Food Systems Resilience Dialogue and Pathway Development

Western Bahr el Ghazal State – South Sudan

Gerrit-Jan van Uffelen, Julius Kaut, Pascal Debons, Tony Ngalamu, Samuel Zaki, Charles Chapman, Arnab Gupta

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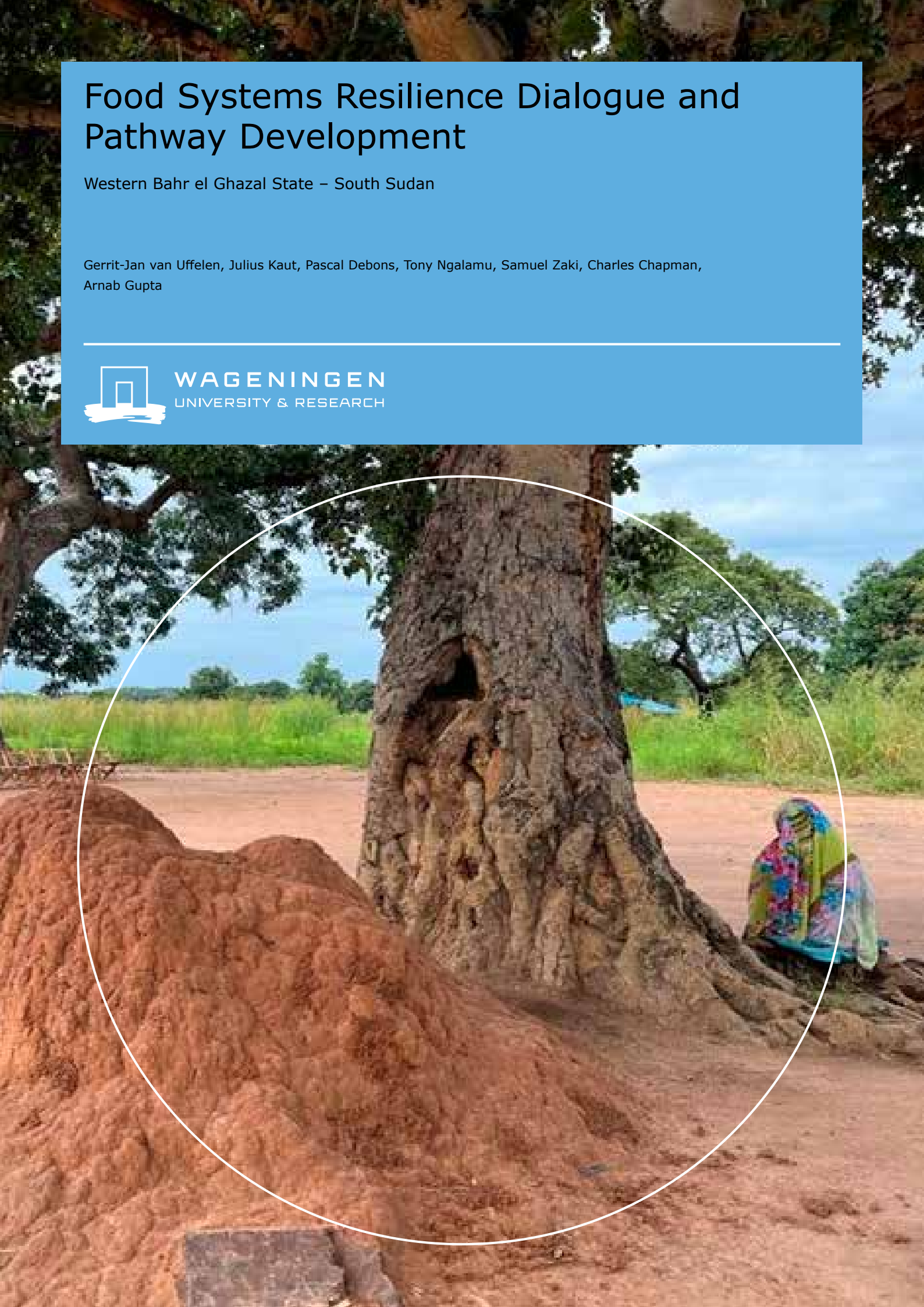

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Abstract
Food systems in Western Bahr el Ghazal (WBeG) State, South Sudan, are in dire crisis because of multiple shocks and stressors, persisting conflict and violence, climate change, and natural resource deterioration. However, building upon South Sudan's National Food Systems Dialogue, ample opportunities exist to build food systems resilience in WBeG through strengthening the capacity of people to produce and access nutritious and culturally acceptable food over time and space in the face of natural and/or man-made shocks and stressors.

This report provides a rationale for building food systems resilience in South Sudan by introducing its concept and operationalisation (part 1 of this report), presenting the main findings of the food systems resilience dialogue that took place in WBeG State (part 2), and introducing the main pathways identified to build food systems resilience in the State (part 3).

Food systems approaches are increasingly seen as a way forward to develop sustainable food systems in protracted food crisis as highlighted by the UN Food Systems Summit, the Global Network Against Food Crises and the Fighting Food Crises along the Nexus Coalition. It is therefore most opportune to act now by investing in an urgently needed transformation towards equitable, inclusive, and sustainable food systems for improved outcomes, in particular food and nutrition security in protracted food crisis contexts. For South Sudan this means, in line with the outcomes of its National Food Systems Dialogue, addressing four strategic challenges to transform the country's food systems: 1) strengthening the resilience of food systems in face of current and future shocks and stressors; 2) developing food systems that contribute to social cohesion and peace; 3) ensuring that food systems are based on sustainable use and management of natural resources and produce healthier diets, and; 4) promoting sustainable food supply systems through inclusive value chains and agribusinesses with an eye on youth employment.

Governance of food systems takes place at multiple levels and scales but transformation of local food systems will only succeed if communities, civil society organisations, small producers, farmers, and indigenous groups – with their local knowledge, and lived-in experiences – can shape how food is governed. WBeG's Food Systems Resilience Dialogue & Pathway Development (FoSReD-PaD) provides an approach to strengthen local governance of food systems for improved food systems resilience and outcomes.

The State-level Dialogue envisaged a total of nine pathways which together form a roadmap to transform WBeG's food systems to become more resilient; better serve the needs of all stakeholders (in particular smallholder farmers/agri-pastoralists and herders); and improve food and nutrition outcomes for all.

Keywords: food systems resilience, dialogue, protracted crises, food and nutrition security, South Sudan

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Photo cover: Julius Kaut

Disclaimer

The views and opinions expressed in this report are those of the authors and do not necessarily reflect those of Wageningen University, or any other parties involved in the making of this position paper.

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We would also like to acknowledge and highlight the important contributions of a wide range of persons representing government, UN organisations, I/NGOs, CSOs, youth and women's associations and the farmers' union, the private sector, knowledge institutions, and representatives of the communities in Western Bahr el Ghazal. Through participation in the Food Systems Dialogue they co-created a better understanding of the food systems in the State; developed a vision to build resilient food systems; and developed the pathways to achieving this vision. They also supported the establishment of a Food Systems Resilience Hub to guide and inform further work on building food systems resilience in the State.

We appreciate the logistical support provided by FAO, NRC, UNMISS, IOM and partners that enabled conduct of the dialogue in WBeG.

In particular, we would like to express our gratitude towards the South Sudan National Bureau of Standards and the WBeG State Government's Ministry of Agriculture and Food Security, the Ministry of Information, the Ministry of Co-operatives, the Ministry of Peacebuilding, and the Ministry of Gender, Children and Social Welfare.

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List of abbreviations and acronyms

AFDB	African Development Bank
ARG	Area Reference Group
ASPF	Agricultural Sector Policy Framework
CAADP	Comprehensive African Agricultural Development Programme
CAMP	Comprehensive Agricultural Master Plan
CLiMIS	Crop and Livestock Market Information System
CMDRM	Community Managed Disaster Risk Management
CSRF	Conflict Sensitivity Resource Facility
EWSKF	East West Seed knowledge Foundation
FAO	The Food and Agriculture Organization of the United Nations
FEWS-NET	Famine Early Warning Systems Network
FGD	Focus group discussion
FS4P	Food Systems for Peace
FNS	Food and nutrition security
FSR-TRC	Food Systems Resilience Training & Resource Centre
FoSReD-PaD	Food Systems Resilience Dialogue and Pathway Development
FS	Food systems
FSR	Food System Resilience
GFW	Global Forest Watch
GoSS	Government of South Sudan
HLPE	High Level Panel of Experts
IMF	International Monetary Fund
IOM	The International Organization for Migration
IPC	Integrated Phase Classification
JRM - DRMFSR	Joint Regional Masters on Disaster Risk Management and Food Systems Resilience
KII	Key informant interview
KIT	The Royal Tropical Institute
LRA	Lord's Resistance Army
NAPA	National Adaptation Plan of Action
NBS	National Bureau of Statistics
NFP	Netherlands Food Partnership
NSS	North-South-South
PfRR	Partnership for Recovery and Resilience
R-TGoNU	Revitalized Transitional Government of National Unity
RSRTF	United Nations Multi-Partner Trust Fund on Reconciliation, Stabilization and Resilience
SPLA	Sudan People's Liberation Army
SPLM-IO	Sudan People's Liberation Movement-in-Opposition
SUN	Scaling up nutrition
ToT	Training of trainers
TVET	Technical and vocational education and training
UNDRR	United Nations Office for Disaster Risk Reduction
UNHCR	United Nations High Commissioner for Refugees
UoWBeG	University of Western Bahr el Ghazal
UoJ	University of Juba
WBeG	Western Bahr el-Ghazal State
WCDI	Wageningen Centre for Development Innovation
WFP	World Food Programme
WUR	Wageningen University & Research

Concepts and definitions

Working definitions for the main concepts used in this document.

Protracted crisis
Macrae and Harmer (2004) define protracted crises as '*those environments in which a significant proportion of the population is acutely vulnerable to death, disease, and disruption of their livelihoods over a prolonged period of time*'.

Resilience
The United Nations Office of Disaster Risk Reduction (UNISDR) definition of resilience: '*The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions'*.

In relation to the Rome Based Agencies' focus on agriculture, food security and nutrition, resilience is essentially about the inherent capacities (abilities) of individuals, groups, communities and institutions to withstand, cope, recover, adapt and transform in the face of shocks.

Resilience is the capacity of a system to withstand shocks and external pressures while maintaining its basic structure, processes, and functions. Resilient systems have buffering capacity, which enhances their ability to adapt to changes, learn from past mistakes, and recover from disturbances (Schipanski, et al., 2016).

Food systems
A food system includes all processes, actors and activities associated with food production and food utilisation, from growing and harvesting to transporting and consuming. A food system also encompasses the wider food environment, from markets and trade to policies and innovation. (Van Berkum, Dengerink and Ruben, 2018[1]; Steenhuijsen Pieters et al., 2021[2]).

A food system operates in and is influenced by social, political, cultural, technological, economic and natural environments (HLPE, 2014; Global Panel 2016; HLPE, 2017).

Sustainable food systems
A sustainable food system is a food system that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised (FAO, 2014[3]). This means that:
- it is profitable throughout (economic sustainability);
- it has broad-based benefits for society (social sustainability); and
- it has a positive or neutral impact on the natural environment (environmental sustainability).

Food system resilience
In short: the capacity of food systems to deliver desired outcomes in the face of shocks and stressors (Steenhuijsen Pieters et al., 2021).

Food systems resilience is the capacity of people to produce and access nutritious and culturally acceptable food over time and space in the face of natural and/or man-made shocks and stressors (Schipanski, et al., 2016).

[1] https://library.wur.nl/WebQuery/wurpubs/fulltext/451505
[2] https://edepot.wur.nl/549244
[3] http://www.fao.org/3/ca2079en/CA2079EN.pdf

Executive summary

This report deals with the transformation of South Sudan's food systems and consists of three interrelated parts.

Part 1 focuses on the concept of food systems resilience and its operationalisation in South Sudan. This part is of key interest to policy makers and senior staff of agencies interested in food systems resilience and its promotion in South Sudan. Part 2 presents the key findings of the state-level Food Systems Resilience Dialogue in Western Bahr el Ghazal state. This is of key interest to state-level actors that seek a better understanding of how food systems function and produce outcomes. Part 3 presents the pathways that were devised on the basis of the Food Systems Dialogue and that together present a roadmap to build the resilience of food systems in WBeG. This is of key interest to practitioners, policymakers and donors.

1. BUILDING FOOD SYSTEMS RESILIENCE

South Sudan's protracted food crisis

Most of South Sudan has been classified by FEWSNET in crisis situation (IPC 3 and above) since early 2016. Currently 60% of South Sudan's population suffers from severe food insecurity, and there is alarming levels of both chronic and acute malnutrition in children under five. In June 2021 the Famine Early Warnings Systems Network categorised South Sudan as a country of highest concern.[4]

After decades of civil war, South Sudan's food systems are in dire crisis because of multiple shocks and stressors, persisting conflict and violence, climate change, and natural resource deterioration.

In almost every state there is civil insecurity and mass displacement. There is a breakdown of social cohesion among communities, with the weakening of family structures and limited access to education contributing to highly vulnerable youth. Rural and urban markets and supply systems have been disrupted and are poorly integrated into the national economy; transport and communication infrastructures are virtually absent. Government services are often limited and government presence poor, particularly in the more remote and conflict-affected areas.

As a result crop production has decreased; local livelihoods and coping mechanisms have been marginalised or seriously eroded. Much of the population is dependent on humanitarian food assistance; food insecurity has become worse in recent years despite growing humanitarian aid. There has been a widening grain deficit, and the diversity and quality of food is poor.

Addressing these problems is difficult on a national level because of economic mismanagement, weak institutions, trade and market constraints, and lack of capacity to get financial support.

South Sudan's National Food Systems Dialogue

Food systems approaches are increasingly seen as a way to improve food system outcomes and sustainability, in order to deal with competing priorities and address the complex relationships that exist between components of food systems (Tendall, et al., 2015).

South Sudan has seen an interesting National Food Systems Dialogue with important initiatives such as *Catalysing the Sustainable and Inclusive Transformation of Food Systems*, jointly worked on by the South Sudan Ministry of Agriculture and Food Security (MAFS), the EU, and FAO.

[4] https://fews.net/east-africa/south-sudan

Four critical strategic challenges/ issues emerged from South Sudan's National Food Systems Dialogue to transform the country's food systems. For each of these, the national dialogue proposed key food system levers as areas of action.

1. How can food systems be more resilient to human-made and natural shocks, so there is food security for all and less dependence on humanitarian assistance?
Transformative levers: strengthen governance and institutions; enhance communities' food production resilience, and; facilitate the transportation of food products.

2. What development of food systems could best contribute to peace consolidation, stability and territorial balance?
Transformative levers: enhance governance on food system-related features; strengthen conflict-resolving processes (by developing community-based peace-building mechanisms); build capacity for enhanced land tenure security; and protect and invest in human capital, particularly women and youth, and social cohesion through community-driven development interventions.

3. How can our rich natural resources produce a large spectrum of food for a healthier diet without hampering these resources and in an equitable manner between actors in food systems?
Transformative levers: strengthen farmer organisations and cooperatives; support responsible public and private investment; enhance awareness and knowledge related to nutrition and healthy diets; enhance the nutrition of infants and children; and develop animal value chains.

4. How can the development of value chains and agri-businesses contribute to the employment of youth and women, economic stabilisation, diversification, and equitable wealth?
Transformative levers: enhance access to financial resources for small to medium businesses; and promote business development.

2. WBeG FOOD SYSTEMS RESILIENCE DIALOGUE

Local governance of food systems
Governance of food systems takes place at multiple levels and scales. However, transformation of local food systems will only succeed if communities, civil society organisations, small producers, farmers, and indigenous groups – with their local knowledge, and lived-in experiences – can shape how food is governed.

WBeG's Food Systems Resilience Dialogue & Pathway Development (FoSReD-PaDs), facilitated through the Partnership for Recovery and Resilience, provides a method to strengthen local governance of food systems and promotes community driven initiatives for improved food systems resilience and outcomes.

Addressing food system resilience in Western Bahr el Ghazal State
The **Food Systems Resilience Dialogues and Pathway Development (FoSReD-PaDs)** method was designed to strengthen food system resilience at local level by the University of Juba, with the support of Wageningen University, by the invitation of the Partnership for Recovery and Resilience. It involved the WBeG State Government, the Area Reference Group, UN agencies, NGOs, private sector and representatives of the communities making up WBeG's population.

In order to tackle the manifold challenges and grasp the existing opportunities, participants saw the following principles as critical to the state's food systems transformation.
- Local ownership and leadership
- A multi-stakeholder approach and sustainable transformation
- The triple nexus: combining humanitarian relief, development and peace-building
- Focus on the most vulnerable people
- Mainstream risk-sensitive approaches
- Aim for sustained impact.

As the first exercise of the food systems resilience dialogue, participants were asked about their perspectives on the national dialogue critical challenges for WBeG food systems transformation. It was important to establish how the national priorities resonated in the WBeG context and whether they captured local reality. There was alignment between the national and state dialogue, because the dialogue participants found the key national challenges to be relevant and could be adapted to state level. The pathways were therefore grounded in the national challenges and recommendations.

The dialogue set out, mapped and prioritised the following.

1. Food system boundaries, activities, value chains, dynamics of production and consumption, transport, employment and so on. This meant that everyone had a common understanding of the food systems involved.
2. Major food system drivers, both socio-economic (such as markets, policy, science and technology) and environmental (like uneven distribution of water, land use, and climate change).
3. Risks and resilience capacities. Conflict was perceived to be the most serious hazard impacting food systems in WBeG, followed by drought and floods; resilience and coping mechanisms were mapped out.
4. Food and nutrition security outcomes. The dialogue participants discussed the food system socio-economic and environmental outcomes (acute food insecurity, acute malnutrition, and environmental /socio-ecological outcomes like deforestation, bush-burning and overgrazing).

On the basis of this collaborative work to develop a joint understanding of the food systems, pathways were developed for WBeG.

3. WBeG FOOD SYSTEMS RESILIENCE PATHWAYS

In total nine pathways were envisaged to build the resilience of WBeGs food systems. In essence the pathways provide a roadmap for the transformation of WBeG food systems to become more resilient and better serve the needs of smallholder farmers/agri-pastoralists and herders across the State.

The pathways

I. Strengthen food systems resilience governance

1. Strengthen FSR governance in WBeG to create ownership and develop a regulatory framework set of principles to guide the development of FSR as required to deliver upon the four national food systems priority areas (see pathways 4-7).
2. Promote coordination, information sharing (digital inclusion), and catalyse partnerships in developing FSR.
3. Guide and support the transformation from humanitarian assistance to developing FSR.

IIa. Develop food systems resilience – address strategic challenges

4. Strengthen the resilience of food systems in the face of human-made and natural shocks (ensuring food security for all reducing the need for humanitarian assistance).
5. Build food systems resilience that contribute to social cohesion and peace - develop food systems for peace.
6. Build food systems resilience that maintains/develops natural resources and produce a variety of food for delivering healthy diets.
7. Develop inclusive value chains and agri-businesses maximising employment for youth.

IIb. Develop a resilient seed sector

8. Promote integrated seed systems development in WBeG as foundational to healthy food systems performance.

III. Learning, capacity building and evidence-based programming

9. Facilitate learning, build capacities of public and private institutions, and encourage evidence-based programming for effective food systems transformation.

The Food Systems Resilience Hub

To facilitate the transformation of the State's food systems, in line with the national priorities set by the National Food Systems Dialogue, the State Government has established a Food Systems Resilience (FSR) Hub. The FSR Hub is in essence a multi-stakeholder partnership bringing together people and institutions dedicated to developing food systems resilience in WBeG. It acts as a neutral and independent body; to ensure this, it was created by the University of WBeG and will be facilitated with support from University of Juba and, if required, Wageningen University.

The FSR Hub performs four interrelated functions:

- Promotes building FSR through dialogue (part 2 of this report)
- Develops shared FSR vision and pathways (part 3 of this report)
- Decides on action plans and guides collaborative implementation
- Facilitates evidence-based adaptive programming and learning.

The FSR Hub has delivered on the first two functions (the dialogue and the development of pathways to build FSR). The next functions are the development of action plans and facilitation of evidence-based programming and learning.

Ultimately the FSR Hub will contribute to the vision that *'the peoples of Western Bahr el Ghazal State produce and access sufficient nutritious and culturally accepted food over time and space, in the face of man-made and/or natural shocks and stressors and live in peace and harmony with each other and with nature.'*

Introduction to the report

Background and purpose of the report

This report presents the key findings of the 'Food Systems Resilience Dialogue and Pathway Development' (FoSReD-PaD) in Western Bahr el Ghazal (September/October 2022), facilitated by the University of Juba (UoJ) and its partner Wageningen University, under the auspices of the Partnership for Recovery and Resilience. Part 1 of this report introduces the concept of food systems resilience and its operationalisation in the case of South Sudan, and in particular for the State of Western Bahr el Ghazal. Part 2 of this report presents the main findings of the dialogue, and part 3 the pathways that are required to build food systems resilience in WBeG.

The State-level Dialogue was designed in such a way that it aligned with the key findings and recommendations of South Sudan's National Food Systems Dialogue.

The dialogue took place under the responsibility of the Partnership for Recovery and Resilience (PfRR) and was made possible with contributions by FNS-REPRO, FAO and NFP.

The State-level Dialogue

The State-level Food Systems Resilience Dialogue was designed to build upon the ideas and priority areas set by the national dialogue, and to co-create pathways to develop WBeG food systems resilience with relevant state-level actors and stakeholders.

In consultation with partners the objectives of the State-level Dialogue were set as follows:
- Develop a shared understanding of local food systems, including their resilience in fragile settings.
- Co-create pathways and action plans for sustainable food system transformation.
- Strengthen food system governance and collaboration through a multi-stakeholder partnership.

In total around 55 participants representing local government, UN agencies, NGOs, private sector, academia, CBOs, civil society and community representatives participated in the FoSReD-PaD co-creation process from September 28th to October 7th 2022 in Wau and Raga towns. For a full list of participants, see Appendix 1; for workshop schedules, Appendix 3.

A State-level validation workshop was organised during which all three parts of this report were validated.[5]

The Food Systems Resilience Hub

As part of the FoSReD-PaD process a State-level Food Systems Resilience Hub was created at the University of WBeG which will be facilitated by University of Juba with, if required, support by Wageningen University.

The FSR Hub is in essence a multi-stakeholder partnership involving people and institutions with a key interest in developing food systems resilience in WBeG State. In essence the FSR Hub performs four interrelated key functions:

[5] The workshop organised to validate findings of the Food Systems Resilience Assessment (FoSRA) on 7th Dec 2022 at Royal Caste Hotel, Wau, WBeG brought together 60 stakeholders (*41 male and 19 female*). Participants included the Minister of Information/ Acting Min. of Peacebuilding representing the State Governor; the Minister of Agriculture; Commissioners for Wau and Jur-river counties; DGs from various ministries; the PfRR ARG member; and representatives from academia, UN agencies, I/NGOs, CSOs, women's associations, and the private sector.

- Initiating and promoting FSR - within the Partnership for Recovery and Resilience (the FSR dialogue – part 2 of this report).
- Joint planning – identification of key issues and opportunities for building FSR (the FSR pathways – part 3 of this report).
- Collaborative action – development of detailed action plans.
- Evidence-based adaptive programming – creating a learning culture and documentation of good practice and policy recommendations on building FSR.

The Food Systems Resilience Hub, through its different functions, connects the three main components of this report.

The timeline of the dialogue process

The WBeG dialogue took place in September – October 2022 co-creating a shared understanding about the State's food systems, a vision for the transformation of the State's food systems and the development of in total nine pathways to build the resilience of the State's food systems.

The one-day validation workshop took place in December 2022 validating the key findings of the Food Systems Dialogue (part II of this report), the pathways (part III of this report), and the main concepts and operationalisation of building FSR in South Sudan (part I of this report).

Next steps are the development of detailed action plans and collaborative action, and evidence-based adaptive programming.

Structure of the report

The report is structured in three interdependent parts:

- Part 1 presents the background to and describes the importance of building food systems resilience by introducing food systems thinking, its main concepts and its operationalisation in the case of South Sudan.
- Part 2 present the main findings of the WBeG State-level Food Systems Dialogue.
- Part 3 presents the pathways that were co-created by the dialogue participants based on envisioning a food systems-resilient WBeG.

Each part of the report can be read as an independent document. Part 1 is of particular interest to policy and senior decision makers with regard to the transformation of South Sudan's food systems. Part 2 and 3 of the report are of key interest to actors and stakeholders in Western Bahr el Ghazal that are interested in the key findings of the dialogue and the pathways required to realise the vison of resilient food systems in WBeG.

Part I: Building food systems resilience in South Sudan: concept and operationalisation

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Part I of this report sets the foundation and rationale for conducting the Food Systems Resilience Dialogue and Pathways Development in Western Bahr el Ghazal – South Sudan.

Part I contains the following chapters:

1. Introduction and background
2. How to build food systems resilience
3. South Sudan's food systems transformation at national level
4. Food systems transformation at state level

1 Introduction and background

The United Nations Food Systems Summit – healthier, sustainable and equitable food systems
In 2021, the UN convened the Food Systems Summit[6] as part of the Decade of Action to achieve the Sustainable Development Goals (SDGs) by 2030. The Summit launched bold new actions to deliver progress on all 17 SDGs, each of which relies to some degree on healthier, more sustainable and equitable food systems.

