Livelihood impacts are similar to above. • Ongoing for centuries, throughout the two Sudanese civil wars, the CPA, to the present.
Cattle raiding	• Opportunistic theft. Often has interethnic dynamic but also wider than that. Reciprocal and ongoing. Violent but limited in scale. Cultural and political drivers. Impacts related to the above. • Cross-border cattle rustling (South Sudan–Kenya; South Sudan–Ethiopia; South Sudan–Uganda). • Ongoing for centuries, throughout the two Sudanese civil wars, the CPA, to the present.
Second Sudanese Civil War	• Active 1983 to 2005. Political power and resource conflict, with religious and meta-ethnic ('African' – 'Arab') narrative. Complex, non-binary conflict included many cases of meta-ethnic and interethnic conflict and atrocities. Mostly less sophisticated, low-intensity militarily, but considered highly destructive to human life – between one and two million deaths from conflict, starvation and disease including the Bahr el Ghazal famine of 1998. High degree of aid pilfering by armed groups. Followed what is often called the 'First Civil War' of 1955–1972.

Category of conflict	Description
Interwar period	• Comprehensive Peace Agreement, 2005. Formation of new nation, 2011. • Interwar years included other forms of disruption – unprecedented volumes of cash flowing within as well as out of the country with insufficient accountability, corruption and misappropriation of aid; social networks and kinship mechanisms affected by introduction of cash and return of long-term refugees; and increased military spending on sophisticated weaponry. • Increase in availability of jobs, especially in urban areas. Minimal disruption to rural production. Cross-border trade mostly strong.
Post-Independence War with Sudan	• Oil war, active briefly in 2012. Ongoing tension regarding disputed Abyei. No significant impact on rural livelihoods.
South Sudan Civil War	• Commenced 2013 to the present. Active, increasing-decreasing intensity over time. Non-binary, interethnic political power struggle, military, national and local levels. Guerrilla and traditional battlefield with more sophisticated weaponry (e.g. helicopter gunships), but also scorched earth techniques, rape as weapon, etc. A new generation of soldiers who 'know only war'. The political nature of this war is heavily underpinned by long-term ethnic dimensions described above. Deeper fragmentation has continued; rogue paramilitaries, intracommunal clan conflict, opportunistic banditry and raiding. Government services (such as vaccination) curtailed.

Source: South Sudan Multidimensional Context Analysis (FAO, 2021a).

7.2 Impacts of Covid-19 on conflict and peace dynamics

In August 2020, the Resilience Team for Eastern Africa in collaboration with FAO's South Sudan, Sudan and Somalia Country Offices embarked on the process of identifying, documenting and analyzing the secondary impacts of the Covid-19 pandemic on conflict and peace dynamics, and more generally, the implementation of the FNS-REPRO. Discussions involving field-level personnel were held. These resulted in the development of action plans to guide the implementation of recommendations for adaptive programming. The text below highlights the key issues identified, and provides recommendations to strengthen the FNS-REPRO's contributions to sustainable peace and resilient livelihoods. The following are some of the impacts of the pandemic on peace and conflict dynamics in the country:

- **Resource-based conflicts: "**From the onset of the Covid-19 pandemic, conflicts between pastoralists and farmers intensified, and there were fears that the situation could escalate and potentially have implications on national level conflict dynamics. Dry seasons in South Sudan often trigger water and pasture related conflicts – this however worsened with the Covid-19 pandemic, with increased demand and greater competition over the aforementioned scarce resources." Adapted from FNS-REPRO Covid-19 Conflict Report (FAO, 2020b).
- **Communal conflicts and related insecurity: "**Cattle raids also increased due to the economic setbacks caused by the Covid-19 pandemic. In some locations, this resulted in intercommunal disputes and violence. Abduction of children at the time of raids has also been reported. Overall, insecurity linked to cattle raids, access to water and grazing land is said to have increased in most of the States where the FNS-REPRO is being implemented" (FAO, 2020b).

In a Covid-19 assessment report released by FAO in November 2020, the following observations were made:

- "More than 60% of households have indicated that these Covid-19 related measures have further created unusual social tensions and conflicts among different population groups which further exacerbates the already fragile food insecurity in the country" (FAO, 2020b).
- "This has been attributed to insecurity resulting from negative coping mechanisms, widespread intercommunal conflict which is mainly driven by competition for resources between and among

different groups including increased disputes between farmers and pastoralists resulting from limitations in pastoral migration due to Covid-19 movement restrictions" (FAO, 2020b).