The summit envisioned five Action Tracks,[7] We focus here on Track 5, as it is specifically aimed at building food systems resilience to vulnerabilities, shocks and stressors. This track works to ensure the continued functionality of sustainable food systems in areas that are prone to conflict or natural disasters; the ambition is to ensure that all people within a food system are empowered to prepare for, withstand, and recover from instability. Action Track 5 also aims to help people everywhere participate in food systems that, despite shocks and stressors, deliver food security, nutrition and equitable livelihoods for all.

The Summit established the UN Food Systems Coordination Hub[8] to act as the catalyst inside the UN system in relation to food systems and the 2030 Agenda. The Hub coordinates and brings together food systems knowledge and expertise from diverse constituencies to support national progress on the SDGs in response to country priorities.

Fighting Food Crises along the Nexus Coalition – food systems and peace
The UN Food Systems Summit gave rise to The Fighting Food Crises along the Humanitarian-Development-Peace Nexus Coalition[9]. Given that the increase in world hunger over the last seven years has been driven primarily by violent conflict and the impact of climate change, the coalition aims to contribute to ending hunger through pursuing peace and unleashing the potential of sustainable food systems to enhance the prospects for peace.

The Global Network Against Food Crises – sustainable food systems in protracted food crises
The Global Network Against Food Crises (GNAFC),[10] founded at the 2016 World Humanitarian Summit, is an alliance of humanitarian and development actors working together to prevent, prepare for, and respond to food crises and support the Sustainable Development Goal to End Hunger (SDG 2).

The Network seeks to reduce vulnerabilities associated with acute hunger; achieve food security and improved nutrition; and promote sustainable agriculture and food systems, using a '3x3' approach. This approach involves working at the global, regional and national levels to support partnerships within existing structures and improve advocacy, decision-making, policy and programming along three dimensions.

- **Dimension 1 - understanding food crises.** This aims to build greater consensus and promote evidence-based food security and nutrition analyses and reporting in order to strengthen the collection, quality and coverage of food security and nutrition data and analysis and inform decision-making and action.
- **Dimension 2 - leveraging strategic investments** in food security, nutrition and agriculture. This advocates for 'fit for purpose' financing and for improved coherence between humanitarian, development and peace actions ('the HDP nexus') to build resilience to shocks and promote longer-term self-reliance.
- **Dimension 3 - going beyond food.** This aims to foster political uptake and coordination across clusters/sectors to address the underlying multi-dimensional drivers of food crises, including environmental, political, economic, societal and security risk factors.

[6] https://www.un.org/en/food-systems-summit
[7] https://www.un.org/en/food-systems-summit/action-tracks
[8] https://www.un.org/sites/un2.un.org/files/2022/07/hub_faqs_en.pdf
[9] http://www.fightfoodcrises.net/hdp-coalition/en/
[10] http://www.fightfoodcrises.net/

GNAFC's 2022 report highlighted the importance of strengthening food systems by focusing on and promoting the following key elements.[11]

- **Key element 1 - sustainability:** acting at scale to move towards integrated approaches to prevention, anticipation, and improved targeting, to sustainably address the root causes of food crises and fragile food systems.
- **Key element 2 - smallholder agriculture:** this must be prioritised as a frontline humanitarian response to overcome access constraints and as a solution for reverting negative long-term trends.
- **Key element 3 - structural changes in external finance distribution:** humanitarian assistance should be reduced over time through longer-term development investments tackling the root causes of hunger.
- **Key element 4 - coordination:** strengthening a coordinated approach to ensure that humanitarian, development and peacekeeping activities are delivered in a holistic and coordinated manner.

Box 1 *The WBeG FSR Dialogue*

The WBeG FSR Dialogue

The dialogue participants found these four key elements to be relevant in WBeG, with two additions/comments (in italics).

- Greater prioritisation of smallholder agriculture (element 2) - dialogue participants emphasised the need to include lead farmers, co-operatives and the private sector and to strengthen linkages between them.
- Longer-term development investments (element 3) - dialogue participants preferred the term 'development' to include both short- and longer-term development investments.

[11] https://www.fao.org/newsroom/detail/global-report-on-food-crises-acute-food-insecurity-hits-new-highs/en

2 How to build food systems resilience

2.1 Why food systems and resilience?

In a world of growing complexity and uncertainty, the security of food supplies is threatened by many factors. These include multiple processes of global change (e.g. climate change, rapid urbanisation, population ageing), unexpected shocks (e.g. natural disasters, financial and political crises), and unexpected responses of food systems themselves to these processes and events.

Food systems approaches are increasingly seen as a way to improve food system outcomes and sustainability, in order to deal with competing priorities and address the complex relationships that exist between components of food systems (Tendall, et al., 2015).

Food security remains elusive for many populations worldwide. Greater emphasis on food systems resilience could reduce these vulnerabilities. This, according to Schipanski, requires integrated strategies that together foster food systems resilience, including (a) integrating gender equity and social justice into food security initiatives, (b) increasing the use of ecological processes rather than external inputs for crop production, (c) fostering local and regionalised food distribution networks and waste reduction, and (d) linking human nutrition and agricultural production policies (Schipanski, et al., 2016). Enhancing social–ecological links and fostering adaptive capacity are essential to cope with short-term volatility and longer-term local-global change pressures.

For the sake of simplicity we understand *food systems resilience* to mean the capacity of food systems to deliver desired outcomes in the face of shocks and stressors (de Steenhuijsen Piterset al., 2021).

Box 2 *Food systems resilience defined*

Food systems and resilience

Food systems
A food system includes all processes, actors and activities associated with food production and food utilisation, from growing and harvesting to transporting and consuming. A food system also encompasses the wider food environment, from markets and trade to policies and innovation. (Van Berkum, Dengerink and Ruben, 2018; de Steenhuijsen Piters et al 2021).

Resilience
UNISDR definition: The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.
https://www.unisdr.org/files/26462_8.annex2andacronyms.pdf

Rome Based Agencies (focus on agriculture, food security & nutrition): Resilience is essentially about ... the inherent capacities (abilities) of individuals, groups, communities and institutions to withstand, cope, recover, adapt and transform in the face of shocks.

Resilience is the capacity of a system to withstand shocks and external pressures while maintaining its basic structure, processes, and functions. Resilient systems have buffering capacity, which enhances their ability to adapt to changes, learn from past mistakes, and recover from disturbances (Schipanski, et al., 2016).

Food systems resilience
In short: the capacity of food systems to deliver desired outcomes in the face of shocks and stressors (de Steenhuijsen Piters et al., 2021).

The capacity of people to produce and access nutritious and culturally acceptable food over time and space in the face of natural and/or man-made shocks and stressors (Schipanski, et al., 2016).

2.2 Protracted crisis situations: characteristics, limitations and constraints

When building food systems resilience, it is important to consider the constraints and implications when doing so in the context of protracted crises.

Protracted crises are heterogeneous but are nevertheless defined by several characteristics (Maxwell, et al., 2011), which all apply to South Sudan:

- **Protracted crises are defined by both time duration and magnitude.** Many have lasted for 30 years or more and are characterised by extreme levels of food insecurity.
- **Few protracted crises are traceable to a single, acute shock**. Conflict is often one cause, but climatic, environmental, or economic factors may also be causes. Unsustainable livelihoods are both a consequence and cause of protracted crises.
- **Intervention mechanisms are often weak.** Development donors are often not willing to make significant investments, and private sector engagement is often lacking or dominated by informal or illegal economic activities that extract wealth but do little to invest in sustainable improvements. Hence, market-led or technology-driven development is extremely difficult to sustain in protracted crises.
- **Protracted crises remain on the humanitarian agenda** in part because of poor food security or nutritional outcomes, and in part because humanitarian agencies are often the only available vehicle for intervention under the prevailing architecture of international assistance.
- Protracted crises often occur in contexts in which **states are incapable of or unwilling to provide basic services or infrastructure** or are downright predatory toward the population. In short, protracted crises, and the populations caught in them, fall between standard categories of intervention and are often forgotten.

Taking a food systems approach in such situations should consider those characteristics which requires dealing with complexity and competing priorities, to improve food system performances and outcomes.

2.3 The importance of local governance

The transformation of food systems
In general there is agreement that it is critical to act now by investing in an urgently needed transformation towards equitable, inclusive, and sustainable food systems for improved outcomes, in particular food and nutrition security in protracted food crisis.

This transformation will only succeed if communities, civil society organisations, small producers, farmers, and indigenous groups – with their local knowledge, and lived experiences – can shape how food is governed.

The need for greater focus on local governance of food systems
While the governance of food systems takes place at multiple levels and scales there are, even in the most fragile contexts, innovative mechanisms and tools that can empower local communities to shape food systems in ways that address hunger, food and nutrition security, and related concerns (Resnick, 2022).

In places where local democracy is relatively new, creating support for a culture of inclusion and accountability inevitably requires a high degree of learning, patience, and realism. According to Resnick (2022), the local milieu—whether neighbourhood, district, or municipality— remains the main level at which citizens engage with the state and where they are most directly affected by food policy and service delivery performance. Harnessing their experiences and mobilising their voices is therefore pivotal for meaningful food system transformation that ultimately benefits all people, especially the most vulnerable.

Key reasons for the importance of local food system governance include: (Resnick, 2022)

1. Farming and livestock rearing methods, consumer preferences and natural resource management practices are often grounded in local cultural traditions, historical experiences, and agroecological conditions.
2. As the world urbanises and cities grow, even in protracted food crisis contexts such as South Sudan, they present their own unique food security challenges that may require particular food system goals in the face of national level aspirations.
3. The general trend towards decentralising government functions has given greater authority to local governments over key elements of local food systems.
4. Informal sources of governance, such as traditional authorities, may have greater credibility with local communities; national government may be unable to exert power, authority or legitimacy, particularly in fragile states.
5. A local perspective on food system governance can better reflect food system priorities responding to local needs and preferences.

It is because of this importance of local governance, that this dialogue for WBeG was set up.

Box 3 *The WBeG FSR Dialogue: the importance of local governance*

The WBeG FSR dialogue: the importance of local governance

The dialogue participants agreed with and thereby validated all the key reasons for the importance of local food system governance, adding the following observations/nuances to reasons 1,3 and 4 (in italics) as follows.

- Grounding of rearing methods, consumer preferences and NRM practices (reason 1) – *there are other important influencing factors (that need to be grounded), in particular policies, external financing, security and political dynamics, as well as exposure to improved farming and marketing techniques and learning pathways (including capacity building).*
- Decentralising government functions (reason 3) – *it is key that delegation of responsibilities to local authorities should be matched/balanced by availing resources to local level.*
- Informal sources of government (reason 4) – *traditional authorities should be included in such discussions, formulation, and the implementation of policies at the local level; the national and local government should be recognised and should not be bypassed even in fragile states.*

Bringing local communities into food system governance

There are several mechanisms through which communities at local level can engage in food system governance and programming. These include: (adapted from Resnick, 2022):[12]

- Use local platforms that bring many stakeholders together to contribute their perspectives on food system challenges, interventions and policy options.
- The use of subnational data on food system dimensions, such as agriculture, nutrition and food security data to inform local decision making and programming (the type and use of data extend well beyond Resnick's recommendations for improving data on budget and expenditure tracking).
- Use science and technology to track performance at the local level.
- Incentivise local governments and other local actors to perform better through peer reviews and comparisons.

[12] https://www.globalhungerindex.org/issues-in-focus/2022.html

Box 4 *The WBeG FSR dialogue: Bringing local communities into food system governance*

The WBeG FSR Dialogue

The dialogue participants validated these mechanisms while adding the following (in italics).

- Nutrition and food security data *which could be managed by government (or other actors in the public domain such as knowledge and research institutions).*
- *The transformation of food systems for improved outcomes at the local level. Introducing appropriate new and modern farming practices should be promoted and accepted by local communities first, including local government, before being introduced on a larger scale by the state government.*
- Incentive local government – *incentives should be explained properly and publicly, and local government staff salaries should be paid timeously and according to the scale. Local government should not be provided incentives to carry out their functions; rather, resources should be provided by the State Government to local-level authorities for the implementation of formulated policies. Partners can complement the operationalisation of such policies.*

Positive experiences and lessons learned

Positive experiences on local food system governance include: (Resnick, 2022)

- Multistakeholder platforms[13] (joint learning, planning and evidence-based programming) and performance tracking have demonstrated some successes such as improved service delivery, more inclusive budgeting processes, and the adaptation of laws, all of which indirectly affect food access and quality.
- Learning, planning and accountability tools/platforms may not directly improve food and nutrition security.
- Exercising participation and oversight empowers communities to demand government responsiveness while increasing their awareness of their entitlements and the means to access them for better food and nutrition security.

At the same time, several key lessons emerge from these experiences (Resnick, 2022):

- Local governments often have fewer resources and technical staff than their central government counterparts, so it is important to ensure that sub-national food system governance efforts match/are realistic to conditions and capacities on the ground.
- In fragile and protracted crisis settings, community efforts may be the only realistic channel for action on local food system governance. In such situations partners can learn from such efforts and facilitate the scaling up of such measures to other communities.
- Local leadership is pivotal to the sustainability of local interventions. Civil society organisations play a pivotal role, including 'champion' nongovernmental stakeholders who can ensure momentum on food policy.
- In situations of weak or poor governance, high levels of displacement, and a lack of security, initiatives to enhance accountability will benefit from incorporating a sufficiently long timeline and flexibility in funding arrangements for development partner planning and engagement with communities.

Resnick (2022) raises several potential concerns about such platforms, including whether they create unrealistic expectations from participants about policy outcomes and whether they simply reinforce existing power asymmetries in the food system.

Overall, while the governance of food systems takes place at multiple levels, there are, even in the most fragile contexts, innovative mechanisms and tools that can empower local communities to shape food systems in ways that address hunger, food and nutrition security, and related concerns. This requires creating support for a culture of inclusion and accountability and therefor a high degree of learning, patience, and realism. Harnessing the experiences of local communities and mobilising their voices is therefore pivotal for meaningful food system transformation that ultimately benefits all people, especially the most vulnerable (Resnick, 2022).

[13] They are especially popular for promoting citizens' entitlements to the right to food (see Box 2.1).

3 South Sudan's food systems transformation at national level

This section summarises key findings of the policy brief Catalysing the Sustainable and Inclusive Transformation of Food Systems.[14]

3.1 Profile of South Sudan

Country profile of South Sudan
South Sudan is the newest country in the world and has a very young and diversified population with over 65 tribes. Endowed with a large territory with rich resources, it has the lowest population density in the world, comprising between 13 and 18 people per sq. km. The land, water, and mineral resource base of South Sudan are substantial to its relatively small population.

After decades of civil war, South Sudan food systems are currently in dire crisis due to multiple shocks and vulnerabilities: persisting conflict and violence, climate change, and natural resource deterioration.

With only 4% of the potentially arable land cultivated, and a vibrant diversity of livelihood zones and climates, South Sudan can feed itself and its neighbours. There is ample scope for the expansion of the area cultivated. Currently, most crop cultivation is done on small farms, producing a little marketable surplus. Effective management and development of these resources offer the prospect of sustained strong economic growth for an extended period.

Macro drivers of South Sudan's food crisis
The macro drivers of South Sudan's food crisis reside beyond food systems themselves.
- Macroeconomic mismanagement, slow pace of the peace agreement implementation, widespread violence, weak institutional and governance frameworks, and the lack of capacities to acquire financial support, making the transformation of the current food systems difficult.
- Sustained improvement in the provision of infrastructure services will require the development of private sector capacities.
- Reduced livelihood options and the prevailing economic downturn have compromised the purchasing power of most poor households.
- The prevailing macroeconomic challenges and structural constraints to trade and markets are not expected to ease in the near term and will drive price inflation.

South Sudan's food insecurity
A combination of factors has had significant direct impact on food insecurity:
- Food insecurity is driven by displacement, decreased crop production, disrupted distribution systems and markets.
- Rural and urban markets are poorly integrated into the national economy due to a virtual absence of transport and communication infrastructures and civil insecurities.
- Food security and nutrition have deteriorated over the recent years despite growing humanitarian assistance, mainly in food aid. South Sudan has seen a widening grain deficit in recent years. The diversity and quality of food are poor.

However, food system transformation could have a tremendous economic role and job-multiplier effect and could contribute to peace consolidation.

[14] *EU, FAO and CIRAD (2021). "Catalysing the Sustainable and Inclusive Transformation of Food Systems."*

Characteristics of food systems at state level

Although South Sudan is a very diverse country, the situation in most of its states can be characterised as follows:

- A breakdown of social cohesion among communities.
- Limited government presence (as local authorities and law enforcement personnel have been absent) particularly in more remote and conflict-affected areas.
- Limited government services (such as health and education) because of insecurity and limited resources.
- Conflict and insecurity has resulted in the marginalisation, and in some areas the destruction, of local livelihoods and coping mechanisms.
- Prolonged conflict has rendered a significant proportion of the population food-insecure and often dependent on humanitarian assistance.
- Mass displacement (both internally displaced people as well as refugees) and returns of civilians strongly affect food production, availability and access.
- The high vulnerability of youth, including the weakening of family structures and limited access to education (including skill development), has contributed to a large pool of at-risk youth. In some areas the youth are also regarded with suspicion by authorities.

3.2 South Sudan's National Food Systems Dialogue

South Sudan's food systems

South Sudan's food systems are increasingly in crisis after decades of war and conflicts. The causes of food crises are often multifaceted, with several factors reinforcing each other. The most common primary driver is conflict. In June 2021, the Famine Early Warnings Systems Network (2021) categorised South Sudan as a country of highest concern.[15]

Despite growing humanitarian assistance and imports, South Sudan's food security and nutrition situation has been steadily deteriorating, particularly in recent years, with a current peak of people suffering from severe food insecurity reaching 60% of the population coupled with alarming levels of both chronic and acute malnutrition in children under five years of age.

Catalysing the sustainable and inclusive transformation of food systems.

In preparation for the September 2021 UN Food System Summit, the South Sudan Ministry of Agriculture and Food Security (MAFS), the EU, and FAO jointly worked on the initiative Catalysing The Sustainable and Inclusive Transformation of Food Systems. The initiative also benefited from South Sudan's national dialogue in preparation for the September 2021 Food System Summit.

Central to the initiative was the assessment of South Sudan's food systems performances, looking at four sustainability goals: 1) Food security, nutrition and health, 2) inclusive economic growth, jobs and livelihoods; 3) sustainable natural resource use and the environment, and 4) territorial balance and equity. Sustainable food systems served as an entry point for 12 of the 17 SDGs.

3.3 Strategic challenges to South Sudan's food systems transformation

As part of South Sudan's Food Systems Dialogue, four critical strategic challenges/ issues emerged that were seen as fundamental to transform South Sudan's food systems. For each of these key challenges to achieve South Sudan's key sustainable food systems goals, the National Dialogue proposed key systemic levers as areas of action, and the State-level Dialogue adopted these levers to ensure alignment and consistency with the national dialogue findings and recommendations.

[15] https://sdgpulse.unctad.org/trade-agriculture-biotrade/#Ref_XZWZ5JGF

3.3.1 Building food systems resilience in face of natural and human-made shocks/stressors

South Sudan's National Food Systems Dialogue – key sustainability question 1: How can food systems be more resilient to human-made and natural shocks so that (i) it can ensure food security for all and (ii) communities and the country are less dependent on humanitarian assistance?

First transformative lever: improve governance and institutional strengthening to enable a multisector approach to food system development.[16]

Second transformative lever: enhance communities' food production resilience through technical and institutional innovations.[17]

Third transformative lever: facilitate the transportation of food products from areas with excess supply to high-demand areas, in particular the growing urban centres.[18]

3.3.2 Developing food systems for peace

South Sudan's National Food Systems Dialogue - key sustainability question 2: Which type of development of food systems could best contribute to peace consolidation, stability and territorial balance?

First transformative lever: enhance governance on food system-related features that could mitigate the impact of conflict and contribute to resolving some of the underlying causes of conflict.

Second transformative lever: re-balance territorial development and strengthen conflict-resolving processes by developing community-based peace-building mechanisms; these should allow evidence-based dialogue and peacebuilding and negotiated community development programming for peaceful coexistence among communities through equitable access to natural resources.

Third transformative lever: build capacity for enhanced land tenure security.

Fourth transformative lever: protect and invest in human capital, particularly women and youth, and social cohesion through community-driven development (CDD) interventions.

[16] The National Dialogue proposed five key elements for this first transformative lever: 1) Commitment to the Revitalized Transitional Government of National Unity (R-TGoNU) to restore and consolidate peace, security and stability is a pre-requisite. 2) Governance mechanisms in place for food systems and food security and nutrition (FSN). Capacity strengthening, coordination of institutions and mutual accountability is essential for food system transformation. 3) Improved macro-economic management, with trade and taxation policies in place. 4) The political will to allocate the necessary financial and human resources to implement the existing investment framework of the country - the Comprehensive Agriculture Master Plan (CAMP). 6) Reduced over-reliance of South Sudan on food importations from the Region and improved food quality and safety standards on imported foods.

[17] The National Dialogue proposed three key elements for this second transformative lever. 1) In face of absence of formal extension services and poor physical infrastructure, strengthen pastoral field schools (PFS), community animal health workers (CAHWs), farmer field schools (FFS), and business field schools (BFS). 2) Develop, propagate and adopt climate-resilient technologies and investments (in particular in face of recent floods and large-scale displacement). 3) Strengthen community seed production as a means to develop self-reliance and avoid the current dependency on donations or uncontrolled imports (extremely variable quality and questionable adaptation to local conditions).

[18] The National Dialogue proposed three key elements for this third transformative lever. 1) Invest in road infrastructure. 2) Policies to enable trade and transportation of domestic food from excess areas to deficit areas 3) Invest in (e.g., solar powered) cold storage, which will reduce the costs as well as losses of agricultural produce, particularly perishables, and improve storage quality.

3.3.3 Developing food systems for sustainable use and management of natural resources, and healthier diets

South Sudan's National Food Systems Dialogue – key sustainability question 3: How can these rich natural resources be seized to produce a large spectrum of food for a healthier diet without hampering these resources and in an equitable manner between actors in food systems?

First transformative lever: strengthen farmers' organisations (FOs) and cooperatives.

Second transformative lever: support responsible public and private investment that is respectful of the environment and enhance governance and equity in accessing productive natural resources.

Third transformative lever: enhance awareness and knowledge related to nutrition and healthy diets.

Fourth transformative lever: enhance the nutrition of infants and children.

Fifth transformative lever: develop animal value chains.

3.3.4 Developing food systems for agri-business and value chain development

South Sudan's National Food Systems Dialogue – key sustainability question 4: How can the development of agri-business contribute to youth and women employment, economic stabilisation, diversification, and equitable wealth?

First transformative lever: enhance access to financial resources for small to medium businesses, to enable them to flourish.

Second transformative lever: promote business development, to enable small-scale producers and food system entrepreneurs to cater for emerging markets in urban areas.

3.4 Critical conditions to transform South Sudan's food systems

South Sudan's food systems are in deep crisis, vulnerable to multiple shocks (conflicts, climate, natural disasters), and inefficient in productivity and competitiveness. At present it cannot fulfil their roles in terms of food security, poverty reduction, equity, job creation and peace consolidation.

Nevertheless, there are multiple opportunities to transform the food systems; the country has a young population on a vast territory and is endowed with a wide range of natural resources.

In order to tackle the manifold challenges and grasp the existing opportunities, the following elements are seen as critical to the country's food systems transformation.

- Peace consolidation and nation-building should take precedence and contribute to the process of building credible, functioning and accountable government structures.
- Policy reforms, innovations and responsible investments that can break the negative feedback loops (between a weak enabling environment, lack of incentives and finance for investment, and low agricultural / food production) that all keep the agri-food systems locked into underperformance.
- Strengthen the productivity and incomes of smallholder farmers, targeting the rural areas where the vast majority of them live and the agricultural sector on which their livelihoods depend on.
- Ensure that humanitarian assistance, development processes and peacebuilding are working in synergy to address short- and long-term needs and reduce risk and vulnerability.
- Food security and other sectoral response policies for urban poor populations should continue to attract the attention of humanitarian and development actors in the short run to create safety nets for the most vulnerable people and provide direct access to food.
- Government commitment and leadership to enhance governance and coordinate policies of the international community, to ensure synergies between all interventions across the food system spectrum.

Box 5 *The WBeG FSR Dialogue: Critical conditions to transform South Sudan's food systems*

The WBeG FSR dialogue

The dialogue participants found these critical

- *Policies, or at least the development of principled approaches, and its dissemination as relevant to guide and promote effective interventions to improving food systems performance.*
- Safety nets (element 5) – *there is a particular need for both short- and long-run attention by humanitarian and development actors to create and maintain safety nets in face of potential shocks.*

4 Food systems transformation at state level

4.1 Food Systems Resilience Dialogues and Pathway Development

The Partnership for Recovery and Resilience invited the University of Juba, with the support of Wageningen University, to design and facilitate state-level Food Systems Resilience Dialogues and Pathway Development (FoSReD-PaD).

The process involved the State Government, the Area Reference Group, UN agencies, NGOs, the private sector and representatives of communities making up the State's population. Together they co-created a vision to build food systems resilience based on which they co-developed pathways to achievement of the vision. Together the different pathways comprise a road map for the transformation of the State's food system to become more resilient and better serve the needs of smallholder farmers/agri-pastoralists and herders across the State.