- **Limitations to community peacebuilding initiatives:** "Due to the social distancing measure of preventing the spread of the Covid-19 virus, opportunities to convene and resolve emerging disputes could not be utilized. The work of formal and informal conflict resolution structures was therefore grossly hindered - this contributed to the escalation of incidences that could have otherwise been resolved" (FAO, 2020b).
- **Covid-19 and re-integration processes:** "Stigma, mistrust and a general fear caused by the pandemic has negatively impacted on the re-integration of Internally Displaced Persons (IDP) and returnees as host communities are hesitant to welcome new and returning persons for fear of the Covid-19 virus affecting them or getting worse in the case of already affected locations" (FAO, 2020b).
- **Economic constraints:** "The Covid-19 pandemic is instigating an increase in land sales in order to meet financial needs. However, this is aggravating conflicts at family and community levels since livelihoods in these areas are majorly dependent on land. Additionally, in the early months of the pandemic, restrictions on movements constrained access to internal and cross-border markets for both traders and buyers. This resulted in increased unemployment levels, and reduced household incomes for many" (FAO, 2020b).
- "As the country was still grappling with the socio-economic impacts of the Covid-19 pandemic, it was hit by severe floods, which caused massive displacement, damage to property and infrastructure, and hampered access to agricultural land thereby worsening the food security situation in Jonglei and Upper Nile states where the FNS-REPRO is being implemented" (FAO, 2020b).

7.3 FNS-REPRO programme recommendations

In order to mitigate the negative impacts of the pandemic on conflict and peace dynamics, programme personnel recommended the following (FAO, 2020b):

Western Equatoria (Yambio – Bangasu & RiRangu ; Nzara – Sakure & Nzara Center):

- Monitor the Covid-19 situation, and provide regular updates on emerging trends and potential impacts;
- Raise community awareness on water conservation processes including water harvests during rainy seasons;
- Review existing programme mechanisms for addressing disputes related to the management of land and other natural resources, and streamline new strategies (if necessary) so that impacts of Covid-19 are taken into consideration;
- Consult local government structures at county level on the use of land for public/community enterprises in order not to fuel tensions (adapted from FAO, 2020b).

Eastern Equatoria (Magwi – Obbo & Lobone; Torit – Torit West & Ifwotu)

- Integrate mechanisms to ensure land conflict management in on-going interventions;
- Form/re-activate natural resource management committees, and ensure that conflict prevention and management is one of their key roles;
- Train members of the natural resource management committees in conflict management;
- Identify land conflict zones to underline potential risks to programme delivery and appropriate risk mitigation strategies;
- Provide inputs to increase production, and improve household incomes;
- Promote inter-community dialogues, and awareness raising on the negative impacts of cattle raiding (adapted from FAO, 2020b).

Upper Nile (Melut – Melut; Melut – Gegar; Renk – South Renk; Renk – North Renk)

- Raise awareness on the Covid-19 pandemic through available radio stations - Nile FM 98.00 and News Agency /InterNESWS agency in Malakal;

- Consult with other relevant stakeholders to understand dynamics around access to farmland and fishing sites. IDP settlements and Malakal centres will be targeted among others (adapted from FAO, 2020b).

Northern Bahr Ghazal and Western Bahr Ghazal States (Aweil East –Mangok; Aweil East – Wunlang; Aweil West - Gomjuer Center; Aweil North - Aweil Center; Wau – Wau South ; Wau – Wau North; Jur River – Kangi; Jur River – MarialBai)

- Engage the youth, and community leaders in dialogues on peaceful co-existence, and raise awareness on production, market and business opportunities;
- Encourage pastoralists to increase production of livestock for business, and raise awareness on the importance of preventing livestock diseases;
- Link FNS-REPRO with on-going FAO livestock programmes, and leverage on vaccination activities as entry points for sensitization and engagement of youth, community leaders and women's groups in activities that enhance peaceful co-existence;
- Integrate crop and livestock production activities in ongoing interventions e.g. animal traction;
- Support local authorities in Greater Pibor Administrative Area in Greater Upper Nile and Jonglei states in promoting peace and security (adapted from FAO, 2020b).

Recommendations applicable to all project sites include the following:

- Ease monitoring and coordination of the programme's activities aimed at mitigating the impacts of the Covid-19 pandemic;
- Sensitise local communities on the Covid-19 standard operating procedures;
- Develop anticipatory actions in case identified conflict issues escalate and affect programming;
- Provide equal opportunities to communities in project sites, and ensure that beneficiary selection processes are inclusive and take care of vulnerable groups including displaced populations;
- Integrate land, pasture and water conflict management strategies in programme interventions;
- Train local and traditional leaders in the management of resource-based conflicts;
- Train the youth on entrepreneurship skills relating to seed business;
- Support community-level dialogue processes.

According to the FNS-REPRO Covid-19 conflict report (FAO, 2020b) the following activities have been implemented by REPRO in South Sudan in order to mitigate the secondary impacts of the Covid-19 pandemic:

- "The FNS-REPRO has set up hand washing points in communities where it is being implemented. The programme is also working closely with line ministries, implementing partners and other stakeholders to educate local communities on preventive, and impact mitigation measures."
- "In all project sites, 60% of project beneficiaries are youth. The programme is supporting them to come up with business ideas that are relevant to their contexts, and form groups. Youth involvement in project activities is creating employment which is expected to increase their resilience to shocks caused by the Covid-19 pandemic while also contributing to a reduction in incidences of youth-perpetrated disputes and conflicts."
- "Letters of Agreement with implementing partners emphasize the need to identify resource-based conflicts, and come up with measures to sustainably manage them. This is to ensure that FAO's contributions to sustaining peace are more explicit in the programme's processes and eventual outcomes."
- "Focused programmes in response to the Covid-19 pandemic are being undertaken for instance household gardening in Juba, Nimule, Wau, Aweil, Torit, Yambio and Maban towns in South Sudan. The interventions contribute to improved vegetable production, nutritional status and income of vulnerable urban and periurban households in light of COVID-19 pandemic."
- "In order to streamline the programme's adaptation to the Covid-19 challenges, FNS-REPRO Seed Assistants are coordinating interventions aimed at lessening the negative socio-economic impacts of the pandemic. Additionally, quarterly discussions are being held with the Conflict-Sensitive Programming Specialist and the Regional Programme Manager at RTEA to devise timely redress measures."

8 Gender and cross-cutting issues

Summary: There are a number of gender disparities present across South Sudan. The RIMA baseline study showed that male headed households (HHs) are better off than female HHs in a number of areas including: Resilience; Food & nutrition security (FCS) Agricultural assets index; Cultivated land; Income sources; Education. However, female HHs were found to be better off than male HHs in regards to: HDDS and access to safe water. The South Sudan Community of Practice (CoP) survey also revealed disparities in relation to access and control over resources. Results indicated how males dominate access to land, farm equipment, capital and education. Whereas, female youth have the least access and control to resources. The CoP survey also identified different gender roles in the seed system. Women more engaged in planting, processing, storing, marketing (slightly more than men) and selling. Whereas, men are more engaged in land preparation, bulking/multiplication, dealing with pests & diseases, transport, land negotiation and settling land disputes (both with older men). Overall, female-headed households are the most vulnerable socio-economic group as they are often excluded from the decision-making process in relation to access, use and control of resources.

8.1 Gender disparities in South Sudan

There are a number of gender disparities present across South Sudan. As stated in the South Sudan Multidimensional Context Analysis (FAO, 2021a):

- "South Sudan ranks in the bottom third of countries for the Human Development Index (HDI) life-course gender gap and women's empowerment." Women continue to face social barriers and inequalities that prevent them from realizing their full (economic) potential. Efforts to address this are often frustrated by the deep-rooted cultural barriers and prevailing levels of poverty. Before the current crisis, almost 80 percent of women had no education and girls were less likely to attend school based on gender norms dictating girls' domestic and caretaking responsibilities along with prospects for early marriage.
- "Cropping is the main livelihood for 71 percent of female-headed households, followed by wage labour (10 percent). At all levels of income, women earn lower wages than their male counterparts."
- "South Sudan has one of the highest maternal mortality ratios in the world, which is fed by the high number of child marriages due to bad tradition, low education levels and extreme poverty. Traditional patriarchal structures keep women out of community leadership, customary decision-making roles and decision-making roles within the household. One survey shows the civic and political participation of men at 84 percent compared with women at 15 percent. Women have limited income generating opportunities and their earnings are often seized by male family members" (FAO, 2021a).

Based on the South Sudan RIMA Baseline Report (FAO, 2021b), there are currently significant differences between male and female-headed households in terms of:

Resilience: Male headed households (HHs) (RCI=36.7) are more resilient than female HHs (RCI=32.6).
HDDS: Male HHs (HDDS=6.21) lower than female HHs (HDDS=7.01).
FCS: Male HHs (FCS=31.51) slightly higher than female HHs (FCS=30.71).
Agric Assets Index: Male HH (AAI: 0.28) slightly higher than female HHs (AAI=0.23).
Cultivated land: Male HHs (1.18) nearly double that of female HHs (0.64).
Safe water: Male HHs (0.38) lower than female HHs (0.48)
Education household head: Male HHs (2.87) higher than female HHs (1.79)
Income sources: Male HHs (2.46) slightly higher than female HHs (2.24)

"The above mentioned RIMA information will have to be analysed in combination with data from other sources as to make sense of available information that can answer the learning questions. Some of this sense making takes place in the Communities of Practice (CoPs) and some during the annual

sensemaking events that are held prior to the annual review and planning meetings of REPRO at country and regional level. As such the sensemaking of available documentation on the different learning questions can inform policy and practice of REPRO and other stakeholders" (FAO, 2021b).