The pathways are grounded in, and contribute to:
- The key priority dimensions for building food systems resilience as identified by South Sudan's National Food Systems Dialogues (2021).
- South Sudan's Comprehensive Agricultural Master Plan - CAMP[19].
- The State Development Plan 2022-24.

The pathways address critical challenges related to governance (policy, principled approaches); coordination; public and private sector performance and programming (including key operations and services in food system development); and capacity building.

4.2 General principles of the pathways

The most important general principles of the pathways include:
- Build food systems resilience, in particular through strengthening localisation and humanitarian-development-peace nexus programming.
- Encourage and facilitate community-driven initiatives to ensure that interventions are responsive to community needs and priorities and are accountable to communities.
- Promote the agency of smallholder farmers, both in value chain development and in building upon their entrepreneurship around existing and new food commodities to improve the food system outcomes.
- Ensure that building food systems resilience is inclusive and that all, in particular women and youth, can participate in and benefit equitably from food systems resilience.
- See the roles of youth as an opportunity in food systems transformation, for example through the adoption of innovative activities/ideas/approaches.
- Ensure constructive engagement of local experts and expertise, thereby strengthening national as well as state-level knowledge/training/research infrastructure. Appendix 4 provides an overview of available knowledge/training/resource packages developed by the North-South-South partnership[20] on FSR, of which the University of Juba is the main hub in South Sudan.

[19] https://openknowledge.worldbank.org/bitstream/handle/10986/37951/cc1048en.pdf?sequence=1

[20] The University of Juba forms part of a North-South-South partnership in which a number of universities and training centres work together in the design and delivery of knowledge/training/resource packages to facilitate building food systems resilience. These initiatives are supported by the Dutch government through the NUFFIC Orange Knowledge Programme and the Food and Nutrition Security RESilience PROgramme (FNS-REPRO).

It is also strongly recommended that each of the pathways should:

- Include learning, capacity-building efforts, and the generation of evidence of impact, including the documentation of good practice, principled approaches and policy recommendations.
- Facilitate joined learning, peer reviews, and exchange visits, to share knowledge, experience and ideas.
- Develop evidence-based intervention models and principled approaches, on the basis of which advocacy is to be promoted for finance options/practice by government and donors.
- Improve data literacy, including data analytics and foresight, to inform state- and local-level decision-making and programming.

4.3 Specific principles in embracing the four national strategic challenges

Based on the various workstreams flowing from the UN's Food Systems Summit,[21] and consultations as part of the state-level Food Systems Dialogues, a number of specific principles were documented to guide and inform work on South Sudan's four strategic challenges at state level.

These strategic challenges, identified as per South Sudan's National Food Systems Dialogue, are represented as individual pathways at state level (pathways 4 to 7; see part 3 of this report); this is done so deliberately to allow for state-level progress to inform national progress on each of the four key strategic challenges seen as fundamental to transform South Sudan's food systems.

Strategic challenge 1: food systems for resilience

Policy and good practice principles may include:

- Create a better understanding of how food systems work and interact. In particular, examine livestock-cropping system interactions, and how these fit into landscape-level management with other components, such as soils, trees, fuels, fibres, fruits, fodder, and food.
- Increase understanding of how livestock-cropping system interactions relate to resource access and management regimes relating to land tenure, governance, and plural legal systems.
- Account for context specific indigenous knowledge to build resilience of food systems through adaptation to local agro-ecologies and conservation of bio-diversity.
- Catalyse food system transformations through investment that responds to local needs, interests, and preferences of urban as well as remote rural areas, targeting youth and rural households to build up social, financial and human capital.
- Develop methodology to assist donors, agri-business and financial intermediaries to make wise investment decisions to increase the sustainability of food systems.
- Build climate-resilient and sustainable food systems that contribute to progress on climate action by accessing climate finance for locally led/driven projects that are practical/do-able and that create impact.
- Exploit the co-benefits of climate adaptation and resilience-building for peace and security.
- Promote synergies between the private sector, co-operatives, and local entrepreneurship in food production and accessibility.

Strategic challenge 2: food systems for peace

Policy and good practice principles may include:

- Facilitate community-driven and community-based activities that seek to improve local-level peace/security and food security outcomes, by working with communities to design and implement action plans.
- Actively engage communities in the identification and prioritisation of their local peace/security and food security concerns, and the development of appropriate and effective responses, jointly with local authorities, security/justice and food security service providers, and civil society.
- Work towards generating a positive social development benefit as well as greater community cohesion and improved perspectives relating to peace/security, reconciliation and food security.

[21] See for example http://www.fightfoodcrises.net/fileadmin/user_upload/fightfoodcrises/doc/resources/HDPNexusCoalition_ClimateSecurityandFoodSystemsWorkstream.pdf

Strategic challenge 3: food systems for sustainable use and maintenance of natural resources, and healthier diets

Policy and good practice principles may include:

- **Aim for increased food production and supply by working with farmers, agripastoralists and herders, in ways that promote sustainable use and management of natural resources.**
- Develop natural resource management/governance regimes that build upon and maintain landscape resilience.
- Programme for increased food diversity (based on analysis of main food deficiencies) and thereby more diverse diets.
- Develop the availability of and access to a variety of foods within and across different food systems: agriculture (including staple crops, nutrition dense crops, improved as well as indigenous vegetables, and wild foods which are nutritious and diverse), pastoralism, agro-forestry, silvo-pastoralism and fisheries.
- Promote healthy food habits amongst the younger generation, e.g. through schooling and education.
- Ensure a food safety component, especially with imported food products.

Strategic challenge 4: food systems for value chain and agribusiness development

Policy and good practice principles may include:

- Promote local economic development through enabling government policies, targeted investments in road and market infrastructure, and promoting entrepreneurship and involvement of the private sector.
- Establish a practical education and training system that facilitates the development of knowledge and practical skills on agricultural production to improve food production, value chains and the development of food supply systems.
- Prioritise those value chains and agribusiness that contribute to narrowing the food gap (strategic challenge 1), invest in cropping and livestock systems to increase mutual interdependency between famers and herders (strategic challenge 2), and contribute to healthier diets (strategic challenge 3).
- Invest in value chains as a complement to farmers' existing activities, using subsidies rather than distributing free input/kits.
- Promote cooperatives and linkages with traders to link demand with supply.

4.4 The State-level Food Systems Resilience Hub

To facilitate the transformation of the State's food systems, in line with the national priorities set by the National Food Systems Dialogue, the State Government has established a Food Systems Resilience (FSR) Hub. The FSR Hub is in essence a multi-stakeholder partnership bringing together people and institutions dedicated to developing food systems resilience in WBeG. The Hub acts as a neutral and independent body; to ensure this, it was created at the University of WBeG and will be facilitated with support from the University of Juba and, if required, Wageningen University.

The FSR Hub performs four interrelated functions:

- Promotes building FSR through dialogue (part 2 of this report)
- Develops shared FSR vision and pathways (part 3 of this report)
- Decides on action plans and guides collaborative implementation
- Facilitates evidence-based adaptive programming and learning.

The FSR Hub has delivered on the first two functions (the dialogue and the development of pathways to build FSR). The next functions are the development of action plans and facilitation of evidence-based programming and learning.

Ultimately the FSR Hub will contribute to the vision that *'the peoples of Western Bahr el Ghazal State produce and access sufficient nutritious and culturally accepted food over time and space, in the face of man-made and/or natural shocks and stressors and live in peace and harmony with each other and with nature.'*

PART II: WBeG Food Systems Resilience Dialogue findings

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Part II of this report presents the results of the data collected during the 'Food Systems Resilience Dialogue and Pathway Development' (FoSReD-PaD) for Western Bahr El Ghazal State, South Sudan. The data presented is structured according to the van Berkum food system framework introduced in the first chapter of this part of the report. To utilise this framework, data needed to be collected from a variety of sources, ranging from thematic and geographic knowledge experts to communities in WBeG. An expert consultative workshop was held in September/ October 2022 in Wau and Raga, WBeG. Each chapter presents the key data collected during the participant dialogue in these workshops.

Part II contains the following chapters:

5. Food systems resilience: framework and methodology
6. Objectives of the dialogue and data collection
7. Food systems transformation: stakeholders and their perspective
8. Food system boundaries
9. Food system activities
10. Food system drivers
11. Food system risks and resilience
12. Food system outcomes

The complete compilation of these exercises and data on the value chains can be viewed in the separate FoSReD WBeG working[22] and background[23] document.

[22] Working Document: Outcomes of the 2022 Food Systems Resilience Dialogue in Western Bahr el Ghazal State, South Sudan.

[23] Background Document: Context Analysis Western Bahr el Ghazal State, South Sudan, to inform the 2022 Food Systems Resilience Dialogue and Pathways Development (FoSReD-PaD).

5 Food systems resilience: framework and methodology

5.1 Food system framework

Our approach is grounded in the food system framework developed by Berkum and al. 2018. We also used other action-oriented food systems resilience assessment methodologies based on good practices, such as the toolbox for food system analysis, developed jointly by KIT-Royal Tropical Institute, the Netherlands Food Partnership (NFP) and Wageningen University and Research (WUR).

The benefit of applying a system lens is that it broadens the perspective when seeking solutions for the root causes of problems such as poverty, malnutrition, climate change; or in our case sustainable solutions for a sufficient supply of healthy food in protracted food crisis contexts.

The food systems approach offers a number of benefits:

- It provides a checklist of topics and issues that should at the very least be addressed when it comes to improving food and nutrition security (in relation to other policy objectives).
- It maps the impact of environmental and climate changes on food security by pointing to the various vulnerabilities of a food system, and in doing so identifies possibilities for strengthening the system's resilience.
- It helps to pinpoint the most limiting factors for achieving food security, and hence identify effective interventions aimed at improvement.

In essence, a food systems analysis considers the relationships between the different parts of a food system, looking at its main elements such as:

- Food system activities – this includes the food supply system (agricultural production, food storage, transport and trade, food processing and transformation, food retail and provisioning, and food consumption); the enabling environment; the food environment; business services; and consumer characteristics.
- Drivers impacting food system activities such as socio-economic and environmental drivers.
- Food system outcomes - this includes food security (availability, access, and utilisation), socio-economic outcomes, and environmental/climate outcomes.

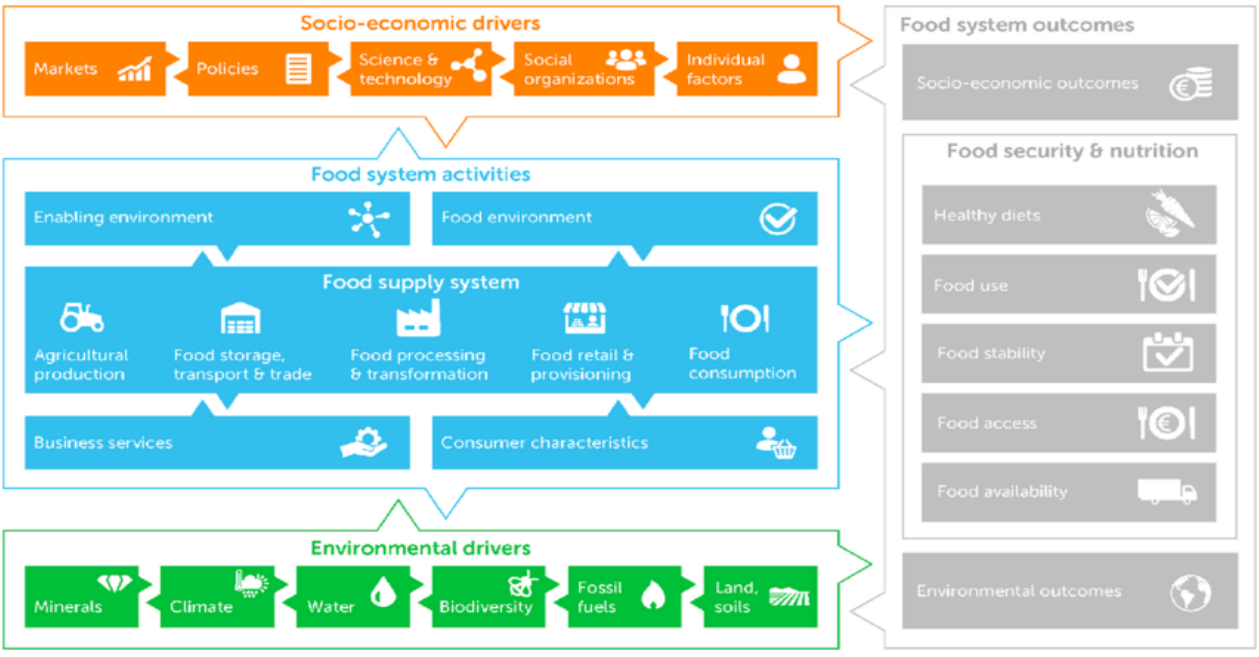


Figure 1 *The van Berkum food system framework (van Berkum, et al., 2018)*

Feedback loops are a distinguishing factor in systems thinking. They occur between parts of the food system activities, the drivers and the outcomes. For example, socio-economic and environmental outcomes of the food system will become drivers of the food system activities and initiate new dynamics which will lead to new outcomes over time.

5.2 Resilience framework

Because of the intensity and frequency of shock and stressors affecting WBeG, it is essential to apply a resilience lens to our analysis of food systems. In protracted food crises (typically characterised by fragile and conflict-affected situations) this approach explores how natural and man-made hazards impact food systems and their outcomes (such as food security, employment, and their impact on social relations and the environment). In doing so one can gain a better understanding of the resilience of food systems in such environments. Concretely, the specific risk landscape of WBeG can be applied to each activity and driver of the food systems to establish specific vulnerabilities and coping capacities. In turn, the food system activities and drivers are also assessed in terms of their dynamic contribution to the risk landscape.

When applying a resilience lens to a food system, we use **four basic resilience questions** to guide and frame our analysis:

- **Resilience of what?** The food systems in its protracted crisis context.
- **Resilience to what?** The typical shocks and stressors that make up the risk landscape of the State.
- **Resilience through what?** Strengthening local capacities and addressing vulnerabilities to better anticipate, absorb, adapt and transform in face of shocks and stressors.
- **Resilience for what?** Improved food systems performance and outcomes, including improved FNS, socio-economic and environmental outcomes.

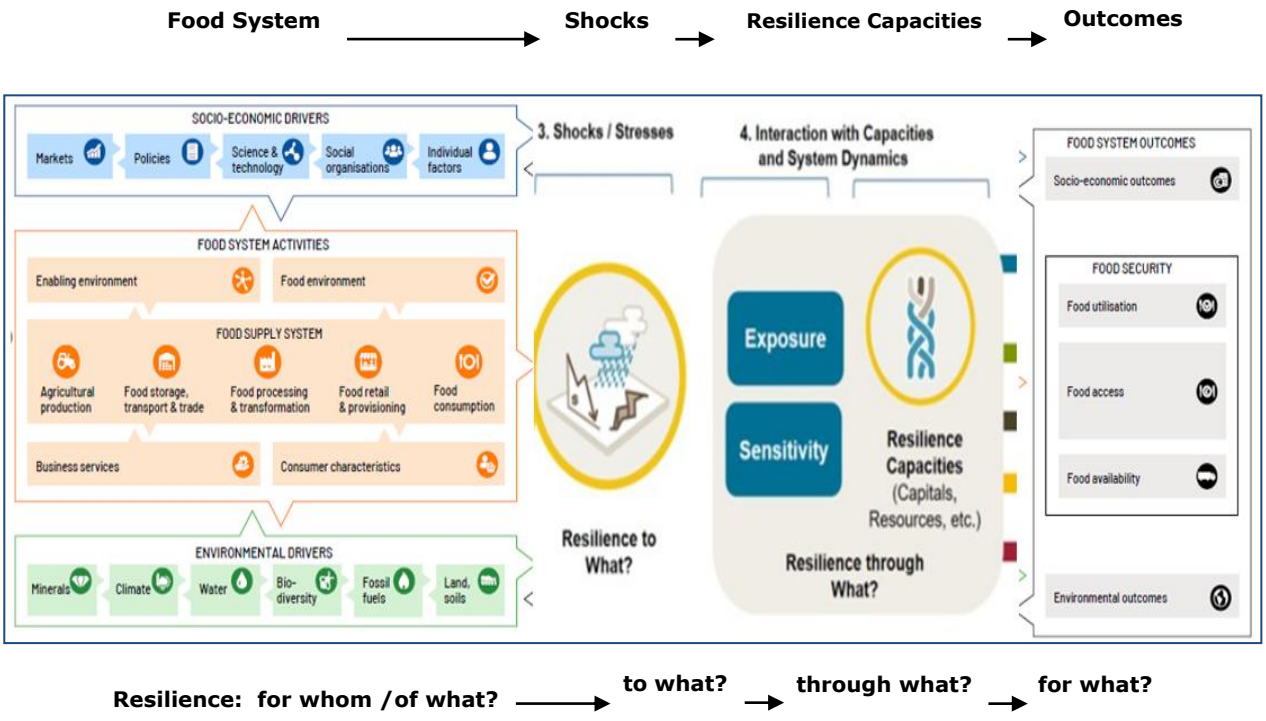


Figure 2 *The food systems resilience framework. Adapted from van Berkum et. al. 2018*

5.3 Dialogue and pathway definition: methodology and steps

To set our analysis on a strong track we were inspired by the Rome Based Agencies' conceptual framework for strengthening resilience for food security and nutrition in protracted crisis contexts[2]. This conceptual framework of resilience is guided by six principles (FAO, IFAD, and WFP, 2015). While keeping in mind the different principles in our analysis, we considered in WBeG the following elements:

Principle 1. Local ownership and leadership
'People, communities and governments must lead resilience building for improved FNS'. In the case of WBeG, this means that all efforts must not only be participatory and inclusive but be led by local actors as much as feasible. In our case, the Partnership for Recovery and Resilience (PfRR) and actors organised around the Area Reference Group (ARG), supported by academics from Juba University, Wau Catholic university, and WBeG University, spearheaded a process that brought together representatives of the local government, the private sector, and civil society.

Principle 2. Multi-stakeholder approach and sustainable transformation
'Assisting vulnerable people to build their resilience is beyond the capacity of any single institution.' In the case of WBeG, this means that a variety of actors need to be involved to work effectively, including local organisations, communities, and governments (also see above). As mentioned, resilience building requires the breaking down of sectoral barriers and silos. The food systems resilience assessment is a step on that journey and will clarify a joint understanding, vision and priorities for food system transformation. The joint pathways and action plan will serve as a guiding document to steer and improve current interventions but also as a basis to raise further awareness and develop funding strategies and investment options for improving food system performances including contributions to social cohesion and peace. The group of diverse stakeholders, mobilised during the assessment phase, will remain engaged to continue learning and act together.

Principle 3. The triple nexus: combining humanitarian relief, development and peace building
'Planning frameworks should combine immediate relief requirement with long-term development objectives.' Given South Sudan's risk landscape, to pay particular attention to conflict and peace building in our understanding of food systems resilience is crucial. We need to explore how food systems respond to shocks and stressors through their absorptive, adaptive and transformative capacities, and at the same time explore how current food systems contribute to the risk landscape. Another element is the humanitarian-development linkage and how humanitarian investment (notably through safety nets, asset creation and school feeding) can catalyse sustainable food system transformations.

Principle 4. Focus on the most vulnerable people.
'Ensuring protection of the most vulnerable people is crucial for sustaining development efforts.' This is an important aspect of our work. In doing this it is equally important to consider those that have potential to drive local development (and in doing so aim to protect the most vulnerable) and to improve on local capacities to protect the most vulnerable. For example, in value chain development, it makes sense to work with those that can make value chains successful while at the same time consider how income or other gains will benefit the most vulnerable.

Principle 5. Mainstreaming risk-sensitive approaches.
'Effective risk management requires an explicit focus on the decision making of national governments, as well as enhanced monitoring and analysis.' Effective risk management is equally important at lower echelons of government, in our case in particular at state and county level.

Principle 6. Aiming for sustained impact.
'Interventions must be evidence-based and focused on results.' Building food systems resilience requires evidence-based adaptive programming as local contexts are often dynamic and volatile and can include potentially violent conflict. Programming for impact is crucial; taking a food systems perspective requires improved outcomes, particularly in terms of food and nutrition security (seeing the current figures which are highly alarming).

Box 6 *FoSReD WBeG priority themes at a glance*

Priority themes at a glance

- Shocks and stressors and food systems
  - Food Systems for Peace
  - Flood and drought risk mitigation
- Dynamics of food consumption and production
  - Role of Wau town in the food system
  - Humanitarian programming and food system transformation (school feeding, seeds and tools, food/cash for assets)
- Food system value chains
  - Food systems and youth employment

An additional consideration when analysing food systems resilience is the risk of getting lost in complexity. As full investigation of all the elements of a food system is overambitious and can lead to information paralysis, we have focused our effort on several priority themes. These themes are non-sectoral and require an understanding of the dynamic relation between elements of a food system:

- Shocks and stressors and food systems: we worked on the particular risk landscape in WBeG, made of recurrent conflict, floods and droughts, and its impact on food systems.
- Balance of food production and consumption: We want to reinforce our understanding of affordable and healthy diets adapted to local realities. Beyond calorific needs, micronutrient gaps and the most effective ways to address these can be further defined. Using a systems approach, food consumption and food production dynamic relations can be further explored at County and Payam levels; competition between food import and local production, and opportunities for local rural-urban linkages, can be analysed and explored. Furthermore, the importance of Wau city is crucial to understand the flow of food within the state and beyond. In this approach, a food system links rural food production with a reference city where food is sold and services are obtained. In this approach, the focus is on the urban-rural dynamic and interdependency, and on the need to ensure constructive dialogue between those different actors.
- Value chains, farmers agency and youth employment: potential for profitable food value chains exists (such as honey, shea, fish, groundnuts, cowpea). Our analysis focused on the potential contribution of value chains to wider food system transformation and resiliency. Starting with farmer realities, and their agency to act, we explored support from farm to policy level to help value chains develop. Particular attention was paid to solutions that promoted job creation, particularly for youth.

In conclusion, we structured our participatory dialogue using a classic describe-explain-explore-design approach, ensuring participants shared their understanding of food systems resilience by describing the situation, explained relation and dynamics, explored futures and scenarios, and designed pathways for transformation.

Given these considerations we followed the following analytical steps in our process:

1. Constitution of a stakeholder group
2. Literature review and validation
3. Food systems description and analysis
4. Mapping of the risk landscape and its impact on food systems
5. Thematic deep dives
6. Pathway designs that build food systems resilience

5.4 Limitations

The information presented in this part of the report is mainly based on views expressed by a group of food system stakeholders during a ten-day dialogue in Wau and Raga towns. The limits of such a participatory process are several, the most important of which are:

a. Our primary source of information was expert perspectives and knowledge, which are, even when well informed, a partial representation of the reality. Stakeholders act based on the information available to them and understood by them. To use this as a starting point for our dialogue and pathways definition was to ensure that participants were brought along in this process of knowledge co-creation. In some cases, the quantitative data available and the experts' perspectives did not align. These discrepancies are in themselves interesting and we have tried to reflect on them.
b. Food systems are complex and the list of actors involved in its numerous components is near infinite. We tried to involve as representative a group as possible, from all roles in the food systems, from various locations within WBeG and from different interest groups, but we are aware that some voices were little or less represented. Representatives from government, civil society (the UN, NGOs, youth and wo associations) and academia were present in number. But representatives from traders, financial institutions and armed groups proved more difficult to engage in the time that we had. More work with those actors is needed.
c. Opting for a dialogue format to our information-gathering is to run the risk of giving more voice to public speakers and group leaders than to people less used to this sort of engagement. We could observe that young NGO workers tend to take the lead in group work as they are more familiar with the concepts, tools and exercises proposed. To try to minimise this bias and maximise the possibility for a diversity of point to view to emerged, we kept groups small and had several groups working on the same topic in parallel.

6 Objectives of the dialogue and data collection

The objectives at the origin of this collective endeavour were set by several partners active in the food system in Western Bahr el Ghazal. International NGOs under the banner of the Netherlands Food Partnership (NFP) as well as UN agencies collaborating within the Partnership for Recovery and Resilience (PfRR) expressed converging interest to conduct further work on food systems resilience at sub-national level.

To meet these objectives, Wageningen Center for Development Innovation (WCDI) and the University of Juba (UoJ)facilitated a participatory learning and action planning process, the Food Systems Resilience Dialogue and Pathway Definition (FoSReD-PaD).

A participatory and qualitative methodology was preferred for several reasons.

Firstly, the protracted nature of the crisis and the long-term presence of actors engaged in the humanitarian and (the emerging) development spaces meant that a significant amount of information on the different aspects of the food systems and their resilience already existed. The main challenges were to digest, make sense and act on this information, rather than generate entirely new data and analysis. However, gaps in key data were identified and adequate assessments planned.

Secondly, the sectorial divisions of humanitarian and development work generates a well-known silo effect, with interventions working in parallel and sometime competing against each other. The multi-sectoral dialogue used involved expert actors in agriculture, trade, value chains, security and peace, cooperatives, food assistance, and nutrition, at multiple levels; experts from Juba, WBeG State and Raga, Wau, Jur River Counties; and experts representing multiple stakeholder groups, such as government, private sector, civil society, humanitarian and development actors. This was a strategic element to ensure collaboration between actors that have usually little time to reflect and plan jointly.