8.1.1 Gender based violence

The South Sudan Multidimensional Context Analysis (FAO, 2021a), indicated the prevalence of gender based violence (GBV) in South Sudan: "Over 65 percent of women and girls have reported some form of physical or sexual assault in their lifetime10. Perpetration is typically driven by underlying gender and social norms, but it has also been used as a weapon of war by warring parties in the recent conflict."

The report also recognizes some key factors that influence gender-based violence (GBV):

- "The general normalization of violence, a breakdown of the rule of law and increases in opportunistic crime often linked to high levels of poverty. Violence and other risk factors that women face, are closely tied to the ways in which men have experienced violence, displacement and loss of livelihood assets."
- "The practices of child marriage, wife inheritance and abduction remain prevalent due to conflict, the country's deteriorating economic situation and harmful social norms and beliefs that perpetuate issues of GBV. Ultimately, GBV and sexual exploitation and abuse can undermine women's and girls' access to education, jobs and income, and ultimately the welfare of entire families" (FAO, 2021a).

8.2 Gender roles and disparities emerging from CoP survey

The results emerging from the CoP survey indicate that men are in control of all resources in gum arabic production. According to the CoP participants, women are slightly more involved than men when it comes to 'labour for seed production'. However, it is interesting to note that in general, women have slightly more access to resources than male and female youth (except in regards to access to education and training. The division of labour within a household can be seen in Appendix 4. Essentially, men dominate all activities. Furthermore, when it comes to any decision-making such as in regards to 'negotiating over land' or 'settling land disputes', women are hardly involved, and female youth are not involved at all.

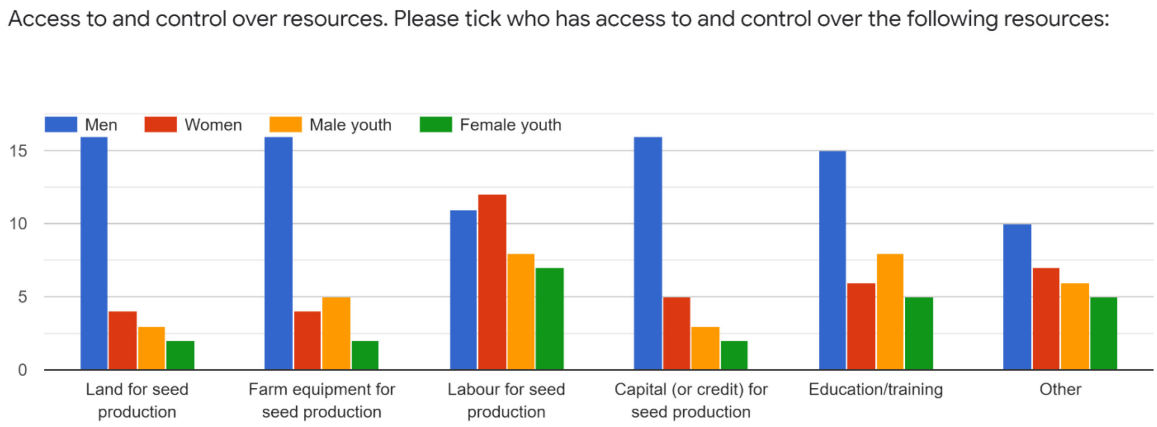


Figure 25 *Access to and control over resources (CoP Survey).*

8.3 What will FNS-REPRO do to be gender sensitive?

As stated in the South Sudan Multidimensional Context Analysis (FAO, 2021a), "FNS-REPRO will pay special attention to vulnerable groups that include both women and youth". This will be done through the following interventions and strategies:

- "The programme will give special attention to the participation of female heads of households to better their socioeconomic conditions. This will aid community women empowerment."
- "In addition, men will be targeted as agents of change, role models and partners in promoting positive change in the lives of women but also in their own lives (i.e. to promote positive masculine and feminine attributes such as ambition and compassion)".
- FNS-REPRO partners will focus on facilitating the mainstreaming of gender perspectives into the programme strategy and activities, to make them gender responsive and to contribute to achieving sustainable socio economic development in the region."
- "A greater inclusiveness in involving both men and women in participation, consultation and decision-making in the implementation of this programme will contribute to peaceful co-existence and ownership and will include culturally acceptable initiatives and use of local knowledge as well as narrow the gender divergence gap" (FAO, 2021a).

8.4 Challenges facing youth in South Sudan

It is worth noting that while youth are targeted in FNS-REPRO programming, not much information or data exists on the role of youth, for example, in the seed sector value chain. This is despite the fact that youth represent the majority of the population of South Sudan. Youth face a number of challenges largely surrounding unemployment and lack of livelihood opportunities, leading to poor coping mechanisms. Some of the key challenges facing youth are presented in the Challenge Fund for Youth Employment Report (2021), these include:

- 'Youth bulge': more than 60% of South Sudan's population is under 25 years old.
- Youth unemployment (15-24 years) = 18.6% in 2019, according to World Bank.
- Limited access to basic education, Technical, Vocational, Educational and Training (TVET).
- Limited access to health services and life skills mainly in reproductive health, alcohol, and substance abuse.
- Youth violence: cattle raiding and urban gangs.
- Fragmentation of youth structures and limited participation of youth in decision-making processes.

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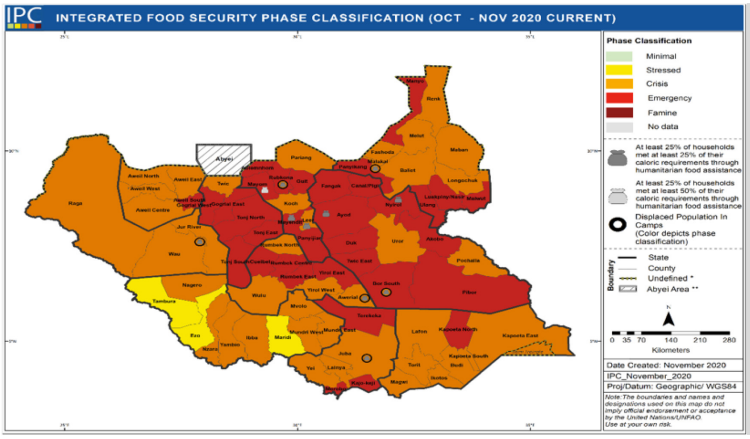
Appendix 1 IPC Analysis Oct 2020 – July 2021

IPC Acute Food Insecurity Situation for October-November 2020.



What is on the map?

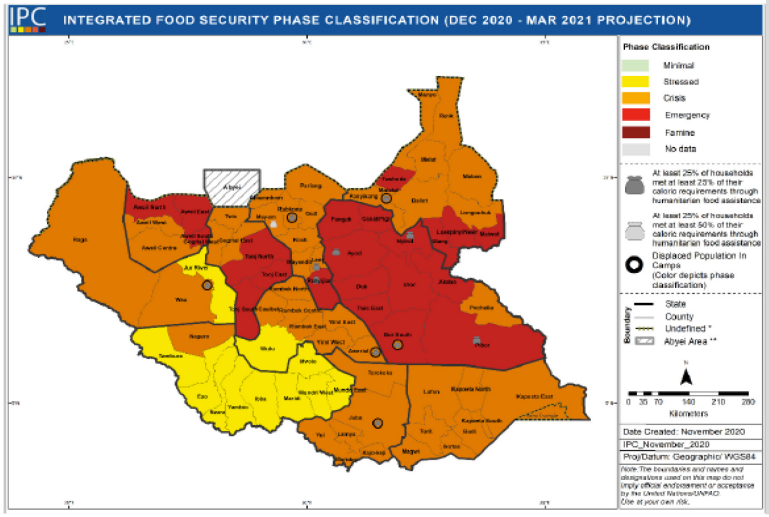
A total of 34 counties were classified in Emergency (IPC Phase 4) acute food insecurity, 41 were classified in Crisis (IPC Phase 3) acute food insecurity, and 3 were classified in Stressed (IPC Phase 2) acute food insecurity.

What is in the population table?

With the current levels of HFA (Humanitarian Food Assistance), 0.2% of the population (about 24,000 people) were in IPC Phase 5 (Catastrophe) acute food insecurity in Pibor County in Pibor Administrative Area, and Tonj North County in Warrap State; 17.4% of the population (about 2.10 million people) were in IPC Phase 4 (Emergency) acute food insecurity; and 35.0% of the population (about 4.22 million people) were in IPC Phase 3 (Crisis) acute food insecurity.

State	Population (NBS)	Minimal	Stressed	Crisis	Emergency	Catastrophe	% of Crisis, Emergency & Humanitarian Catastrophe
Central Equatoria	1,507,980	298,000	524,000	480,000	206,000	-	45.5%
Eastern Equatoria	1,097,900	277,000	364,000	348,000	109,000	-	41.6%
Jonglei & Pibor Administrative Area	1,982,222	230,000	369,000	724,000	648,000	11,000	69.8%
Lakes	1,180,247	190,000	334,000	447,000	208,000	-	55.6%
Northern Bahr el Ghazal	912,347	122,000	310,000	330,000	151,000	-	52.7%
Unity & Ruweng Administrative Area	1,096,229	114,000	279,000	500,000	204,000	-	64.2%
Upper Nile	1,459,701	183,000	430,000	612,000	235,000	-	58.0%
Warrap	1,262,489	215,000	349,000	426,000	259,000	13,000	55.3%
Western Bahr el Ghazal	646,729	106,000	273,000	199,000	69,000	-	41.4%
Western Equatoria	914,326	375,000	370,000	156,000	13,000	-	18.5%
Total	**12,060,167**	**2,110,000**	**3,602,000**	**4,222,000**	**2,102,000**	**24,000**	**52.6%**

IPC Acute Food Insecurity Situation for December 2020–March 2021.