Box 7 *Objectives for the FoSReD-PaD data collection*

The objectives of the Food Systems Resilience Dialogue and Pathway Definition:

- To improve our collective understanding of local food systems resilience in fragile settings.
- To co-create action plans and pathways for sustainable food system transformation (food systems resilience pathways).
- To strengthen food systems governance and collaboration through multi-stakeholder partnerships.

7 Food systems transformation: stakeholders and their perspectives

Perceptions on the challenges to South Sudan's food systems transformation.
As the first exercise of the Food Systems Resilience Dialogue, participants were asked for their perspectives on the critical challenges (identified by South Sudan's National Food Systems Dialogue) to transform WBeG's food systems. It was important to establish how the national priorities resonated in WBeG's context and whether they captured local realities.

Each of the four strategic challenges for the transformation of food systems were introduced in the form of a statement. Participants were asked whether or not they agreed (using a five-point scale: strongly agree, agree, neutral, disagree, strongly disagree) with each statement, and were asked to provide a rationale for their choice. The arguments were weighted either in favour of or in opposition to the statement. The exercise presents an overall perspective on, and unique insights into, the perceived strengths of as well as challenges to the food systems of WBeG.

Key findings are discussed below. Detailed findings can be found in Appendix 6.

Development of the pathways to building food systems resilience in WBeG
Based on the perspectives voiced by the dialogue participants (in agreeing or disagreeing with the statements), and a context- and subject-based search in relevant publications, potential action agendas were generated.

The action agendas can be found in Appendix 7 and were used to guide the development of the pathways and its key activities to building food systems resilience in WBeG.

7.1 Food systems resilience

Statement: Food systems in Western Bahr el Ghazal are resilient to human-made and natural shocks/stressors (ensuring FSN).
A total of 11% of arguments agreed with the statement (strengths), 70% disagreed (challenges) and 11% of responses were neutral. See Figure 3.

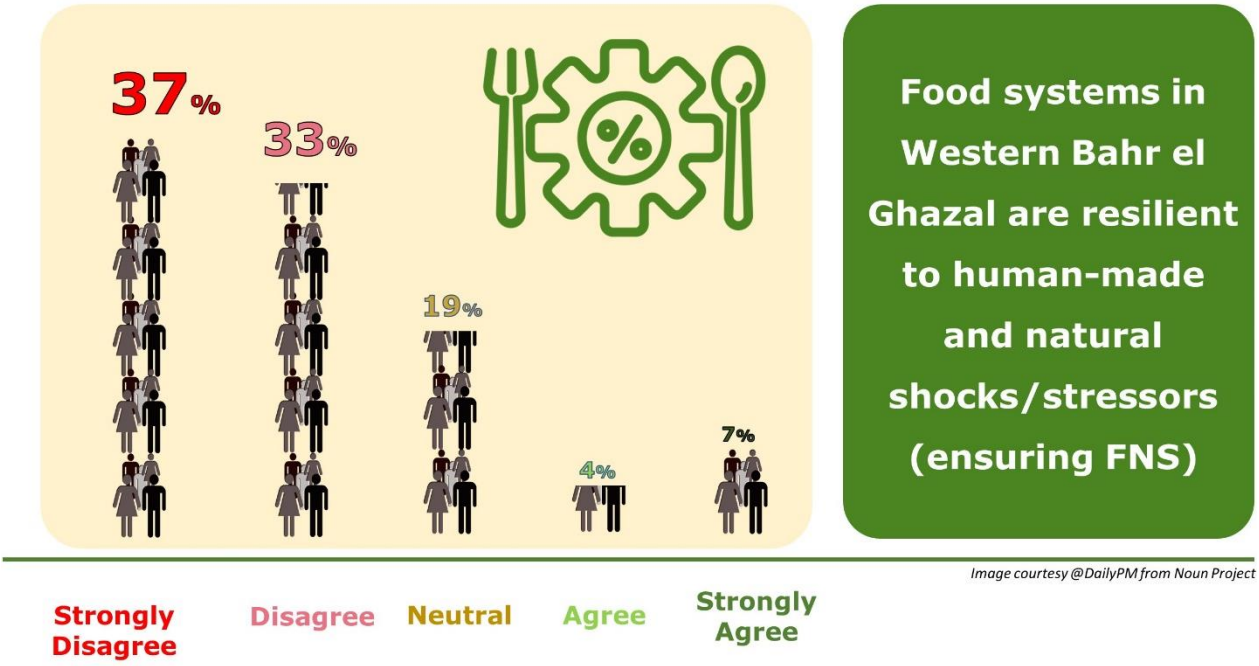


Figure 3 *Food systems resilience statement 1*

Typical arguments in disagreement included: 'Conflicts and displacement interrupts food production & can make food systems collapse'; 'Man-made shocks like conflict affects peoples' ability to produce their own food, how to store it, and how to process it', and 'Shocks like droughts and floods limit people's ability to produce; without proper assistance people lose their productive assets such as livestock'.

Arguments in agreement included: 'Historically we have seen many shocks/stressors while food systems remained somehow resilient', and; 'There is a fair level of interaction and eagerness to share, interact, cooperate and exchange ideas to make food systems more resilient'.

A typical argument for those taking a neutral position was 'When political and socio-economic conditions are good/stable we are resilient; if these factors are negative we are less resilient'.

See Appendix 6, 'Dialogue participant perspectives on the four key strategic challenges to transform WBeG's food systems' for a detailed overview of the answers given.

7.2 Food systems for peace

Statement: Food systems in Western Bahr el Ghazal contribute to peace and stability within and across ethnic groups.
A total of 59% of arguments agreed with the statement (strengths), 6% disagreed (challenges) and 35% of responses were neutral. See Figure 4.

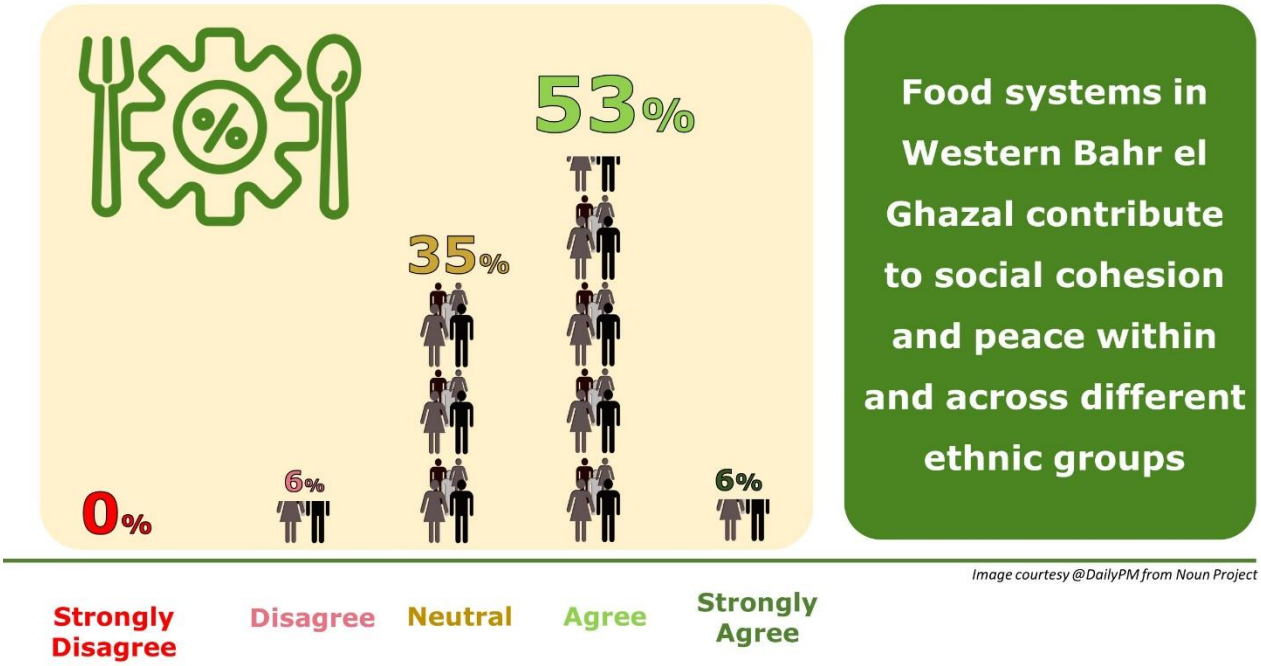


Figure 4 *Food systems resilience statement 2*

Typical arguments in agreement included: 'There is interaction between different food systems contributing to social co-existence, increased interdependency and stronger relations'; 'With food being produced, markets bring different people together and as they buy and sell grow stronger relationships', and; 'Food systems bring different communities together creating mutual benefits, like people from Wau buy food from other areas in WBeG and by doing so share important resources with those producing food'.

The argument in disagreement was: 'When there is a shortage of food availability and access to food is difficult it may create conflict'.

Typical arguments for those taking a neutral position included: 'Because of insecurity and/or fear access to part locations and communities is difficult, and therefore interaction is difficult and as a consequence limited options to grow social cohesion', and; 'People depending on different food systems may be in conflict in times of scarcity, in particular farmers and herders'.

See Appendix 6, 'Dialogue participant perspectives on the four key strategic challenges to transform WBeG's food systems' for a detailed overview of the answers given.

7.3 Food systems for healthier diets

Statement: Food systems in Western Bahr el Ghazal contribute to food diversity and healthier diets.

A total of 50% of arguments agreed with the statement (strengths) and 50% of arguments disagreed. See Figure 5.

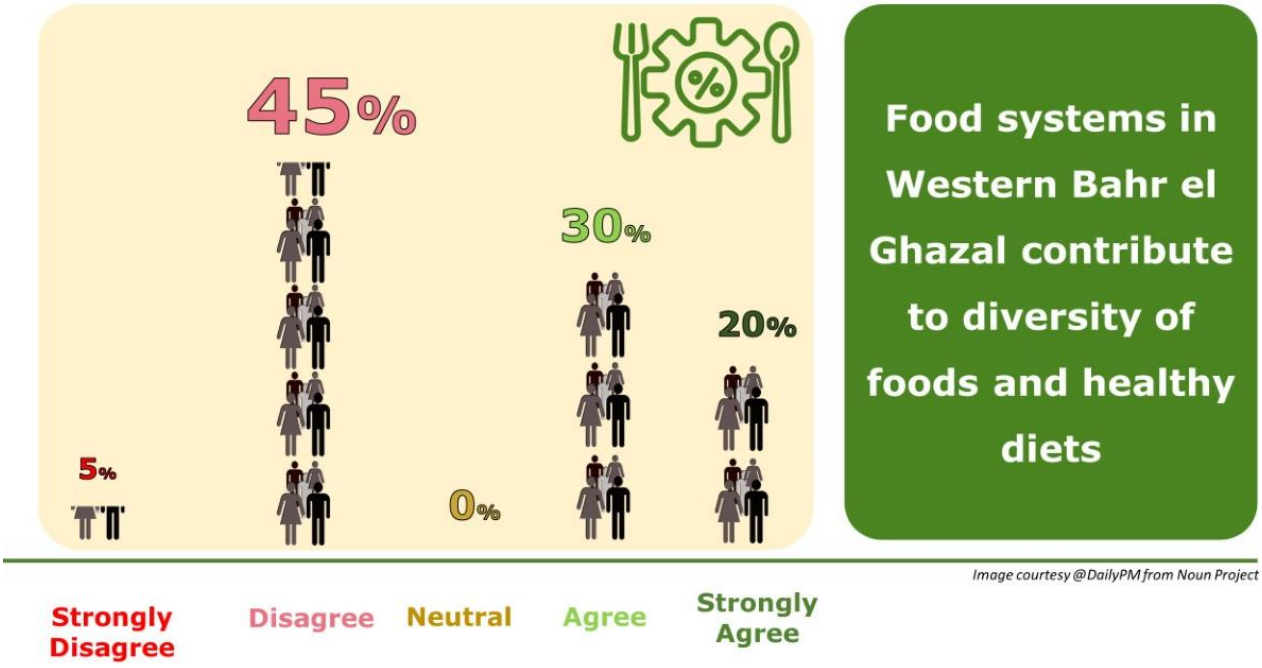


Figure 5 *Food systems resilience statement 3*

Typical arguments in agreement included: 'Farmers have diversified cropping systems that produce a variety of foods contributing to nutrition security'; 'Vegetables and fruits are being produced, but mainly seasonal', and; 'We produce healthy organic foods; our farmers do not use chemical fertiliser'.

Arguments in disagreement included: 'Lack of awareness: most people don't know the importance of balanced diets'; 'Production of healthy foods and its storage for marketing are issues', and 'Despite opportunities to produce, healthy foods have a high price as compared to grain-based staple crops'.

See Appendix 6, 'Dialogue participant perspectives on the four key strategic challenges to transform WBeG's food systems' for a detailed overview of the answers given.

7.4 Food systems for inclusive value chains / agribusiness and youth employment

Statement: Agribusiness and value chains in Western Bahr el Ghazal are inclusive and generate employment for youth and women.
A total of 61% of arguments agreed with the statement (strengths), 26% disagreed (challenges) and 13% of arguments were neutral. See Figure 6.

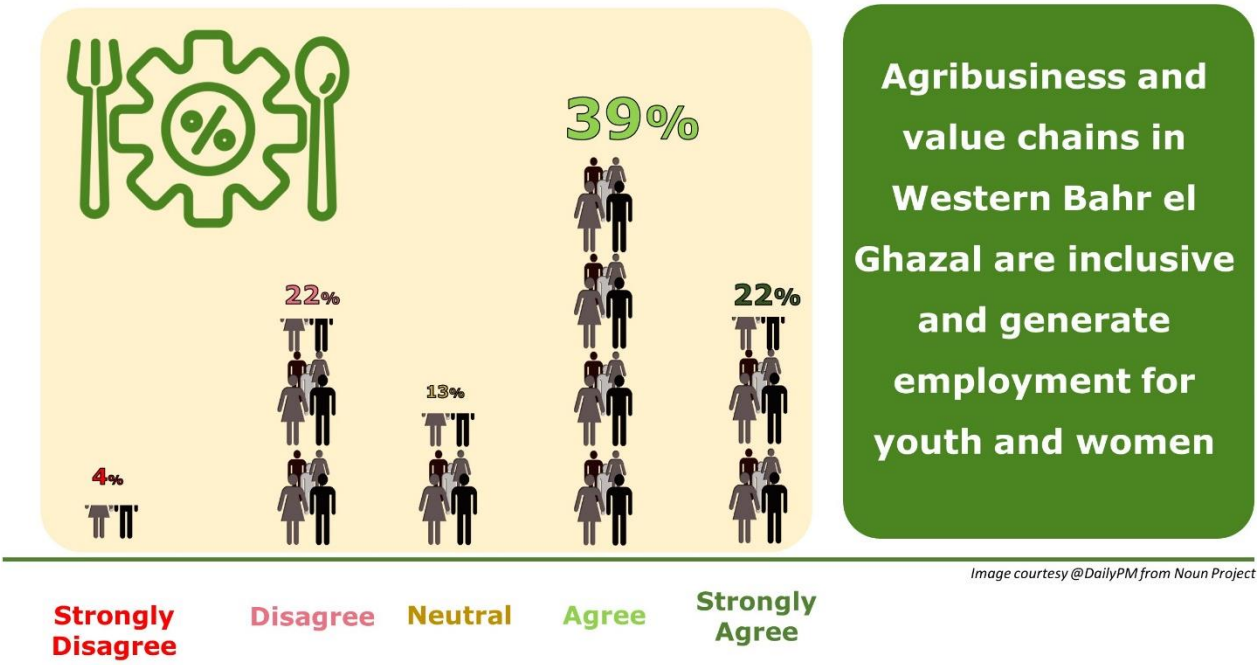


Figure 6 *Inclusive value chains statement*

Typical arguments in agreement included: 'Youth and women groups are increasingly and eagerly involved in value chain development', and; 'Strong potential and interest in value chain development; engagement of youth in this will make communities proud'.

Arguments in disagreement included: 'Women are committed and work seriously on value addition and value chains; there is no commitment by youth', and; 'Limited access to finance, cultural norms, poor education and, for women in part domestic responsibilities, limit potential for value chain development'.

A typical argument for those taking a neutral position was: 'The agricultural sector is not well developed and there is no concerted effort to promote development of value chains'.

See Appendix 6, 'Dialogue participant perspectives on the four key strategic challenges to transform WBeG's food systems' for a detailed overview of the answers given.

8 Food system boundaries

As mentioned, the objective of this dialogue was to analyse and find entry points for transformation of the Western Bahr el Ghazal food systems. It was therefore important that all actors involved had a common understanding of the boundaries of these particular food systems. What do the WBeG food systems encompass? Food systems are complex and require a holistic view that brings together different disciplines, sectors and geographical areas.

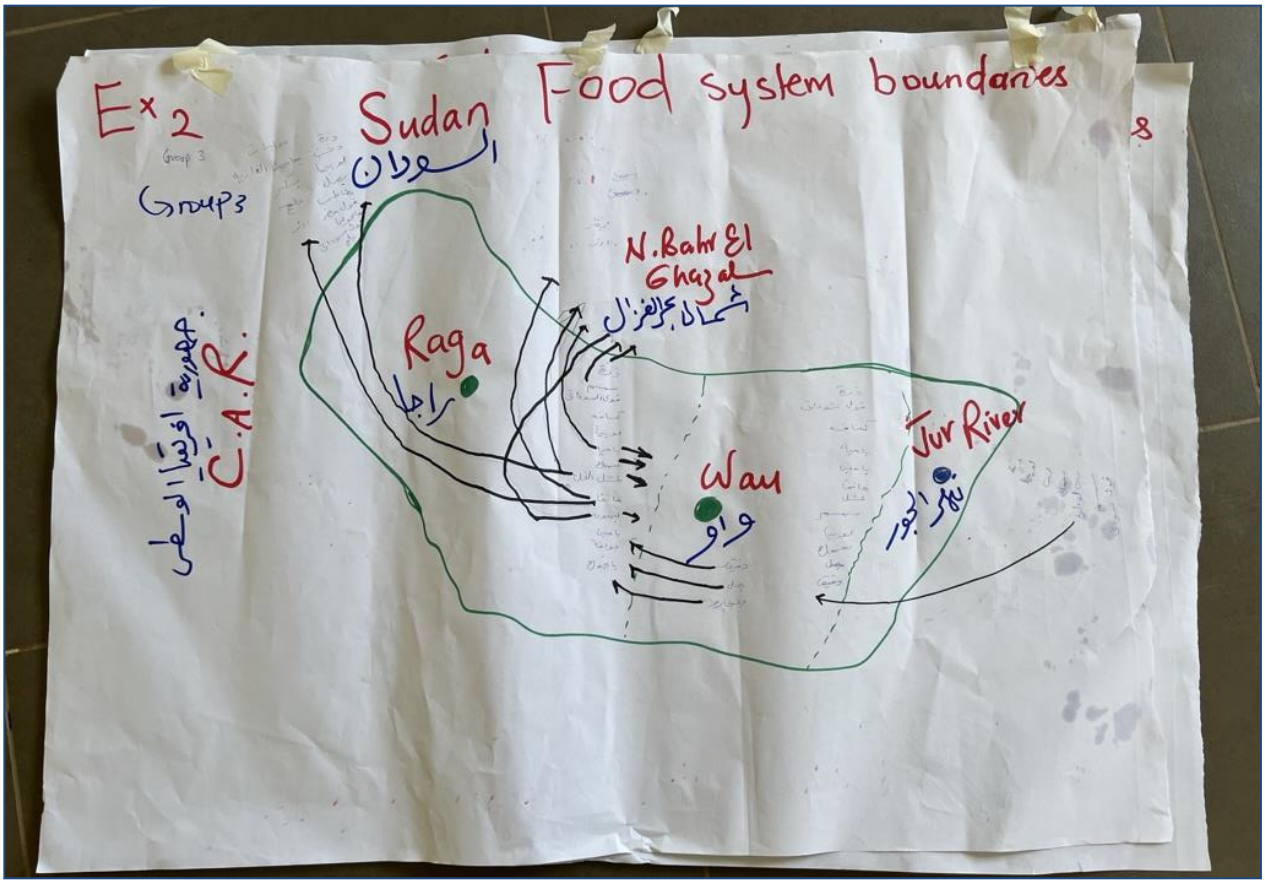


Figure 7 *Identifying WBeG food systems boundaries*

'Many food security and nutrition challenges are complex problems whose solutions are contested and which transcend disciplinary, divisional, institutional, and geographical or state boundaries. In increasingly globalised food systems, these challenges result from interactions across different scales and levels' (FAO, 2018).

Food system boundaries can be defined using a variety of criteria, such as:
- administrative boundaries
- specific population groups
- livelihood zones
- climate and ecological zones
- food trade networks.

The central questions used to guide our reflection on food system boundaries were investigating the out and inflows of food in WBeG:
- Where is the majority of the food consumed in various areas of WBeG coming from?
- Where is the majority of the food produced in WBeG going to?

To focus on the flow of food commodities, we had to clearly identify the geographic areas that make a significant contribution to the dynamic of the WBeG food system. This approach was pragmatic, as change within WBeG will have to consider dynamic effects with other states and countries. At the same time, we wanted to ensure that administrative entities were considered in their entirety as they are the units best placed to implement change through policy implementation.

From participant dialogues in Wau/Jur River and Raga, a few defining features emerged in the WBeG food system:

1. **A high dependence on subsistence agriculture.** Each boma, Payam and county produce food that is mainly consumed locally. The differences in production are based on the presence of two agro-ecological and three livelihood zones (as described in chapter 9.1 on food production).

Table 1 *Main local food production*

Main local food production		
Jur River	**Wau**	**Raga**
Sorghum	Groundnut	Fish
Groundnuts	Okra	Cassava
Okra	Sorghum	Groundnuts
Simsim	Cassava	Sorghum
Bambara nut	Sweet potatoes	Simsim
Cassava	Simsim	Sweet potatoes
Honey	Fish	Honey
Shea		Mango-citrus
Fish		Livestock
livestock		

Figure 8 *Honey from Raga*

2. **The importance of Wau town** as a trade hub for surplus and commercial production of mainly sorghum, groundnuts, honey, shea and livestock products from Wau and Jur River counties. Raga exports honey directly to Sudan and Shea through Wau. Wau town is also the central point that receives food commodities from outside WBeG to feed its large urban population and neighbouring communities.

3. **High level of dependence for specific food commodities imported outside of WBeG:**

Table 2 *WBeG flow of food*

Origin	Food commodity
Sudan (Raga-Wau route or Aweil-Wau route)	Onion, sorghum, rice, sugar, salt, oil, beans lentils, beverage, livestock, potatoes
Western Equatoria (Tambura-Wau route)	Fruits, cassava, maize
Warrap and Northern Bahr el Ghazal	Livestock and livestock products
Uganda (via Juba-Runbeck-Tonj-Wau route)	Fruits, maize, sugar, cassava, oil, rice, vegetables

While difficult to pinpoint accurate figures, due to lack of data and statistics, the dialogue participants' estimates indicate approximately 100% of maize flour and sugar, 90% of onion and oil, 80% of beans and lentils, 75% of livestock products, 50% of fruits and 30% of sorghum is brought into WBeG from the outside.

4. **The interdependency of the production system between Jur River farmers and Warap State pastoralists,** with yearly seasonal movement of cattle into Jur River. Jur river farmers directly supply crops (groundnuts, sweet potatoes, cassava, tomatoes, mangoes) to Warrap State pastoralists and benefit in return for animal products.

5. **The flow of commodities is highly seasonal**, with out-of-state exports after local harvest and import of food commodities into WBeG during the rest of the year. Accessibility during the rainy season impacts the flow of food commodities; Wau town remains accessible, but Raga is mostly isolated. During the rainy season, the flow of food between Raga and Sudan is of bigger importance, while during the dry season there is more interaction between Raga and Wau.

In summary, we can define three layers and dynamic in the WBeG food system. These units could constitute different sub-food systems within the wider WBeG food system, but for now have been covered together:

- **Wau town**, with its large urban population of more than 200 000 people at the centre of the local and international food trade route. A large influx of food is required to feed its population. The requirement of Wau on the food system is reinforced by the presence of about 46,292 registered internally displaced people (IDPs, as of April 2022, source UNHCR) and the fact that a large majority of the recent returnees to the state are staying in Wau town (through July and September 2021, 171,394 returned to Wau county).
- **Rural Wau and Raga**, relying largely on subsistence agriculture, but feeding their surplus production to Wau town.
- **The Jur river-Warrap agro-pastoralist layer** presents an additional and specific dynamic in the food system. This dynamic is important to single out when it comes to the role of the food system in conflict in the region.