What is on the map?

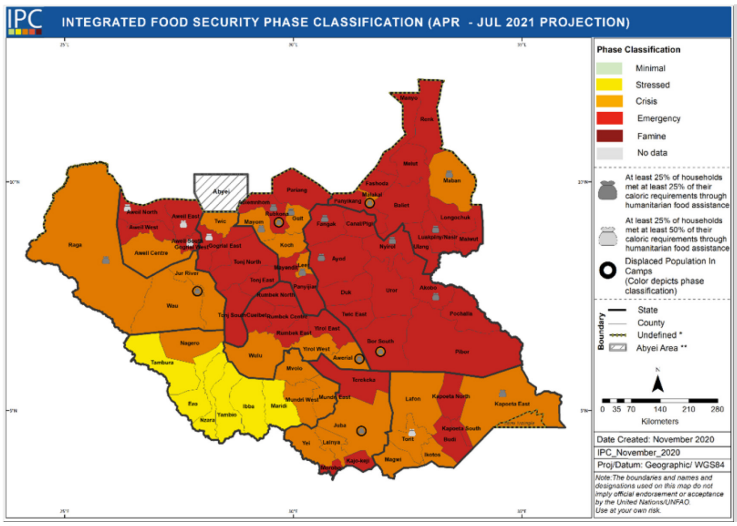
A total of 21 counties are classified in Emergency (IPC Phase 4) acute food insecurity, 46 are classified in Crisis (IPC Phase 3) acute food insecurity, and 11 are classified in Stressed (IPC Phase 2) acute food insecurity.

What is in the population table?

With the planned levels of HFA, 0.1% of the population (about 11,000 people) will likely be in Catastrophe (IPC Phase 5) acute food insecurity in Pibor County in Pibor Administrative Area; 14.8% of the population (about 1.78 million people) will likely be in Emergency (IPC Phase 4) acute food insecurity; and 33.4% of the population (about 4.02 million people) will likely be in Crisis (IPC Phase 3) acute food insecurity.

State	Population (NBS)	Minimal	Stressed	Crisis	Emergency	Catastrophe	% of Crisis, Emergency & Humanitarian Catastrophe
Central Equatoria	1,507,980	434,000	652,000	355,000	66,000	-	27.9%
Eastern Equatoria	1,097,900	290,000	392,000	341,000	76,000	-	37.9%
Jonglei & Pibor Administrative Area	1,982,222	139,000	291,000	822,000	719,000	11,000	78.3%
Lakes	1,180,247	249,000	434,000	384,000	112,000	-	42.1%
Northern Bahr el Ghazal	912,347	95,000	266,000	372,000	179,000	-	60.4%
Unity & Ruweng Administrative Area	1,096,229	139,000	351,000	466,000	140,000	-	55.3%
Upper Nile	1,459,701	179,000	423,000	634,000	224,000	-	58.8%
Warrap	1,262,489	244,000	372,000	417,000	230,000	-	51.2%
Western Bahr el Ghazal	646,729	154,000	303,000	153,000	37,000	-	29.4%
Western Equatoria	914,326	445,000	389,000	80,000	2,000	-	9.0%
Total	**12,060,167**	**2,368,000**	**3,873,000**	**4,024,000**	**1,785,000**	**11,000**	**48.3%**

IPC Acute Food Insecurity Situation for April-July 2021.



What is on the map?

A total of 45 counties are classified in Emergency (IPC Phase 4), 27 are classified in Crisis (IPC Phase 3) and 6 are classified in Stressed (IPC Phase 2).

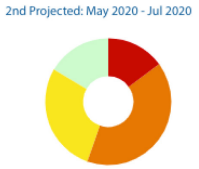
What is in the tables?

With the planned levels of HFA, 0.3% of the population (about 31,000 people) will likely be in Catastrophe (IPC Phase 5) acute food insecurity in Akobo County in Jonglei State, Aweil South County in Northern Bahr el Ghazal State, and Tonj North County in Warrap State; 20.5% of the population (about 2.47 million people) will be in Emergency (IPC Phase 4) acute food insecurity; and 39.3% of the population (about 4.74 million people) will be in Crisis (IPC Phase 3) acute food insecurity.