9 Food system activities

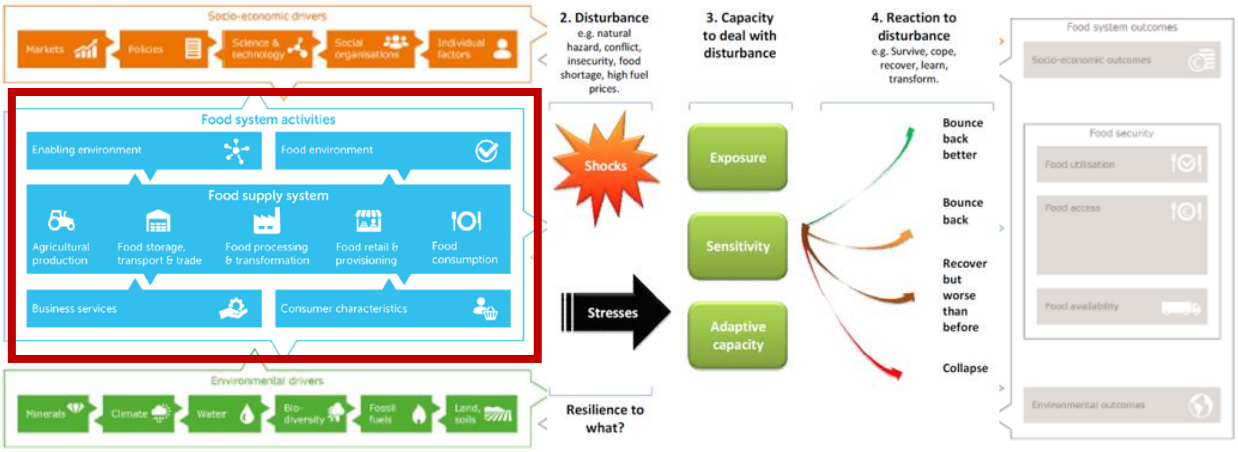


Figure 9 *Food system resilience framework. Adapted from van Berkum et. al. 2018*

As mentioned, the food system framework developed by van Berkum (2018) was used to structure our analysis.

We focused our analysis on each element of the food supply system in WBeG, using available data and filling the gaps with the dialogue participants' information. We discussed how food production, food transport/trade/processing/retail and food consumption has evolved over the past ten years; future evolution; and the main constraints and opportunities. This review was designed to help participants align their understanding of the main strengths and weaknesses of the current food supply system and potential for improvement.

We concluded our analysis by assessing the dynamic relation between food production and consumption within the state, trying to identify imbalance, bottlenecks and gaps.

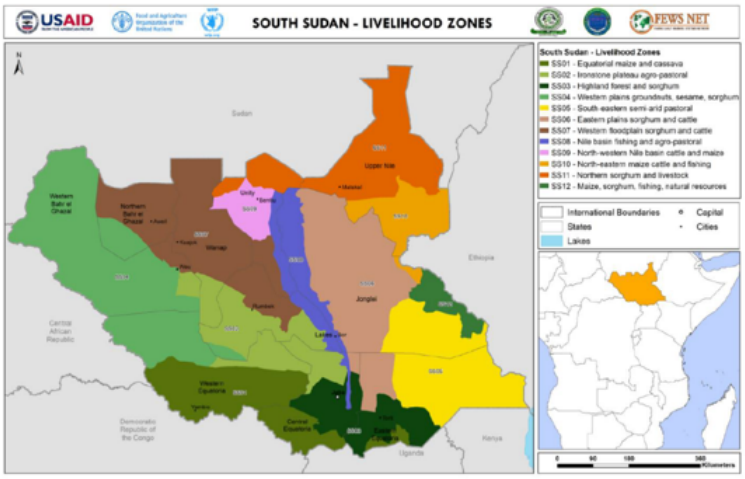
9.1 Food production

The WBeG food production system can be described using the livelihood zones[24] found in the area. The Western plain groundnuts, sesame and sorghum zone (SS04) is the major livelihood system in Raga and Wau counties. Jur River is more influenced by the North-western flood plain sorghum and cattle zone (SS07) and to a smaller extent by the Ironstone plateau agropastoral zone (SS02). Livelihoods in this zone are chiefly based on unimodal rain-fed subsistence agriculture. A small proportion of farmers are able to sell their produce commercially in local markets. The main crops grown are groundnuts and sesame for cash income and sorghum mainly for household consumption. The major determinants of wealth in the zone are linked with size of land cultivated, ownership of production assets and availability of labour. About 50% of household in and around Wau town practice agriculture, while rural payams in WBeG see 70-90% of their population active in agriculture (AFDB, 2013).

Crop diversification is higher around Wau town due to higher market access and include cassava, onions, simsim, groundnuts, maize, millet or sorghum (USAID, 2019a). Livestock systems are either nomadic pastoralist, notably with the yearly movement of herds from Warrap to Jur River county, or mixed crop-

[24] https://fews.net/east-africa/south-sudan/livelihood-description/november-2018

livestock systems and are a major source of livelihood. However, the increasing number of sedentary farmers is reducing the amount of grazing land available, that is a source of internal conflict in the state (AFDB, 2013). Livestock is an important economic asset, but due to his central cultural value only a small fraction of its commercial value is realised.



WESTERN PLAINS GROUNDNUTS, SESAME AND SORGHUM (SS04)
Livelihoods in this zone are chiefly based on subsistence rain-fed agriculture and supplemented by forest products and seasonal fishing in shallow rivers using fishing nets and traps as well as animal sales (poultry, goats and sheep). The zone was well known for its agricultural surplus before the conflict reduced access to farms and, in turn, production.

NORTHWESTERN FLOOD PLAIN SORGHUM AND CATTLE (SS07)
Livelihoods in this zone depend on a combination of crop production (sorghum is the staple), rearing of cattle and other livestock, fishing and 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% of households. For cereal, the zone is deficit producing, and imports a significant proportion of its staple foods from Sudan. In return, large volumes of cattle and other livestock are sold to Sudan.

IRONSTONE PLATEAU AGROPASTORAL (SS02)
The zone is predominantly agro-pastoral. Cereal and legume crop production and cattle and small livestock drive the local economy. It is a moderately productive zone.

Figure 10 *Description of livelihood zones. Adapted from FEWS NET 2018*

According to the dialogue participants, the major trends over the last decade in WBeG in terms of food production are linked with the increase in vegetable and groundnut production, the adoption of short-term varieties of sorghum due to climate change and conflict, and some development of mechanised farming. It is important to note that WBeG was a net exporter of cereal before the last few years of conflict.

If the current trends of peace and stability continue, the dialogue participants were confident that food production will return to pre-conflict level as farmers trust reinvesting in agriculture. The current development in road infrastructures is seen as key as it will give producers access to urban consumers. As is usually the case, food value chains do develop faster along transport axes.

The main opportunities in WBeG are linked to the availability of land and the large urban market of Wau. Beyond these overall strengths in WBeG, each county presents particular comparative advantages:

Table 3 *Comparative advantage by county*

County	Comparative advantages
Raga	Rivers for fishing
	Rangeland
	Fertile land
	Honey production
	Vegetable production
Wau	Market availability
	Fertile land
	Fishing
Jur River	Livestock
	Shea

In summary, the key food production elements for food system transformation are:

- Historical potential to be a food exporting region due to availability of fertile land.
- Food value chain development is dependent on the progress of road infrastructures.
- Due to high transport price, local food production can be profitable for a wide range of products.
- Wau town consumers currently have limited availability of diversified food products.

9.2 Food transport-transformation-retail

Food transport

Physical infrastructure such as roads are a crucial element of food systems, as without access to good roads, receiving good agricultural inputs and market access remain a challenge. For instance, farmers, importers, traders, etc. need roads to access input and output markets. Road rehabilitation needs to take place on a massive scale in South Sudan, including WBeG, to get the agriculture engine of growth moving, and this will create thousands of temporary, but relatively long-terms jobs at various skill levels (World Bank, 2019).

Access to markets varies seasonally in Wau and greater WBeG due to flooding and is limited by the poor state of the local roads. It is estimated that only 2% of the existing road network in South Sudan is paved, and most roads are impassable during the wet season, making it difficult if not impossible for rural people, which raises the transportation costs and also hinders the movement of goods from rural areas to urban centres and markets in the country (AfDB, 2013). Within South Sudan, there is a lack of connectivity among regions and between urban and rural areas. Moreover, there are only limited connections with neighbouring countries.

The government of South Sudan and various international organisations, including UNMISS, are working on upgrading roads in South Sudan and WBeG. In November 2021, a newly rehabilitated Kuajiena-Pagol link Road was opened, connecting WBeG and Warrap States. The 48 kilometres road, dubbed 'Salama Road' by the local communities, was rehabilitated as part of the Mitigating Cattle-Related Violence in the Border Areas of WBeG and Warrap States project funded by the United Nations Multi-Partner Trust Fund on Reconciliation, Stabilization and Resilience (South Sudan RSRTF), jointly implemented by the International Organization for Migration (IOM), the UN Mission in South Sudan (UNMISS), and the Food and Agriculture Organization (FAO) (IOM, 2021).

Another crucial infrastructure for the development of the food system in WBeG is the connection of Raga either with Sudan or Wau. As it is known that upgrading roads can contribute to improved food and nutrition security through increased connectivity, participants in the FoSReD-PaD have been asked a number of statements on the role of upgrading the physical road infrastructure in WBeG.[25]

[25] The full detail of these statement can be found in Annexe 10.

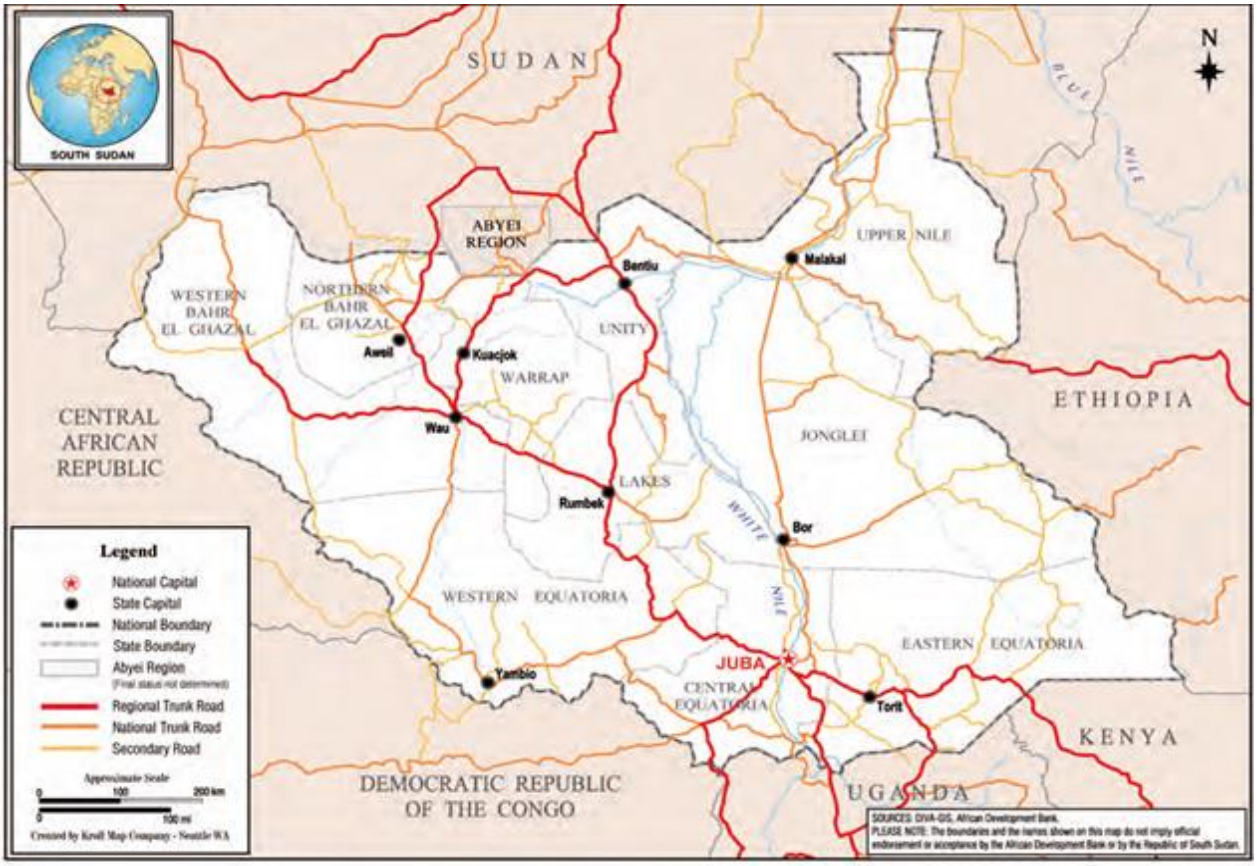


Figure 11 *South Sudan's road network (AFDB, 2013)*

Food trade/retail

Key information on trade and price:

- Checkpoint payments from Juba to Wau per trucks can be around 50% of the value of the shipment.
- Traders sell food commodities in Wau town with a 10-15% profit margin.

Given the dependency of Wau town on food produced outside of the state and the high additional price due to transportation/trading costs, the economic potential for local production to be competitive is strong.

As a consequence of poorly developed road network, markets are characterised by weak integration. Transportation costs are in general more than proportional to the distance from the markets, due to multiple taxation (both official and unofficial), time spent at customs, check points and roadblocks (FAO and WFP, 2021). Prices record a high volatility throughout the country, as local economies are very shallow and prices tend to quickly react to contingent and short-lived events such as roadblocks, the delivery of food assistance, or episodes of violence.

According to the dialogue participants, in Wau town, out of the 50-60 daily trucks that supply it daily, about 90% are operated by Sudanese traders. Few local traders have the required capital to compete in international trade and South Sudanese traders are mainly focused on local rural Wau transport. Local loans for transport are difficult to access (high collateral asset requirements and high interest rates of around 20%). International traders supply the town mainly in sugar, oil, onion, legumes and potatoes from Sudan and maize flour from Uganda. Most of this trade is unidirectional; only about 10% of trucks are able to trade food products (mainly groundnuts, simsim, sorghum or cowpea seasonally) from Wau to other markets.

Food storage

More than 80% of traders from Wau are not using storage (World Bank, 2017). According to the dialogue participants, most existing storage is individual; some share space, but this practice is limited. Small

individual stores are vulnerable to rodents and insects, while larger traders' storages are of poor quality and targeted for looting or theft.

Food losses
According to the dialogue participants, food losses in WBeG are very high and can be estimated at 50%: 10% loss in the field due to insects, pests and diseases, 10% during transport due to thefts, loss of quality and taxes, and around 30% in storage due to mould, rodents, insects and thefts. This number (which might be slightly exaggerated) gives a sense of the perceived scale of the current loss of potential in the local food system.

Food transformation/processes
Food transformation is limited in WBeG and no large-scale business is active. Nevertheless, individual and group/cooperative food transformation exists. The principal activities are:
- Shea butter
- Drying fish
- Drying okra
- Honey processing
- Cassava drying
- Groundnut and simsim paste.

In summary, the key elements for food system transformation are:
- Road infrastructures that are prioritised are Raga-Sudan and Raga-Wau.
- Value chain development should follow closely road infrastructure development.
- Empty trucks travelling from Wau toward Juba and Sudan offer an opportunity for low-cost transport for local food production.
- Safe and quality storage is needed to avoid food losses and high seasonal fluctuation.

9.3 Food consumption

The main foods consumed in WBeG are sorghum, maize, cassava, groundnut, cowpeas, pumpkins, vegetables and fish. Better-off households are able to add more meat to their diet. Traditionally, the lean season occurs in May-June, but with livelihood disruptions, food scarcity starts much earlier for the most food insecure segments of the population.

According to the dialogue participants, over the last ten years the diet in WBeG and especially in Wau town has seen an increase in the consumption of rice, vegetables, fruits, cooking oil and processed food. These tendencies are forecasted to continue in the future, with a gradual increase of white meat (such as chicken) and plant protein (such as beans and cowpeas).

In terms of the main nutrition deficiencies we can identify the following:
- A historical low average dietary energy value at 1440 kcal/person/day in WBeG as measured in 2009. This figure, the lowest in South Sudan at the time compared to a national average of 1890 kcal/person/day, corresponded to 74% of the WBeG population suffering from food deprivation at the time (National Bureau of Statistics South Sudan, 2012).
- On top of this overall energy gap, the dialogue participants who were nutrition experts identified the lack of protein and iron in the current local diet as the main macro and micronutrient deficiencies.

To achieve a locally balanced diet, they promote:
- An increase in overall energy requirement consumption through increase in cereal consumption (sorghum).
- Planting protein such as beans and cowpeas or raising poultry as more affordable options than red meat and fish.
- The consumption of leafy green to meet iron needs.
- The local consumption of milk (but this remains difficult due to low productivity and scarcity during the dry season).

In summary, key elements for food consumption transformation are:

- Closing the yield gap for cereals.
- Promoting plant protein (beans and cowpeas) production and consumption.
- Promoting leafy green production and consumption, especially for pregnant and lactating women.

9.4 Dynamics of food production and consumption

In WBeG, where moderate cereal crop surpluses were produced until 2015, increasing deficits were recorded between 2016 and 2019 due to the conflict. Subsequently, the deficit decreased by about 22% to about 25 000 tonnes in 2020 and is expected to further decline by almost 40% to about 15,000 tonnes in 2021, as cereal production increased by almost 30% both in 2019 and 2020 due to improved security and favourable weather conditions (FAO and WFP, 2021).

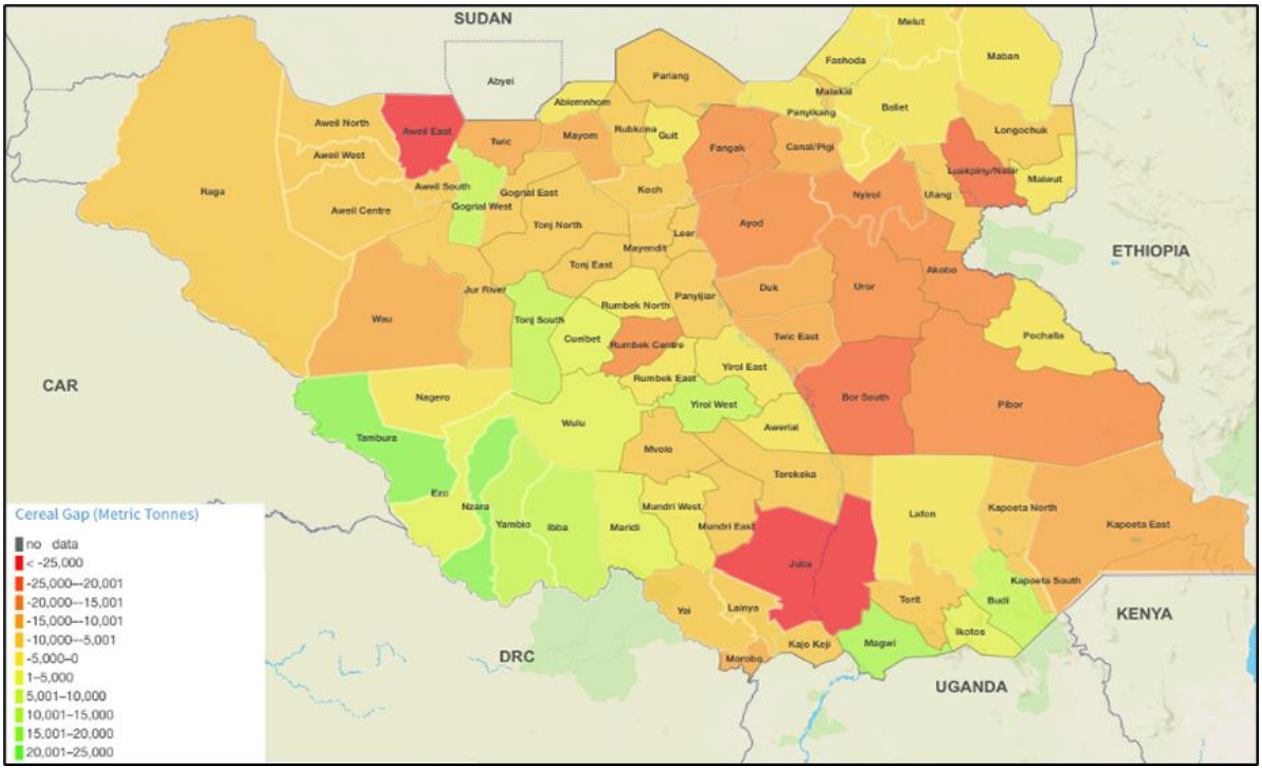


Figure 12 *Cereal crop gap. (CLIMIS, 2021)*

9.5 Linking food production, transformation and consumption through value chains

Our participant dialogues dedicated attention to exploring the value chains specific to WBeG. We prioritised this as value chains have a strong potential to drive local food system transformation. However it is important to understand the differing potentials of the different value chains to deliver benefit on the multiple outcomes of the food system. Not all value chains can deliver equally on improving food and nutrition security, income generation, climate resilience, conflict prevention or youth and gender integration. Before investing in value chain development it is important to have a nuanced understanding of the trade-offs and synergies that commodities offer for different segments of the population or geographic areas.

The dialogue participants reflected on the long list of available, or potentially available, food commodities in WBeG. For each of the key commodities they worked on value chain mapping, identification of actors, drivers-trends-opportunities, and uncertainties and opportunities/barriers to youth inclusion.

Presented below is an example of the workshop exercises carried out to map the fish value chain in WBeG. This process was carried out for all value chains. The complete compilation of these exercises and data on the value chains can be viewed in the separate FoSReD WBeG working and background document. However, this example of fish value chain mapping demonstrates how the qualitative data was captured for each value chain, incorporating the different inputs, perspectives and knowledge of the participants during a collaborative group work process.

9.5.1 Mapping potential value chains: the fish value chain as example

Participants were asked to identify the value chains with most potential for four main categories:
- Value chains to narrow the food gap (those identified were sorghum, cowpea and Irish potatoes)
- Value chains to contribute to healthier diets (groundnuts, fish, fruits, mangoes)
- Value chains to contribute to fodder production and improvement of rangelands (none were identified by participants)
- Value chains to strengthen agro-forestry and silvo-pastoral systems (shea, honey, teak).

For the main value chains identified, dialogue participants applied a number of participatory activities to analyse the value chain and its key institutional factors affecting smallholder inclusion in markets, and on that basis identified options and strategies for change[26]. The participatory activities included:
1. Mapping the value chain
2. Mapping the institutional and policy environment
3. Mapping drivers, trends, issues and opportunities
4. Mapping future scenarios
5. Mapping options for better inclusion
6. Mapping strategies to support change.

The fish value chain is presented as an example.

1. Mapping the value chain

Table 4 *Production, collection, processing and consumption; fish value chain example*

Production	Collection (harvesting)	Processing	Consumption
Fish farming (natural)	Harvest mature fish using sustainable fishing practices.	Cleaning, drying, smoking, powder, oil making, fish meal, fresh fish.	Direct from source Local markets Sold at wholesale and retail

[26] Use was made of 'Chain-Wide Learning for Inclusive Agrifood Market Development', a guide to multistakeholder processes for linking small scale producers to markets. https://edepot.wur.nl/248994

2. Mapping the institutional and policy environment

Table 5 *Institutional mapping: fish value chain example*

	Fish value chain					
Actors	**Production**	**Collection**	**Wholesale**	**Processing**	**Retail**	**Consumption**
Public	• Fishing police • Fish extension services	Assemblers	Traders	Fish processing companies	Local traders	Communities
Private	• Fishing tools & equipment • Extension	Cooperatives	Traders	Fish processing machines (FAO)	Local traders	Communities Hotels
Civil Society	Awareness training (CSOs)	Community groups	Linkage	Facilities	Individuals	Communities
Cultural	Fishing	Local communities	Direct suppliers	• Smoking • Drying • Salting • Cleaning • Oil making	Local traders	Communities

3. Mapping the drivers, trends, issues and opportunities

Table 6 *Drivers, trends, issues and opportunities: fish value chain example*

List of drivers	Trends	Stakeholders	Issues/opportunities	
• High demand • Availability of water resources • Preferences • More equipment for fishing • Increase of income • High population growth • Peace and stability	• High prices • Climate change (more fish during floods and less fish during droughts). • Increase in fish production because people think it's more healthy than red meat. • Increase in fish production from neighbouring states (Warrap and WBeG).	• FAO • Government • CSOs / NGOs • Traders & retailers • Individuals	• Inadequate preservation (cold boxes) • Lack of storage - perishable fish • Distance to markets	• Tools and equipment like fishhooks, nets • Provision of extension services • Selling fishing tools and equipment • Consumption of fish

4. Mapping future scenarios

Key uncertainties among drivers / trends affecting the fish value chain

- Insecurity (conflict)
- Climate change (water availability in rivers and ponds)
- Market forces (demand, supply, price)
- Low population (displacement, loss of life etc.).

5. Mapping options for better inclusion, in particular for youth.

Inclusion of youth (fish value chain)

Table 7 *Inclusion: fish value chain example*

Key opportunities	Key barriers
More training for youth by NGOs, civil society, government	Lack of training
Provision of more fishing tools and equipment	Lack of fishing tools and equipment
Awareness of importance of fish consumption	Lack of awareness of the nutritional/health value of fish
Access to water resources	Lack of access to water resource
Peace and stability	Insecurity

6. Mapping strategies to support change

The group working on the fish value chain did not have time to develop strategies to support the changes required to develop the potential of the fish value chain.

9.5.2 Value chain results at a glance

Table 8 below summarises the results of value chain mapping, actors' identifications, drivers-trends-opportunities, uncertainties and opportunities/barriers to youth inclusion. A full overview of the value chains can be found in the FoSReD WBeG working document[27].

Table 8 *Identified value chains at a glance*

			Potential for		
Food commodity	**Income generation**	**Food and nutrition benefit**	**Climate resilience**	**Conflict sensitivity**	**Youth and gender inclusion**
Shea (score 3.5)	Potential for fruits, oil, cosmetic, wood/charcoal, wax. High demand and quality product.	Limited	Good	Not a source of conflict but requires stability for access	High potential for value addition
Honey (score 3)	Good quality product and consumer demand, lack of organisation to bulk and be profitable	Limited	Good	Not a source of conflict but require stability to access	Potential youth activity if trained
Groundnuts (score 2.5)	Low farm gate prices, high transport costs (intermediaries), high taxation, high market demand and retail prices but labour-intensive	'Healthier' oil	Vulnerable to flooding and water logging	Not a source of conflict	Difficult for male youth as slow return on investment and some labour is perceived as a woman's activity (weeding)
Fish (score 4)	High local demand and high price for fresh fish	Gap in animal protein	Impacted by drought and flood cycle	Not source of conflict – potential competition if developed	Potential youth activity if trained
Sorghum (score 2)	Low productivity, subsistence	Calories	Rainfed – drought tolerant varieties	Long cycle crop can generate conflict during livestock migration. Short cycle varieties introduced to avoid losses due to livestock migration.	For youth, slow return on investment activity and limited land
Fruits-mango (score 2)	Short season (requires transformation and transport), slow to mature	Good	Drought resistance	Not a source of conflict	For youth, long wait before return on investment
Cassava			Impacted by drought and flood cycle	Long cycle crop can generate conflict during livestock migration	
Cowpea (score 5)	Local demand (population and humanitarian actors), lower transport costs	Strong due to limited consumption of legumes and gap in vegetable proteins	Drought-resistant varieties	Not a source of conflict and can be used as fodder	Suited for women's groups
Livestock-cattle (score 2)	Potential for meat, milk, dung/urine, hide, hooves/horns, but cultural resistance to business development. Consumer demand-high price-high meat tax (10%)	Gap in animal protein	Impacted by drought	Source of tension (pasture access and cattle wrestling)	Lack of capital for youth

[27] Working Document: Outcomes of the 2022 Food Systems Resilience Dialogue in Western Bahr el Ghazal State, South Sudan.

		Potential for			
Food commodity	**Income generation**	**Food and nutrition benefit**	**Climate resilience**	**Conflict sensitivity**	**Youth and gender inclusion**
Irish potatoes (score 3)	High urban (Wau) demand and price, currently an expensive import from Uganda/Sudan	Limited	Drought impact if rainfed	Not a source of conflict	Short cycle crop close to urban environment, but require access to land-seeds- skills
Teak/ mahogany (score 1)	Require high investment costs	-	-	-	-

* The score in column 1 indicates the potential of the value chain to deliver on multiple benefits; the scoring range is 0 (weak potential on all dimensions) to 5 (strong potential on all dimensions).

In terms of geographic location, each county in WBeG has a different competitive advantage when it comes to value chains development. The dialogue participants identified these main strengths:

Table 9 *Comparative advantage per county*

County	Comparative advantage
Raga	Rivers for fishing
	Rangeland
	Fertile land
	Honey production
	Vegetable production
Wau	Market availability
	Fertile land
	Fishing
Jur River	Livestock
	Shea

In conclusion, based on the participant dialogue, key food value chains that have the most potential for food system transformation in WBeG could be:

- Shea for youth and women's groups, particularly in Jur river
- Honey for youth groups, particularly in Raga
- Fish and Irish potatoes for youth groups in peri-urban Wau
- Cowpeas for women's groups in the State
- Groundnuts and livestock value chains in the State.

9.6 Youth employment

In addition to the exercises on the value chain, the thematic area of youth employment was explored in more depth during the consultations in Raga.

Employment and opportunities for labour are a key element in the food system, as livelihoods and income provide the very basis for the purchase of food items for those who are not self-sufficient in food production. Further, employment increases opportunity costs and reduces the susceptibility of people to engage in conflict. These effects are especially strong for youth, who are most prone to engaging in conflict as a livelihood strategy.

Generally, there is a lack of employment opportunities in South Sudan. The agriculture sector, mainly crop cultivation, dominates employment opportunities but remains underdeveloped. The types of employment or jobs are often considered less desirable, particularly for youth, due to the underdeveloped activities in the food systems.

Due to the importance of (youth) employment for food and nutrition security, agricultural and economic development and the connections between employment and conflict, participants in FoSReD-PaD were asked about a number of statements on the role of employment for youth in Raja.

Statement: Currently, there are employment opportunities for youth in Raga.
NO: 86% disagreed or strongly disagreed with the statement. Answers given included 'because jobs that are advertised are corrupted. Other people will get the job, not locals. There is no capital to start up a business', 'because projects cannot absorb a lot of youth. Even if there is a job, payment is too low. Most youth are still unemployed', 'because youth are lazy, but there is a chance they overcome their laziness', 'youth are lazy, that is how human beings are, we do not want to change our life despite opportunities being there'.

Statement: Employment for youth will contribute to food security in Raga.
YES: 97% of participants strongly agreed with this statement.

Statement: Employment for youth will contribute to peace and stability in Raga.
YES: 97% of participants agreed and 94% strongly agreed with this statement. One participant indicated that 'peace and stability increase FNS and production. People can go anywhere for cultivation, investors come, youth can be employed.'

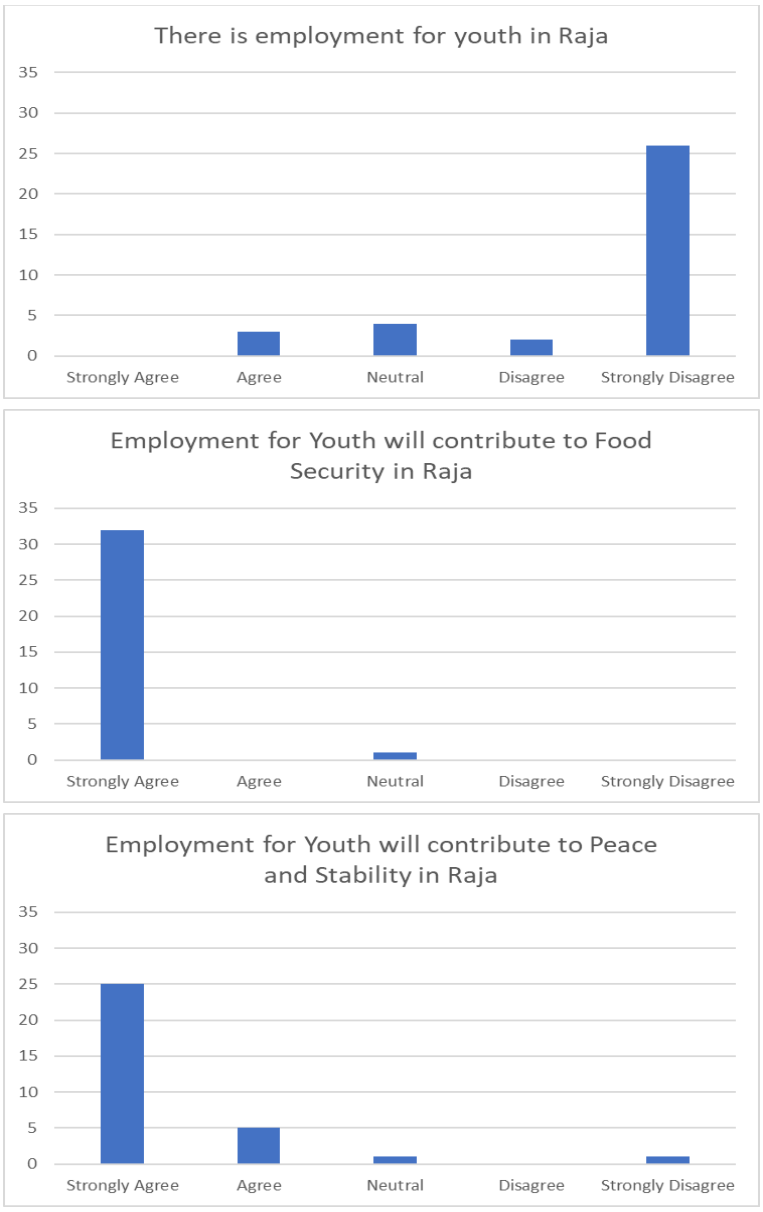


Figure 13 *Statements on youth employment*

9.7 Humanitarian food assistance

Humanitarian assistance is intended to reduce the human costs of war by providing relief to vulnerable populations in need (Wood & Sullivan, 2015); policy makers and donors consider humanitarian food aid as an effective tool to mitigate the impact of conflict on food security (Mary & Mishra, 2019). However, in recent years, there have been growing concerns about humanitarian aid leading to unintended consequences, potentially increasing rather than decreasing the occurrence of conflict.

Currently, food aid (from WFP or other NGOS) is often the primary option when households face food insecurity. However, such humanitarian aid may not be sustainable in the future, nor support long term resilience (World Bank, 2019).

9.7.1 Perspectives on humanitarian food assistance

As part of the FoSReD-PaD for WBeG, participants were asked to respond to a number of statements regarding the role of humanitarian food assistance for FNS as well as the impact of humanitarian food assistance on local conflict dynamics.

Statement: Humanitarian food assistance is important for food and nutrition security in Raga.
YES: A total of 97% of participants agreed or strongly agreed with this statement, showing that humanitarian food assistance is perceived to be an important contribution to FNS in Raga.

Statement: Humanitarian food assistance contributes to peace and stability in Raga.
YES: A total of 61% agreed or strongly agreed with this statement, while 39% disagreed or strongly disagreed, showing there is controversy regarding the impact of humanitarian food assistance on peace and stability. This discrepancy shows that there is a need for additional research on the question of how humanitarian food assistance impacts local conflict dynamics.

Statement: Currently, levels of malnutrition are higher than normal in Raga.
YES: 97% agreed or strongly agreed that levels of malnutrition are currently higher than normal in Raga.

Statement: Humanitarian food assistance leads to dependencies. People become reluctant to work.
NO: 93% disagreed or strongly disagreed. Yet this is in stark contrast to participants indicating in other conversations that humanitarian food assistance makes people reluctant to work or 'lazy'. Some examples of these answers include 'there is positive and negative effects (of humanitarian food assistance). Positive is that people have energy to work, but negative is that it creates dependencies, they stop working.' Another participant added along the same lines that humanitarian food assistance is 'helping the community, but some people become reluctant to work.' Further, participants added that if humanitarian food assistance was to stop two things would happen, namely 'farming would increase and during (the) dry season people would go to the riverbank, others would go hunting, fishing, others would engage in labour.' Another participant added that without humanitarian food assistance, 'those who can work will go do some work; those who can, will go to forest for wild foods, hunting, fishing; yet many people may go hungry.'

One possible explanation for this discrepancy between individual responses and the overall response to the statement may be that people rely on humanitarian food assistance for food and nutrition security and thus may not want risk receiving less food assistance by voicing the negative side effects of food assistance and are especially reluctant to do so in group settings.

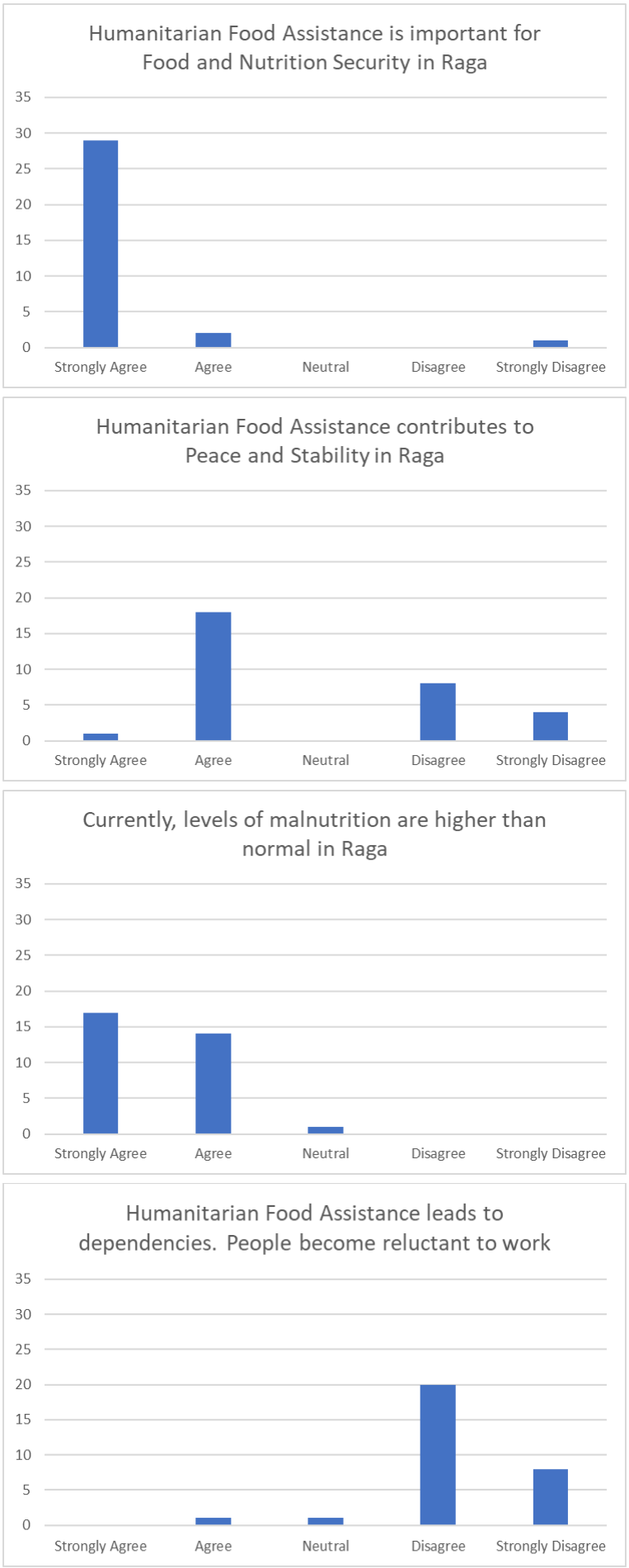


Figure 14 *Statements on humanitarian food assistance*

9.7.2 Perspectives on school feeding programmes

School feeding programmes are a frequent type of humanitarian food assistance delivered in South Sudan. While considered important to ensure food and nutrition security for children and this is seen as an incentive for parents to send their children to school, in some areas school feeding programmes have been suspended.

As part of the FoSReD-PaD for WBeG, participants were asked to respond to a number of statements regarding the importance of school feeding programmes, in order to capture people's understanding of the importance of school feeding programmes and the perceived impact of suspensions of the programme. The paragraphs below present the results.

Statement: The school feeding programme is a motivation for parents to send their children to school in Raga.
YES: All participants agreed or strongly agreed with this statement, indicating that school feeding programmes, such as have been provided by WFP in the past, incentivise parents to send their children to school. Answers included that 'school feeding programmes encourage children to attend schools regularly, paying attention to learning,' that 'teachers also can benefit from the school feeding programme, enhancing the learning system' and that 'school feeding programmes improve the health of children, since they feed on a balanced diet.' Further, participants answers that 'it increases school enrolment and retention rates' and that the 'school feeding programme reduced poverty by freeing household income to be spend on other household needs.'

Statement: Without school feeding programmes, parents do not send their children to school in Raga.
NO: A majority (94%) disagreed or strongly disagreed with this statement, indicating that school feeding programmes are an incentive (as indicated in the previous statement) for parents to send their children to school, but are not a main determinant in parents' decision-making. The rationale for the answers included that *'education is very important,* so even without a school feeding programme parents still send their children to schools' and that 'education is the right of all children; they can still be sent to school although they learn in hard ways.'

Statement: Suspension of WFP school feeding programmes has no negative effect in Raga.
NO: A majority of participants (89%) disagreed or strongly disagreed with this reverse statement, indicating that suspension of school feeding programmes did have negative effects. Answers given included that 'suspension of school feeding programme in Raga has increased the rate of school dropouts', that 'some dropout children are involved in crimes, and some of them are now jailed for 12 years', while others mentioned that 'dropout girls are pregnant due to suspension of school feeding programme.' Further, it was mentioned that 'children go home early due to hunger, hence leading to poor learning' and that suspending school feeding is an 'increased burden to parents who have some income, as they struggle to pay for feeding costs for their children in the school.'

Statement: There are alternatives to the WFP suspended school feeding programme in Raga.
NO: A majority of participants (97%) disagreed or strongly disagreed with this statement, indicating that there are no viable alternatives to school feeding programmes. Answers included that 'most households are food insecure and having no capacity to provide an alternative to provide food to schools ', and that 'the working class have little salaries which is not enough for feeding the family for 2 days, and not regularly paid'.

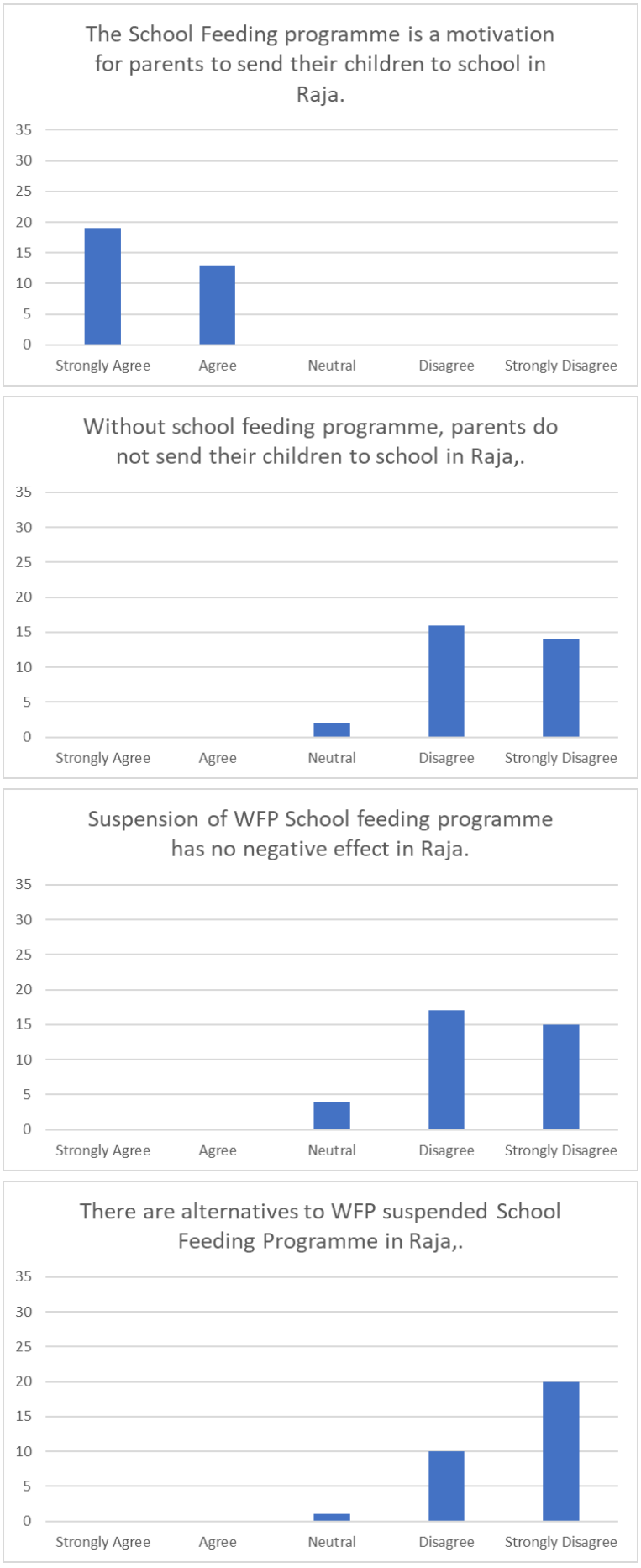
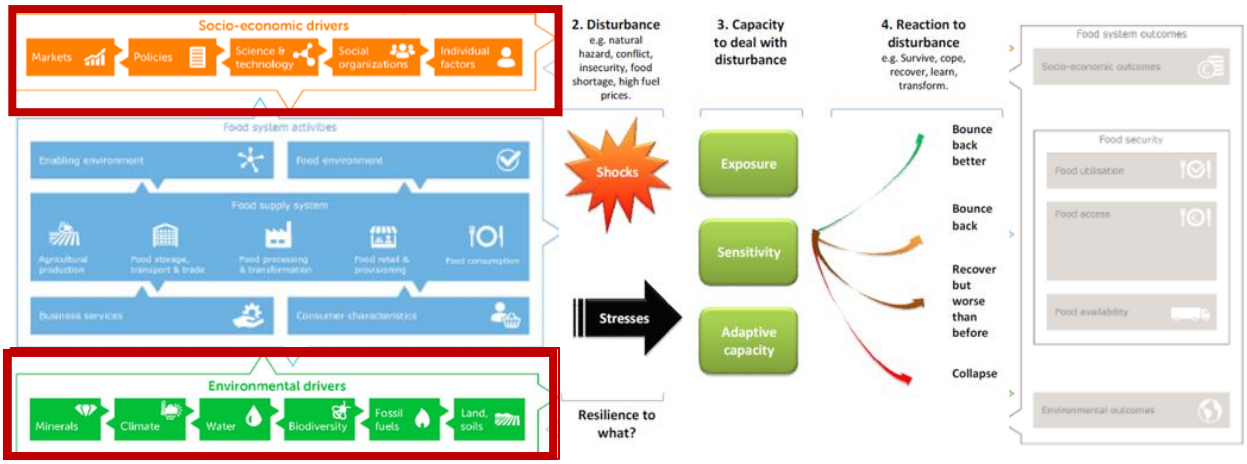


Figure 15 *Statements on school feeding programmes*

10 Food system drivers



The food system drivers impacting food system activities and food system outcomes include socio- economic drivers (section 10.1) and environmental drivers (10.2).

10.1 Socio-economic drivers

Socio-economic drivers of food systems cover, for example, the local market situation, policies, the standard of science and technology, how society is organised (aspects such as health care, household structures, or education), or individual factors which include lifestyle, beliefs, values and culture.

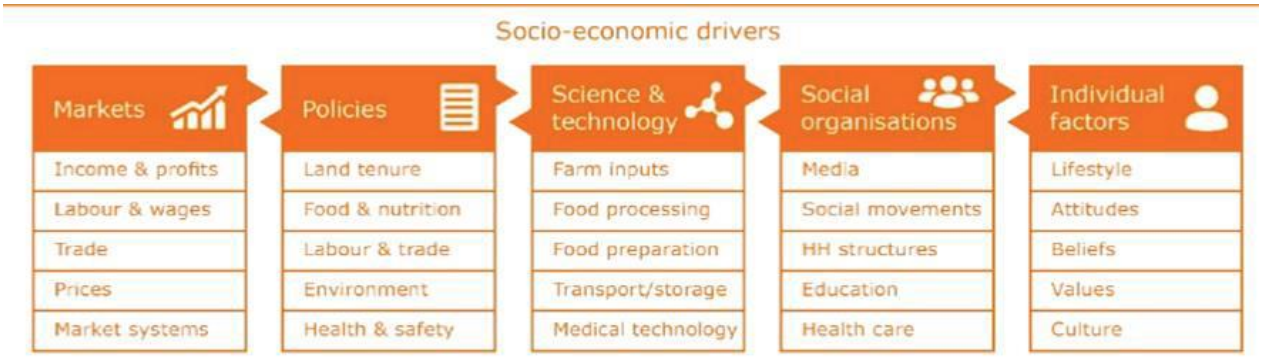


Figure 16 *Socio-economic drivers at a glance*

10.1.1 Socio-economic drivers - context analysis and participatory dialogue

To build on the data collected during the Wau participant dialogue,[28] additional desk research was conducted in a context analysis / literature review, which looked more broadly at how various socio-economic drivers are impacting food systems in South Sudan, focusing on WBeG (where possible).

[28] The full detail of the participatory dialogue on socio-economic drivers can be found in Appendix 12.

Policies

South Sudan has a policy framework that provides the basis for transformation of agri-food systems. This includes the Agricultural Sector Policy Framework (ASPF), as well as 14 sub-sector policies (see Appendix 8: Status of agricultural policies). However, as was expressed by participants during the Wau participant dialogue, this policy framework is outdated, and lacks implementation capacity due to a number of critical gaps and political economy considerations. For instance, during the workshop participants identified the following critical gaps: the lack of subsidies provided to farmers, inactive quality control systems, and that the formulation of policies is not based on local contexts.

The country developed sector and sub-sector policies in the early 2010s. However, officially they have seldom been endorsed and therefore need updating. The 2013 Comprehensive Agriculture Master Plan (CAMP) provides an ambitious framework for investments in the country, with a long-term horizon on which future investment strategies should build, but to a large extent it still must materialise. Initiatives such as the Scaling Up Nutrition (SUN) or the Comprehensive Africa Agriculture Development Programme (CAADP) framework provide other opportunities worth exploring (FAO and The World Bank, 2022).

Markets

Years of conflict have profoundly disrupted markets in South Sudan and the remaining value chains are rudimentary (von der Gorlitz, et al., 2020). Numerous markets stopped functioning as a result of the conflict, floods and production shocks, and moreover the remaining ones are poorly integrated. During the Wau participant dialogue, a number of bottlenecks or constraining market factors were identified, which included:

- Inflation due to poor price control systems
- Market supply is not based on market demand, hence the low price of food commodities
- Poor road and transport networks
- Currency fluctuation and inflation
- Market deregulation
- Illegal taxation
- Limited trade linkage between communities due to conflict.