State	Population (NBS)	Minimal	Stressed	Crisis	Emergency	Catastrophe	% of Crisis, Emergency & Humanitarian Catastrophe
Central Equatoria	1,507,980	298,000	524,000	480,000	206,000	-	45.5%
Eastern Equatoria	1,097,900	277,000	364,000	348,000	109,000	-	41.6%
Jonglei & Pibor Administrative Area	1,982,222	230,000	369,000	724,000	648,000	11,000	69.8%
Lakes	1,180,247	190,000	334,000	447,000	208,000	-	55.6%
Northern Bahr el Ghazal	912,347	122,000	310,000	330,000	151,000	-	52.7%
Unity & Ruweng Administrative Area	1,096,229	114,000	279,000	500,000	204,000	-	64.2%
Upper Nile	1,459,701	183,000	430,000	612,000	235,000	-	58.0%
Warrap	1,262,489	215,000	349,000	426,000	259,000	13,000	55.3%
Western Bahr el Ghazal	646,729	106,000	273,000	199,000	69,000	-	41.4%
Western Equatoria	914,326	375,000	370,000	156,000	13,000	-	18.5%
Total	**12,060,167**	**2,110,000**	**3,602,000**	**4,222,000**	**2,102,000**	**24,000**	**52.6%**

IPC ANALYSIS October 2020–July 2021.

ACUTE FOOD INSECURITY								
CURRENT (OCTOBER-NOVEMBER 2020)			PROJECTED (DECEMBER 2020 - MARCH 2021)			PROJECTED (APRIL - JULY 2021)		
6.35M (52.6% of the population) People facing severe acute food insecurity (IPC Phase 3+) IN NEED OF URGENT ACTION	Phase 5	24 000 People in Catastrophe	**5.82M** (48.3% of the population) People who will be facing severe acute food insecurity (IPC Phase 3+) IN NEED OF URGENT ACTION	Phase 5	11 000 People in Catastrophe	**7.24M** (60% of the population) People who will be facing severe acute food insecurity (IPC Phase 3+) IN NEED OF URGENT ACTION	Phase 5	31 000 People in Catastrophe
	Phase 4	2 102 000 People in Emergency		Phase 4	1 785 000 People in Emergency		Phase 4	2 467 000 People in Emergency
	Phase 3	4 222 000 People in Crisis		Phase 3	4 024 000 People in Crisis		Phase 3	4 743 000 People in Crisis
	Phase 2	3 602 000 People in Stress		Phase 2	3 873 000 People in Stress		Phase 2	3 144 000 People in Stress
	Phase 1	2 110 000 People minimally food insecure		Phase 1	2 368 000 People minimally food insecure		Phase 1	1 675 000 People minimally food insecure

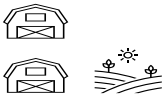


Phase	Population	%
Phase 1	1,935,000	17
Phase 2	3,285,000	28
Phase 3	4,735,000	40
Phase 4	1,745,000	15
Phase 5	0	0

Appendix 2 Crop Diversity Wheel from SSRA

Diversity wheel to map current availability and use of crop diversity

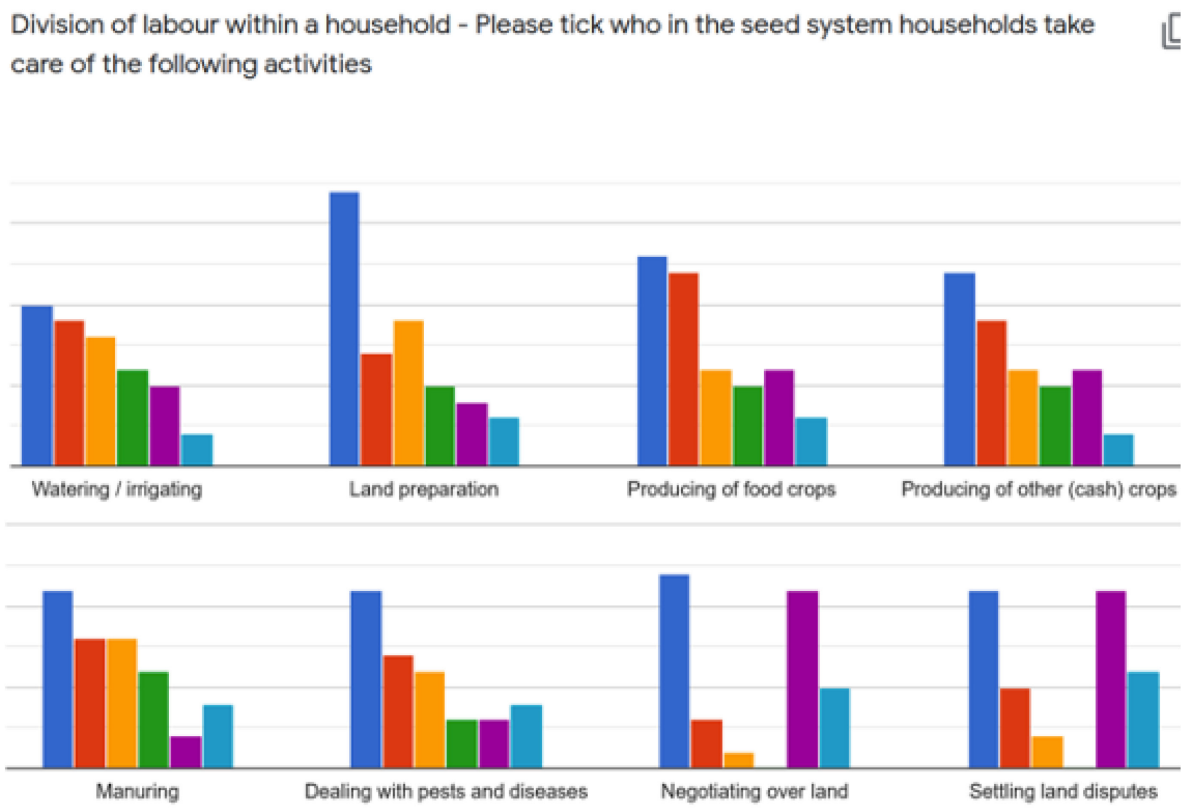
The crop diversity wheel tool was carried out to identify the different types of crops varieties that are currently available and also lost in Ikowoto Payam and Chahari Payam.