During the Wau participant dialogue a number of key strategic actions were made to develop markets and improve the situation of market access and thus, food system outcomes in WBeG. These included:

- Price regulation
- Better align supply and demand
- Construct road networks
- Currency stabilisation policies
- Tax and market regulation
- Market facilitation and linkage
- Improve production, post-harvest handling and value addition among small farmers' groups
- Build on cooperative and groups formation.

Overall, while Western Bahr el Ghazal also has good potential both for livestock and crops, the state requires significant infrastructure investments to be better connected to major markets such as Wau (FAO and The World Bank, 2022).

Recent market data from South Sudan's Crop and Livestock Market Information System (CLIMIS) shows that market prices continue to increase in WBeG – as for the whole of South Sudan - driven by increasing fuel prices, depreciation of the SSP, trade route barriers due to flooding and insecurity, and high market demand (FEWS NET, 2022). Overall, the onset of Ukraine crisis, increased global fuel prices, value depreciation of the local currency and obstacles to trade, combined with seasonal factors, have led to an increase in fuel and food prices in Western Bahr el Ghazal and across South Sudan. This is negatively impacting household's financial access to markets and food, particularly for labour-dependent households (FEWS NET, 2022).

Market access

Access to markets varies seasonally in Wau and greater WBeG due to flooding and is limited by the poor state of the local roads. Market access can also be constrained by insecurity due to the presence of the Lord's Resistance Army (LRA) in neighbouring Central African Republic. Poor households take their goods

directly to market on bicycles and motorbikes while better-off households hire trucks to transport their farm produce. As in other areas, prices in nearby main markets have increased significantly in recent years. For example, prices of staple foods for poor households such as sorghum, sesame, and groundnuts have increased six- to ten-fold at Wau market (see Appendix 9). At the same time, wages for agricultural labour increased two-fold between early 2016 and mid-2017 (FEWS NET, 2018).

Imported goods from neighbouring countries are also available, particularly from Sudan and Uganda, due to trade routes that run through the county. Wau Town has a major market in the central area of town, as well as several smaller markets that serve the local population. It lies along historical trade and transportation routes, and as a result other parts of the Bahr el Ghazal region rely on Wau Town as a feeder market for goods (CSRF, 2020). Furthermore, according to a resilience assessment of Wau, 'only 66% of surveyed households have regular access to a common open market, though among those with access, nearly all (97%) have daily access' (USAID, 2019a).

Social organisations

Social organisations can be regarded as the organisational forms or sectors that affect the functioning of the food system, such as households, social movements, media, education, and health care. These organisations can help strengthen the position of farmers in the food system, for example, and possibly result in higher incomes.

During the Wau dialogue several bottlenecks were identified which inhibit the formation of effective social organisations. Key constraints identified included:

- Few cooperatives and inactivity
- Farmers' lack of knowledge on the concept of cooperatives
- Lack of sustainability
- Tribal conflict and social frictions
- The issue of land ownership
- Poor socio-economic infrastructure
- Poor gender dynamics
- Poor access to market and financial services.

To address these constraints, several key recommendations or 'strategic actions' were made with the aim of strengthening social organisations' capacity. These included:

- Strengthen cooperatives and link them to finance providers
- Strengthen social cohesion through community dialogue for peaceful coexistence
- Enable and strengthen cooperatives
- Strengthen financial systems
- Establish a financial literacy campaign.

Individual factors

During the Wau dialogue participants identified several individual factors impacting food and nutrition security outcomes in Western Bahr el Ghazal. These included:

- Negative social, cultural, and economic norms
- Poor farming practices and poor attitudes toward productivity
- Negative gender roles and responsibilities.

To address these constraints, participants recommended

- Humanitarian/development actors should further focus on capacity building
- Improving awareness amongst community members, since across South Sudan in general, there is a particular need to devise interventions aimed at supporting the change of harmful and inequitable social and gender norms and behaviours, such as those that promote cattle raiding and underpin other forms of violence, including against women and girls.
- Cattle culture is very important for most South Sudanese ethnic groups. The size of one's herd is a key marker of wealth, and a culture of cattle raiding is particularly common amongst young men. Livestock farming is dominated by culture and tradition that lack business orientation (cattle, for instance, are still raised for prestige and for dowry payments rather than for meat, milk, hides and other by-products).

Therefore, further capacity building and training should be implemented in consultation with communities to promote market orientation towards livestock.

Further research is required on how these various individual factors (e.g. lifestyle, norms, attitudes and cultures) combine to influence the choices of individual actors in the food system.

10.2 Environmental drivers

The environmental drivers indicate the biophysical context in which the food system operates (van Berkum, et al., 2018). The information in this section has been mainly derived from the participant dialogue held in Wau, Western Bahr el Ghazal. It is kept brief as it focuses on the most relevant aspects.

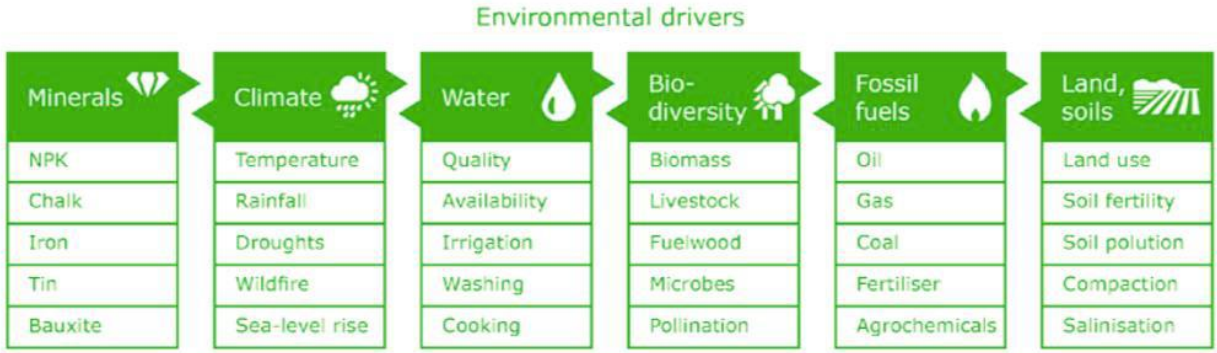


Figure 17 *Environmental drivers at a glance. Adapted from van Berkum et. al 2018*

10.2.1 Environmental drivers: context analysis and participatory dialogue

To build on the data collected during the Wau participant dialogue,[29] additional information on environmental drivers was collected through an extensive context analysis / literature review. Key findings on environmental drivers are presented below.

Climate: trends and projections
South Sudan is experiencing the effects of long-term climate change, such as increased temperatures and precipitation change, as well as short-term changes such as more frequent droughts and floods.

Temperature: Mean annual temperatures across South Sudan have varied between 25°C and 35°C over the past 30 years, with an increase of 0.4°C every decade (World Bank, 2022). The average temperature is projected to increase between 1°C and 1.5°C by 2060, leading to a warmer and drier climate (USAID, 2019b).

Precipitation: In the last 20 years, rainfall in South Sudan has been erratic.[30] Summer rainfall has decreased by 15–20%, particularly in the northeast (South Sudan Ministry of Environment and Forestry, 2016).

[29] The full detail of the participatory dialogue on environmental drivers can be found in Appendix 13.
[30] See online graphic: South Sudan rainfall anomalies 2000–2020. Red indicates lower-than-average rainfall, blue shows above-average rainfall. Source: FEWS NET, NASA Land Data Assimilation System (FLDAS).

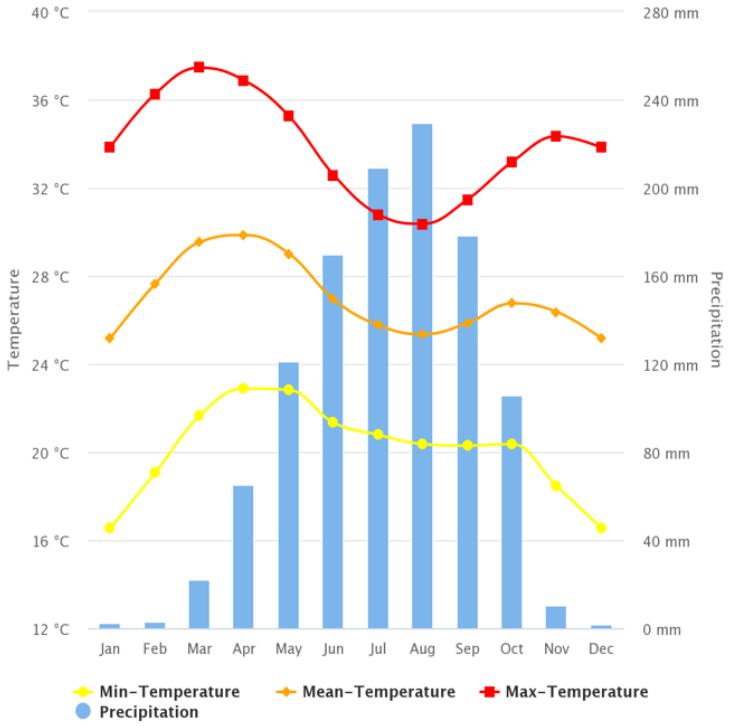


Figure 18 *Temperature and rainfall in Western Bahr El Ghazal, South Sudan from 1991-2020 (WFP, 2022)*

The following environmental drivers are contributing to the current vulnerability to climate variability in WBeG State. Experts consulted during the dialogue mention, as problems, late onset rain, drought, poor harvest, heavy rain leading to temporary displacement, and changing rainfall pattern influencing cattle migration and causing tensions.

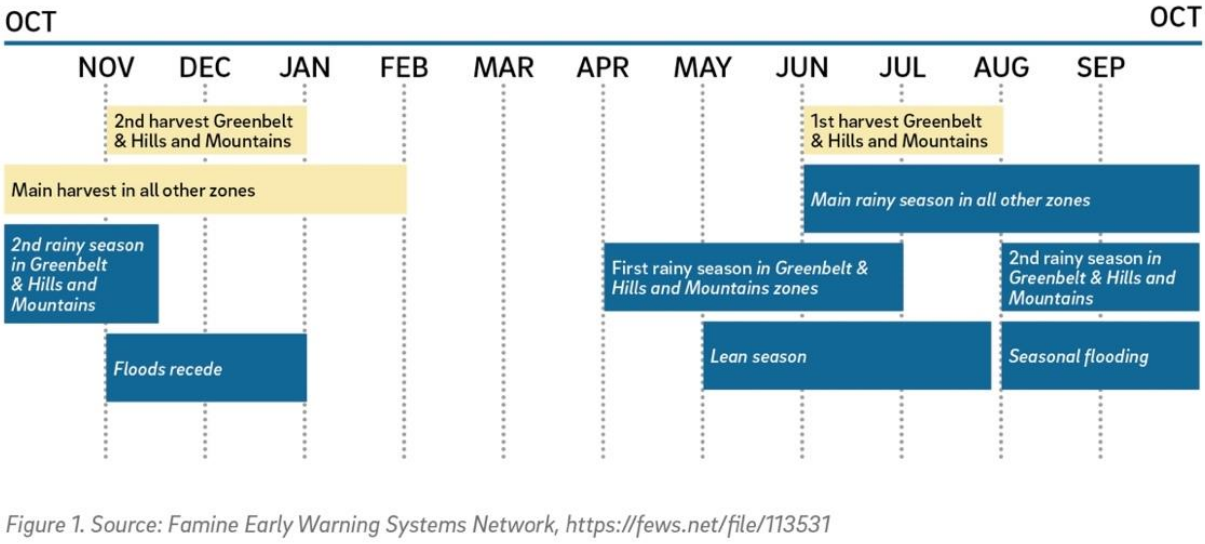


Figure 1. Source: Famine Early Warning Systems Network, https://fews.net/file/113531

Figure 19 *Key livelihood and labour cycles in South Sudan's seasonal calendar FEWS NET, 2021*

Increased deforestation

Since gaining independence, immigration and natural population growth in South Sudan have resulted in an increased demand for charcoal and fuelwood, as well as land for agricultural and residential purposes. The rate of deforestation has consequently accelerated between 1.5–2% each year (UNEP, 2018). Deforestation

and habitat degradation have decreased the ability of woodland and forest ecosystems to provide important goods (such as non-timber forest products) and services (such as water provision) to rural communities. This has increased the vulnerability of rural communities to climate variability, as the goods and services provided by these ecosystems buffer communities against the crop failures associated with erratic rainfall, floods, and droughts.

Deforestation is also having a negative impact on biodiversity and wildlife conservation in South Sudan (Ministry of Environment South Sudan, 2016). From 2001 to 2021, West Bahr-al-Ghazal lost 4.27 kha of tree cover, equivalent to a 0.23% decrease in tree cover since 2000, and 926kt of CO_2 emissions (GFW, 2021). In conclusion, deforestation in WBeG is significantly lower than the national average of 2%, yet deforestation remains an issue affecting WBeG.

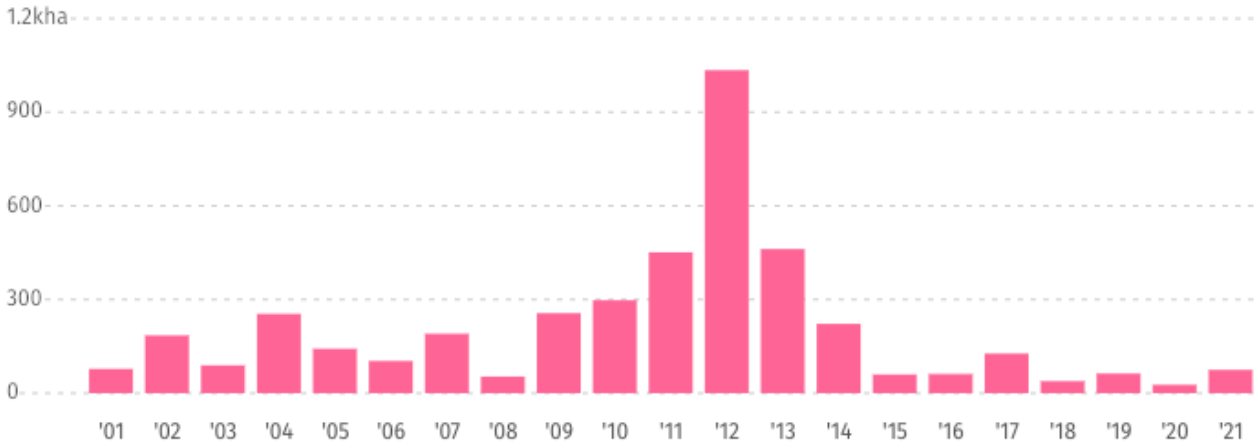


Figure 20 *Tree cover loss in Western Bahr-al-Ghazal (GFW, 2021)*

Land and soil erosion

Approximately 90% of the land in South Sudan is arable, but only around 5% is currently cultivated for crops. Some 95% of the population is dependent on climate-sensitive livelihoods like traditional rainfed agriculture, crop farming, pastoralism and animal husbandry. Soil and water conditions are relatively favourable for agriculture and related activities (USAID, 2019b).

As a result of deforestation, overgrazing and bush fires, soil erosion in South Sudan is increasingly becoming a problem. Consequently rivers, lakes, dams, and irrigation canals are silting up, reducing the supply of water for drinking and irrigation. Soil quality is also declining, which negatively affects agricultural productivity (Ministry of Environment South Sudan, 2016).

More specifically for WBeG, experts identified decline of soil fertility due to climate change and water runoff resulting in poor yields and limited knowledge of soil types to optimise crop production as major challenges.

Future climate projections and impacts

According to the South Sudan Climate Vulnerability Profile (USAID, 2019b), WBeG is expected to see 1.5-3.3°C increases in temperature by 2090, significantly increasing the risk for drought occurrence and intensity. Increased temperatures may lead to the following impacts on the agricultural sector:

- Increased evapotranspiration in plants and reduction of soil moisture, increasing the amount of water crops will need.
- Potential increase in pest and pathogen outbreaks in crops and livestock.
- Increased evapotranspiration, combined with prolonged dry periods, leading to shrinking wetlands, and perennial rivers becoming seasonal. This could negatively impact pastoralist access to water resources and reduce fishing resources by reducing the health and size of fish.
- Crops reaching their thermal maximum temperature, thus producing less yields. This is especially likely for wheat and sorghum.

At the same time, cumulative annual rainfall is expected to increase by 4-15%, particularly increasing in the November – March dry season, increasing flood risk. However, projections for changes in precipitation vary greatly; some models project a decreasing rainy season length and total annual precipitation, potentially resulting in increased drought occurrence. The extreme precipitation days are expected to rise by 1-3 days annually by 2090 (USAID, 2019b).

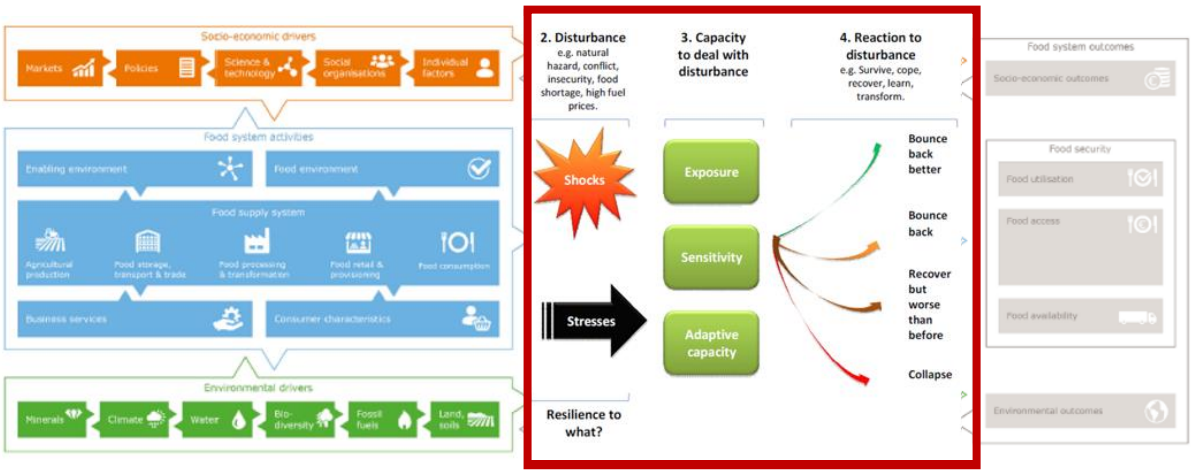
- Increased competition for water resources during droughts between pastoralists and farmers, potentially leading to increased local conflict.
- Floods decreasing crop and livestock yields.
- Delay or shortening of rainy season causing crop failure or reducing water resources, leading to decreased livestock health.
- Extreme flooding or drought leading to the loss of grazing area or access to water for pastoralists.
- Droughts leading to potential drop in water table, drier seasonal rivers, and reduction of wetland size. The combination of drought and high temperatures might contribute to wildfires that destroy grazing and agriculture habitats.

These anticipated climate changes bring with it not only the risk for increased drought and flood increases, but also the increase of other natural hazards such as wildfires, landslides, crop pests and disease. Further, there are concerns that climate changes may lead to an increase in conflict occurrence.

Location	Projected average temperature increase by 2090 compared to current levels	Projected cumulative annual precipitation increase by 2090 compared to current levels*	Projected increase in extreme heat days by 2090 compared to current levels	Projected increase in extrem precipitation days by 2090 compared to current levels
Wau Bahr el Ghazal	1.5-3.3 °C	51-177 mm/yr (4-15%)	14-47 days/yr	1-3 days/yr

Figure 21 *Anticipated climatic changes WBeG (USAID, 2019b)*

11 Food system risks and resilience



There are a variety of natural as well as man-made hazards in Western Bahr el Ghazal, which may result in disaster. These food system risks, shocks, and stresses impact on food systems and negatively affect food system outcomes.

Based on a most recent REACH assessment on Wau county (REACH, 2022):

- 39% of assessed settlements reported shocks, such as flooding, drought, conflict, or disease outbreak, impacted or led to loss of livelihoods, in the 30 days prior to data collection.
- 19% reported that shocks, such as flooding, drought, conflict, or disease outbreak, impacted agriculture in the 30 days prior to data collection.

From a recent historical perspective, the main natural disasters that have affected WBeG were multiple floodings in 2013 and in the 2016 drought. Compared to other states in South Sudan, WBeG has been relatively less affected in terms of major natural disasters.

Year	Disaster type	Location	Total Deaths	No affected
2013	Riverine flood	Northern Bahr El Ghazal, Western Bahr El Ghazal, Warab provinces	1	156,000
2013	Riverine flood	Northern Bahr el Ghazal, Warab, Upper Nile, Western Bahr El Ghazal provinces	98	425,000
2016	Drought	Western Bahr El Ghazal, Northeren Bahr El Ghazal, Warab, Unity, Upper Nile, Jonglei, El Buheyrat, Western Equatoria, Central Equatoria, Eastern Equatoria provinces		3,600,000

Figure 22 *Main natural disasters affecting WBeG since 2013. Source: EM-DAT*

From a conflict perspective, the following trend over the last 10 years has been documented in terms of fatalities in WBeG counties. This clearly shows the current low level of violent conflict as compared to the 2016-2019 period.

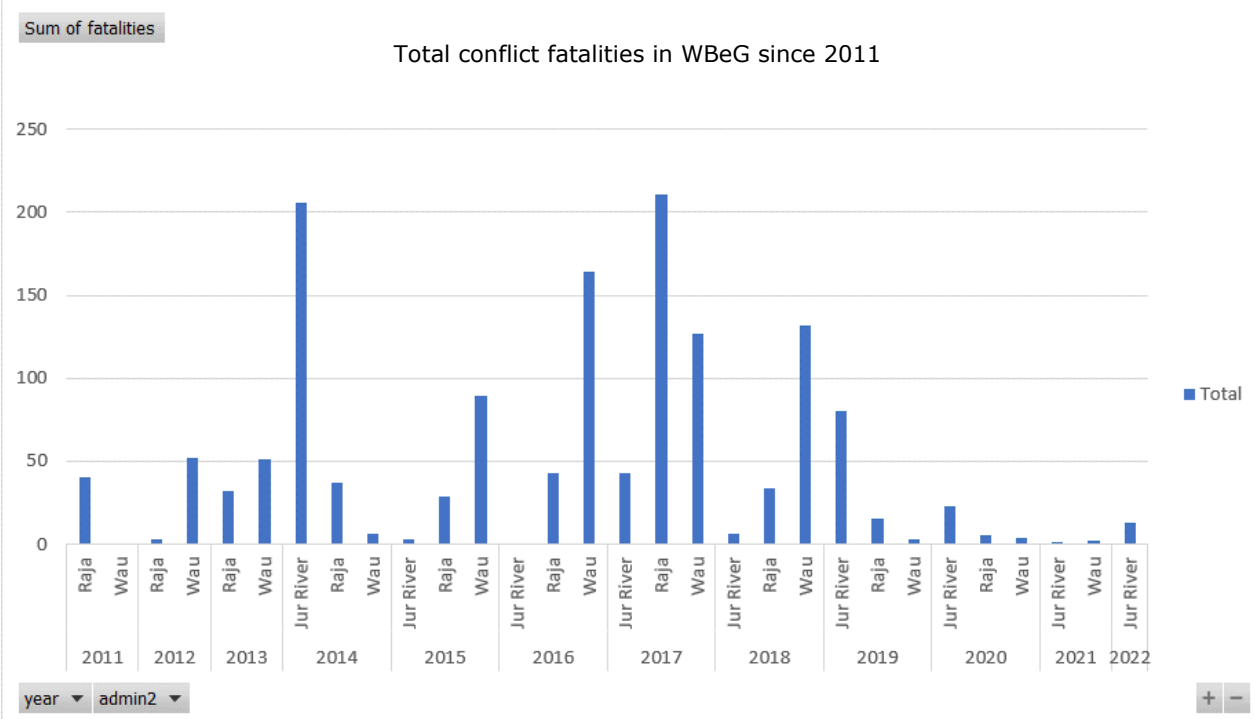


Figure 23 *Total conflict fatalities in WBeG since 2011. Source: ACLED*

The following sections outline and describe a number of food system risks and resilience capacities to address risks identified in WBeG, based on a literature review and observations and data collected during the FoSReD-PaD workshop in WBeG.

11.1 Food system risks

This chapter outlines food system risks - shocks and stresses – and their impact on the food system in WBeG, based on information and input collected during the FoSReD-PaD dialogues in Wau and Raga. The food system risks are presented in order of perceived importance by FoSReD-PaD participants.

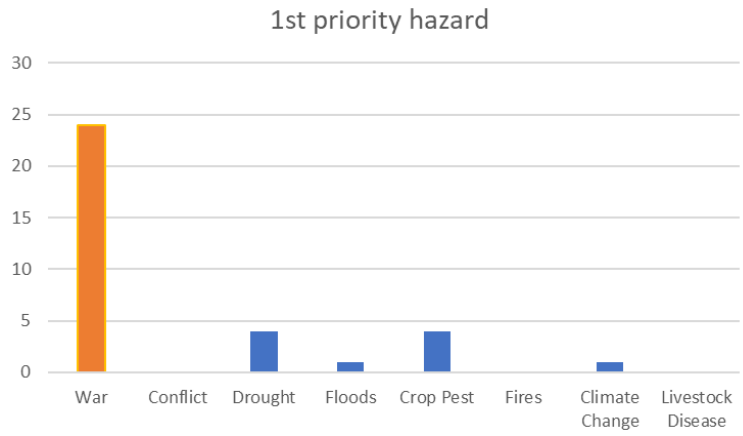


Figure 24 *1st priority hazard, WBeG*

11.1.1 Conflict

Conflict was identified as the main food system risk in WBeG.