					
Location	**Many households and large areas**	**Many households and small areas**	**Few households and large areas**	**Few households and small areas**	**Lost crops**
Ikwoto Payam	Sorghum: Local var Dotung, Osingo and Okleweng, Aderi and Naluyak Sesame: Improved variety, MaizeGroundnut: Red Beauty Cowpea: Local variety (Notononngnogwoa)	Finger millet, Pearl millet, Soybean, Sweet potatoes: Improved var: Orange flesh Local vars: Babule; Nacercri and PalotakaCassava Cowpea Local varieties of Pumpkin(Nabaru and Nanajar)	Groundnut: local variety Lomide (extra early) and Gurgura (medium)Sesame, Local variety, Gura Pigeon pea and Sorghum Cucumber: Local Variety Nanyolili	Tomatoes: Local var. Cherry type, Eggplant: Improved var Black beauty, Carrots, Cabbage, Pumpkin, Common beans, Cowpea, Lemon, Jute mellow, Irish potatoes, Sukumawiki and Sunflower (unknown introduced from Uganda) Cassava: Improved var: TME 5	*Hyptis spicigera* (Nino), Bambara nut, Long millet, and groundnut (local var: Moru)
Chahari Payam	Sorghum: local variety (Aderi, Osingo, akongloi) Common beans Sesame: Anyim Cowpea Okra Groundnuts: Lokoya Sunflower Maize Cassava: local variety (Agwana Ondwato, Agwana Onolek)	Groundnut (Red Beauty) Okra Cassava Cowpea Tomatoes Sweet potatoes Egg plant Maize Sorghum (Akele and Serena)	Sorghum (Osingo local variety) Cow peas Sesame (Anyim) Figure millets Cassava (Agwana Onolek)	Pumpkins Lemon Pawpaw Sweet potatoes, Eggplant. Red pepper Maize Mango Guava Sukumawiki Banana Sunflower Groudnut(Otukoni)	Nyino (*Hyptis spicigera)*, Groundnut (Akabiri/ Abusere) Pearl Millet

Appendix 3 Summary of RIMA indicators

Variable	Overall	Beneficiary	Non-Beneficiary	MHH	FHH
RCI	35.16	35.26	34.96	36.68	31.98
FCS	31.25	31.43	30.87	31.51	30.71
HHDDS	6.47	6.82	5.72	6.21	7.01
Wealth Index	0.45	0.47	0.41	0.48	0.39
Agricultural assets index	0.26	0.26	0.26	0.28	0.23
Per capita TLU	0.08	0.07	0.09	0.08	0.06
Cultivated land	1.01	1.13	0.75	1.18	0.64
Transfers received	0.89	0.93	0.81	0.89	0.89
Number of associations to rely	1.28	1.38	1.06	1.28	1.27
Closeness index	0.08	0.07	0.10	0.08	0.08
Safe water	0.41	0.44	0.36	0.38	0.48
Improved cooking energy	0.06	0.04	0.09	0.06	0.05
Education of household head	2.52	2.59	2.37	2.87	1.79
Sources of income	2.39	2.43	2.31	2.46	2.24
Dependency ratio	0.76	0.75	0.77	0.76	0.74

Appendix 4 Division of labour



Source: Division of labour (CoP survey).

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