Conflict has a direct impact on a region's internal stability and the macro environment surrounding food systems; so it indirectly influences food system outcomes by influencing the factors and actors in which food system activities take place. Beyond this, conflict impacts on FNS outcomes when people lose or are refused access to food or where food availability is limited due to conflict. During times of conflict, people in Western Bahr el Ghazal have frequently lost access to their land, disrupting their ability to produce food.

Delgado et al. (2021) state that violent conflict impacts the food systems and FNS outcomes of people who depend on them and negatively impacts FNS outcomes on the food production side by destroying assets and resources needed for food production, destroying human capital, and increasing risks/diverting resources in the wider operating environment. Further, on the distribution and food sales side, violent conflict impacts negatively on FNS outcomes by disrupting the distribution of food and market links, by reducing availability of goods, by shifting market dynamics, and by changing the institutional market environment (Delgado, et al., 2021).

Types of conflict

As a second step the main types of conflicts happening locally were identified by participants. Four groups worked independently to identify the types of conflict; then, in plenary, the participants agreed on the local relevant distinctions between conflicts (exhibiting different characteristics).

Question: What are the main type of conflicts affecting food security in Western Bahr el Ghazal?
In response to this question, five types of conflict were identified in Wau:

- Farmer-herder conflicts
- Political and armed conflicts
- Conflict over access to resources
- Border and encroachment conflicts
- Displacement and return conflicts (potential).

In Raga, participants made a distinction between war and conflict, with conflict being defined as farmer-herder conflicts. War was perceived the most impactful type of conflict in Raga.

Understanding conflict causes, effects and triggers

Each main type of conflict was explored and a conflict tree was drawn. The conflict tree distinguishes three important issues:

- Core issues (triggers)
- Underlying and immediate causes (root causes)
- Effects (consequences).

As a next step, participants developed a more detailed narrative about the conflict dynamic, its impact and the risk management strategies available. To that effect participants worked on a specific type of conflict as follows:

- A conflict timeline identifying the most severe years and constructing a historical narrative.
- Question 1: What is the impact of farmer-herder conflicts on the food supply system (production, storage/transport/trade, processing/retail/provisioning, consumption)?
- Question 2: What risk management strategies are available, considering prevention, mitigation, response and recovery?

In Wau, participants focused on farmer-herder conflicts, while in Raga participants focused on war.

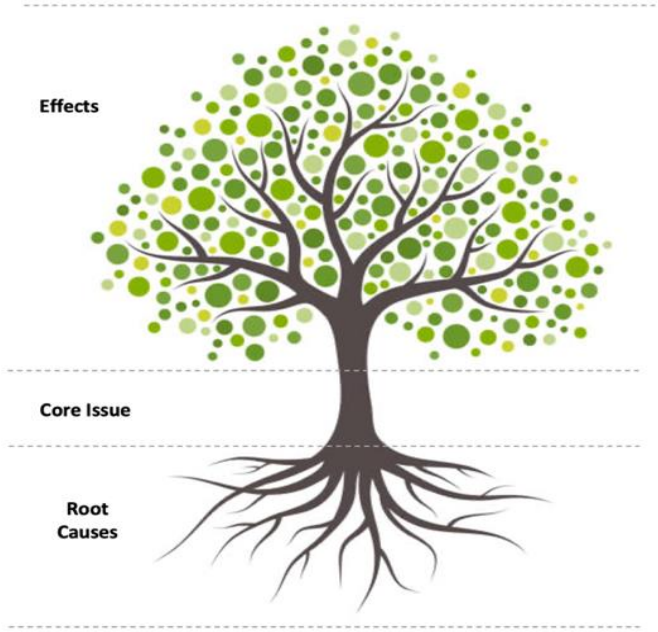


Figure 25 *The 'conflict tree'*

Focus on conflict between farmers and herders (Wau)

The table below presents the results from the conflict tree exercise in Wau, where farmer-herder conflicts were selected as the priority conflict. The table presents the perceived root causes, core issues and effects of farmer-herder conflicts in Wau.

Table 10 *Overview conflict tree results Wau*

Conflict tree for farmer-herder conflicts, Wau		
Root causes	**Core issues**	**Effects**
Inter-communal fights	Overcrowding	Increased poverty levels
Grazing land (pastures)	Seasonal migration	Increase of diseases
Water scarcity	Displacement	Malnutrition
	Fighting	Gender-based violence
	Competition over scarce resources	Loss of lives
		Loss of property
		Loss of crops
		Hunger
		Fear
		Loss of cattle

Table 11 *Conflict timeline of farmer-herder conflicts Wau*

	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Severity	X	X	X	X	X	XX	XXX	XX	X	X

Farmer-herder conflicts are a yearly occurrence during the dry season between January and June/July when herders from Warrap State enter Jur River County in search of pasture and water. According to the conflict timeline drafted by participants, in 2015 and 2016, there was conflict between SPLA and SPLA-IO. In 2017, there was a build-up of farmer-herder conflicts and large-scale violent escalation in 2018 with around 1000 displaced. Conflict receded in 2019.

The Marial-bai cattle migration agreement was first reached in 2017 and reviewed in 2019. It was signed by cattle herders from Gogrial and the farming community in Western Bahr el-Ghazal State to regulate the movement of cows and their herders in search of pasture and water. Among other provisions, the agreement stipulates that farmers are entitled to compensation for any crops that are eaten or destroyed by cattle, and for pastoralists to be recompensed whenever farmers resort to killing intruding animals. Cattle keepers are committing to not carry tension-inducing weapons and to not begin their migration till January (when farmers will typically have harvested their crops).

Question 1: What is the impact of farmer-herder conflicts on the food supply system (production, storage/transport/trade, processing/retail/provisioning, consumption)
Answers on the impact of conflict on the food supply system included that 'farmer-herder conflict generates loss in crop/animal and potential displacement', that 'farmer-herder conflict can also cut off villages from Wau town, stopping food supply to/from town' and that 'farmer-herder conflict disrupts food supply and availability of food on Wau market'. Further, 'farmers-herders conflict affect income of the affected households. This limit on purchasing power and the potential price increase will trigger two main strategies 1) food consumption reduction and 2) reduction in dietary diversity.'

Question 2: What risk management strategies are available, considering prevention, mitigation, response and recovery?
Answers on the second question, regarding availability of risk management strategies considering prevention, mitigation, response and recovery, answers included that there is prevention through the 'regulation of cattle migration through Marial Bai agreement', that 'information dissemination is needed so rules and right to access land are known' and further, that fencing, fodder production and shifts in farming strategies are adopted as method to prevent conflict. Regarding mitigation, interviewees suggested enforcement of agreement through rule of law and deployment of police and tribunals and mentioned 'committees are in place for Marial Bai agreement (and) violations are solved in court, (yet) mobile courts are expensive as judges come from outside the state, high salary and police presence is high.' Lastly, regarding the recovery from conflict, interviewees voiced that 'the main system is relying on community solidarity for seeds and food. Usually chiefs call for a meeting to gather contribution by all', that 'saving groups formed are also a strong solidarity mechanism in case of losses', that 'legal compensation do happen for losses of crop or livestock but take time', and that 'humanitarian assistance might come but later.'

The full transcript of this key informant discussion can be found in Appendix 5.

Focus on war (Raga)

Table 12 below presents the results from the conflict tree exercise in Raga, where war was selected as the priority conflict. The table presents perceived root causes, core issues and effects of war in Raga.

Table 12 *Results of conflict exercise in Raga*

Conflict tree for war, Raga		
Root causes	**Core issues**	**Effects**
Leadership and governance; those who lead are ignorant, they are in control, they bring hatred, they are not accountable. Tribalism and hatred will appear.	Leadership The stem is the first thing you see in a tree. You need to dig to see the roots, then you will see the conflict. The result is below (the surface)	War, displacement, lack of education, lack of health, infrastructure (lack of), food insecurity, security itself, unemployment
Injustice	Lack of accepting one another	Displacement
Selfishness / Self-interest – accountability	Practice of political affiliation	Education (lack of)
Lack of employment – tribalism	Discrimination	Health (lack of)
Militarisation in Africa and South Sudan. If you hold a high rank you hold the law.	Inequality	Infrastructure (lack of)
Tribalism, tribes who think they are better than others	Lack of food security	Food Insecurity
Poverty, limiting opportunity, no one hears your voice	Economic deterioration	Security itself
Power imbalance	Gender violence	Unemployment
Ignorance, they don't know the future		Poverty
		People are busy with conflict
		Fear (to move)
		Communication shut down

Participants in Raga were asked to list coping strategies applied to deal with war and conflict risks. The following coping strategies were mentioned.

Table 13 *Identification of resilience and coping mechanisms in Raga*

Strategy	**Hazard**	**Rationale**
Short-term crop varieties	War/ conflict	Increases people's ability to move quickly if needed
Wild foods (gathering)	War/ conflict	Food supply in absence of access to farmland
Depending on leaves for consumption	War/ conflict	Food supply in absence of access to farmland
Home gardens	War/ conflict	Food supply in absence of access to farmland
Fishing	War/ conflict	Food supply in absence of access to farmland
Honey (production)	War/ conflict	Food supply in absence of access to farmland
Go to the forest (as part of culture)	War/ conflict	Food supply in absence of access to farmland
Displacement	Various	Escaping from shock/ stress, looking for safe places

11.1.2 Drought

Droughts are slow-onset climatological stressors and were indicated by the participants to be the second most impactful hazard faced by populations in Western Bahr el Ghazal; droughts may lead to crop failure and loss of lives and livestock, thereby affecting FNS outcomes.

Droughts are very common in South Sudan due to the hot and dry conditions experienced during the dry season. In general, the country is experiencing substantially warmer and drier weather, and the combination of these effects leads to more droughts. In 2022, an early season drought affected most of South Sudan until mid-July. The combination of drought and high temperatures is leading to drier seasonal rivers and reduction of wetland size and may contribute to wildfires that destroy grazing and agriculture habitats (USAID, 2019a).

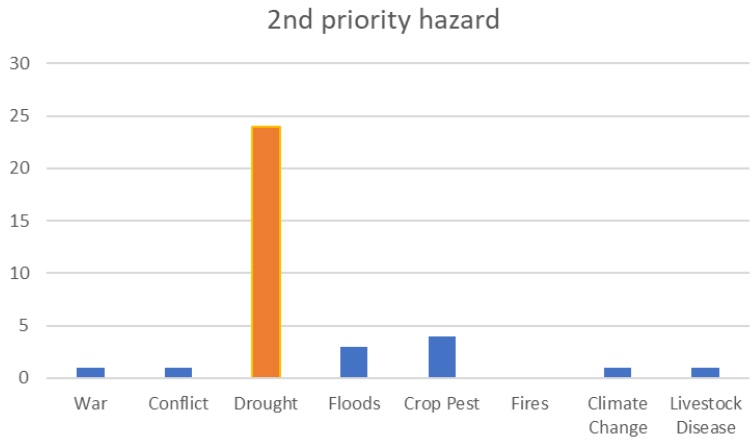


Figure 26 *2nd priority hazard*

With a temperature increase of 2°C, water levels could fall by 50%, disrupting the flow of the Bahr el Ghazal and Sobat rivers and negatively affecting local communities and natural resources (South Sudan Ministy of Environment and Forestry, 2021).

Droughts impact on food production in Western Bahr el Ghazal. Human activities, such as deforestation, grazing, overgrazing and rudimental cropping methods can worsen the effects of drought, as these activities further reduce the water retention capacities of soil and lead to soil erosion (Hrachowitz, et al., 2020).

Drought may result in the loss of grazing area or access to water for pastoralists. Further, the combination of drought and high temperatures can contribute to wildfires that destroy grazing and agriculture habitats.

In order to prepare for drought and mitigate its impacts on food systems, drought modelling is applied for WBeG. For instance, a predictive livestock early warning system (PLEWS) is in place, which can predict the forage condition index 6 months in advance (both biomass and palatability through spectral analysis). Other tools and systems to forecast and prepare for drought that were mentioned included water balance-inflow and outflow, validated with sentinel sites and water ponds; a model for plant growth, linked with number of livestock per hectare; GIS model by watershed; and Boma level rainfall compared to the long-term average.

The full transcript of the KII can be found in Appendix 5: Resource and training packages on building food systems resilience.

11.1.3 Floods

Floods are a frequent occurrence in South Sudan, and also affect Western Bahr el Ghazal, albeit less than other states. Floods are hydrological rapid onset hazards and can have devastating effects on people and environment alike. Flash floods, in particular, because of their rapid onset, pose a threat to people's lives, livelihoods and FNS situation, and impact on food systems.

South Sudan is experiencing severe flooding for the third consecutive year since 2019. In 2022, flooding and heavy rains continue to impact people across the country, including Jonglei, Lakes, Northern Bahr el Ghazal, Western Bahr el Ghazal, Unity, Upper Nile, Warrap, and Western Equatoria states (UNOCHA, 2022). In WBeG, the collapse of a key bridge between Wau-Raga counties due to heavy rains is hampering the response of some 50,000 people, including 30,000 returnees mainly from Sudan, living in Raga County. The collapsed bridge and lack of access impacts the delivery of critical supplies, including medical and nutrition provisions to Raga County by road from Wau (UNOCHA, 2022).

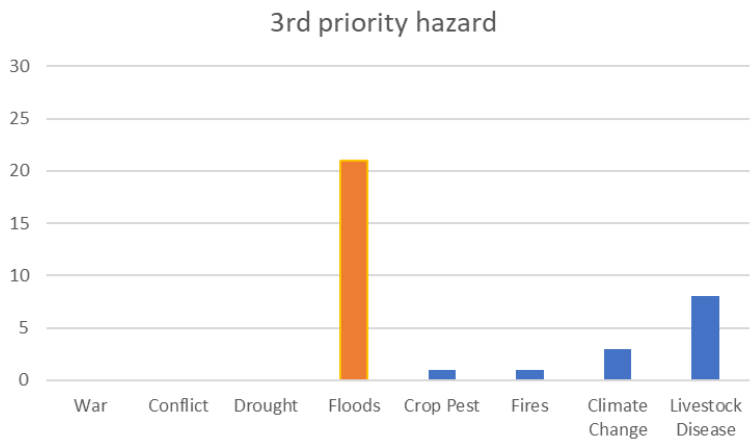


Figure 27 *3rd priority hazard*

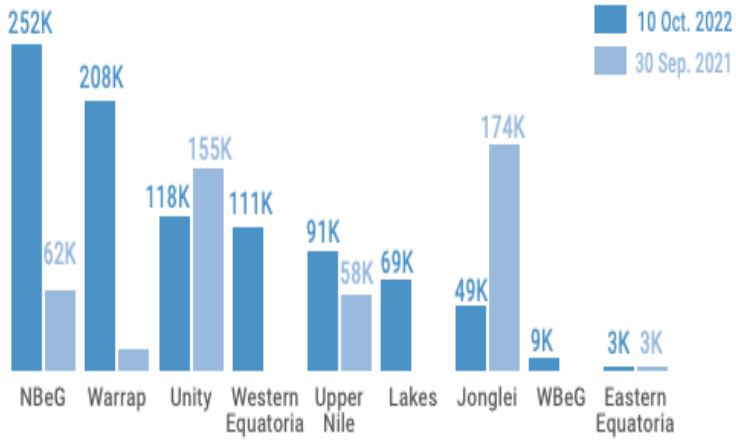


Figure 28 *Flood-affected people by state (UNOCHA, 2022)*

In order to better deal with the impacts of floods, flood modelling is applied in WBeG through watershed analysis. However, this system is not able yet to predict flooding and consensus is lacking on long-term precipitation trends for the country; recent data indicates reductions in rainfall, but heavy rains are expected more often and with greater intensity, increasing the risk of flooding.[31]

[31] Ministry of Environment, 2016; Quinn et al., 2019; African Development Bank (2018). National Climate Change Profile: South Sudan.

Figure 29 *Flooding as seen from the air in WBeG*

11.2 The cause-effect relationship between conflict and food insecurity

11.2.1 Exploring the cause-effect relationship

As part of the food systems resilience dialogue participants were asked their perspectives on the cause-effect relationship between conflict and food insecurity.

Participants were asked to reflect on two key statements and indicate whether or not they agreed (using a five-point scale: strongly agree, agree, neutral, disagree, strongly disagree), and to provide a rationale for their choice. The arguments were weighted in favour of or opposition to the statement.

The exercise[32] presented an overall perspective on, and insights into, the cause-effect relationship between conflict and food insecurity by participants in the WBeG food systems resilience dialogue (government, academia and local universities, UN agencies, NGOs, the private sector, and CSOs).

The dialogue participants' responses reflect a diverse range of perspectives and rationales, but ultimately present a nuanced understanding of the interplay between conflict and food insecurity. As such, the exercise underscores the need for a multi-faceted approach to addressing food insecurity that not only addresses the root causes of conflict but also seeks to build stability and peace. The insights gained from this exercise can

[32] The exercise was designed to provide a more comprehensive understanding of the complex and multi-directional relationship between conflict and food insecurity. Through this reflective exercise, the participants were able to weigh in on the critical role that food systems play in building stable and peaceful communities, while also highlighting the challenges posed by insecurity and fear such as reducing access to certain locations and communities, and consequently limit opportunities for interaction and social cohesion. Moreover, the exercise provided valuable insights into the potential for conflict to arise when food is not available in sufficient quantities, as well as the potential for food to bring people together and contribute to cohesion when access is sought.

inform interventions that prioritise the role of food systems in building peaceful and stable communities while also addressing the underlying drivers of conflict and insecurity.

Key findings are discussed below. Detailed findings can be found in Appendix 10.

11.2.2 Statements

Argument: Conflict is the main cause of food insecurity in Western Bahr el Ghazal
In total 86% of arguments voiced by dialogue participants were in agreement that conflict is the main cause of food insecurity in WBeG (51% agreed and 35% strongly agreed). It is obvious that conflict has a major impact on food insecurity in the region by reducing access to farms and farmland (reducing food production) or by displacing communities altogether, strongly reducing their ability to produce food. Conflicts affect supply and demand routes, discourage trading, and erode markets. Indirectly, conflicts and insecurity limit employment opportunities and contribute to the economic crisis. The spread and use of firearms has made intercommunal conflict more violent, further impacting food systems and food and nutrition security outcomes.

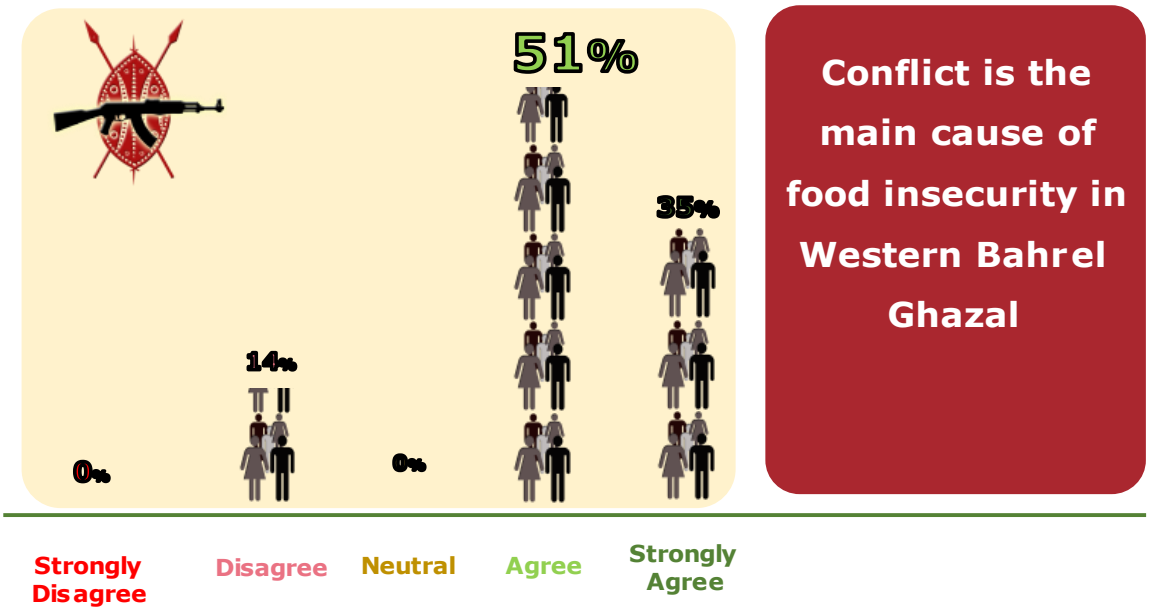


Figure 30 *Cause-effect relation conflict-food insecurity statement 1*

Conflict shifts people's priorities from producing food to saving their lives, leading to a reduction in human capital and workforce and making food production risky in insecure and conflict-affected areas. Conflict also contributes to a loss of trust and motivation to farm and produce food, causing poverty and food insecurity.

A total of 14% of voiced arguments disagreed that conflict is the main cause of food insecurity in the state. While conflict plays a role it was not seen as the main cause of food insecurity, rather this was the absence of an effective government system; although, more recently, lands have been allocated to communities by the government which has helped to alleviate the potential for major conflicts. It was also noted that natural resources are abundant and when well governed should not contribute to conflict.

The arguments voiced in agreement or disagreement with the statement highlighted that the impact of conflict on food systems is far-reaching, affecting not only food production and access but also people's overall livelihoods and psycho-social well-being. As such, these arguments highlighted that addressing conflict will be critical to improving food and nutrition security in the region; and that this will involve addressing a range of factors, in particular governance and the management of productive resources.

Argument: Food and nutrition insecurity is the main cause of conflict in Western Bahr el Ghazal
In total 46% of arguments voiced by dialogue participants were in disagreement with the statement that food and nutrition insecurity is the main cause of conflict in WBeG (38% disagreed and 8% strongly disagreed). Arguments highlighted the perspective that conflict in WBG is primarily driven by political and tribal differences, disputes over land, competition for control over valuable natural resources, and the culture of revenge, with food insecurity being a result rather than the root cause. The main cause of conflict in WBeG was seen to be political - in essence, about power and resource sharing.

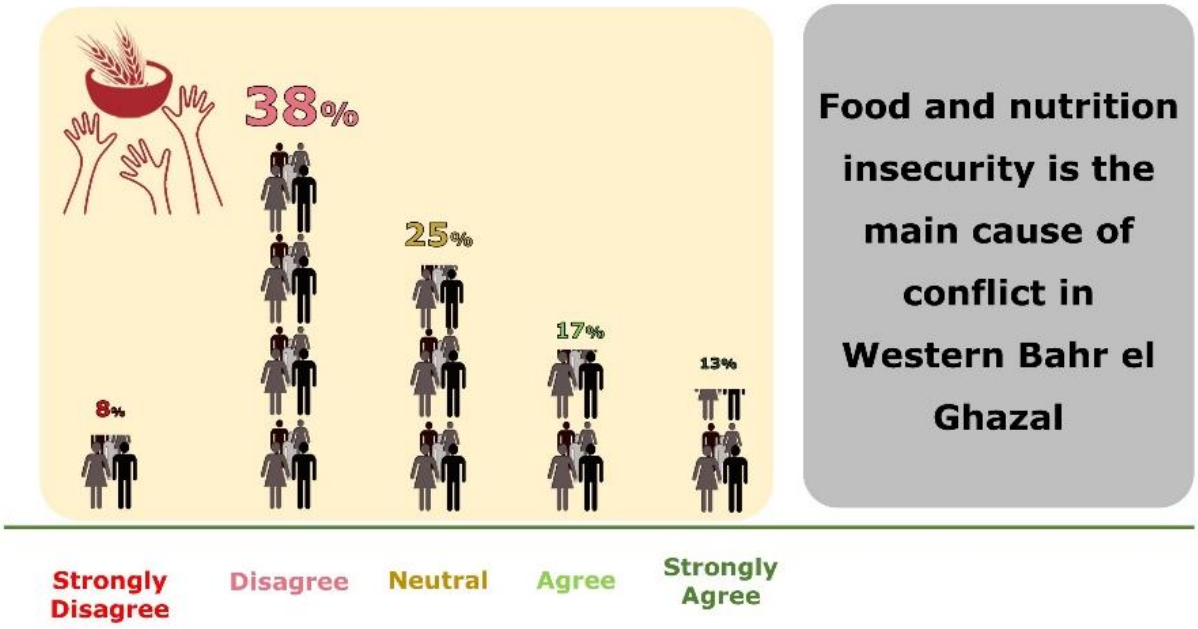


Figure 31 *Cause-effect relation conflict-food insecurity statement 2*

In total of 29% of arguments agreed with the statement that food and nutrition security is the main cause of conflict in the state (17% agreed and 13% strongly agreed). Responses highlighted that a lack of food can lead to frustration and desperation and may result in theft and robbery creating chaos and conflict within communities. Food insecurity makes individuals struggling to produce or access sufficient food and increases the likelihood to engage in conflict over resource access: "a hungry man is an angry man".

A total of 25% of arguments were neutral regarding the statement that food and nutrition insecurity is the main cause of conflict in WBeG. Arguments highlighted unequal access to natural resources and services. This unequal access was seen as primarily driven by discrimination, corruption and political rivalry (including from neighbouring states). Another major driver of conflict is disputes between farmers and herders over agricultural and grazing land.

11.2.3 Key findings

Combining the responses to both statements, and analysing these, provides an interesting insight into the complex and interwoven relationship between conflict and food insecurity.

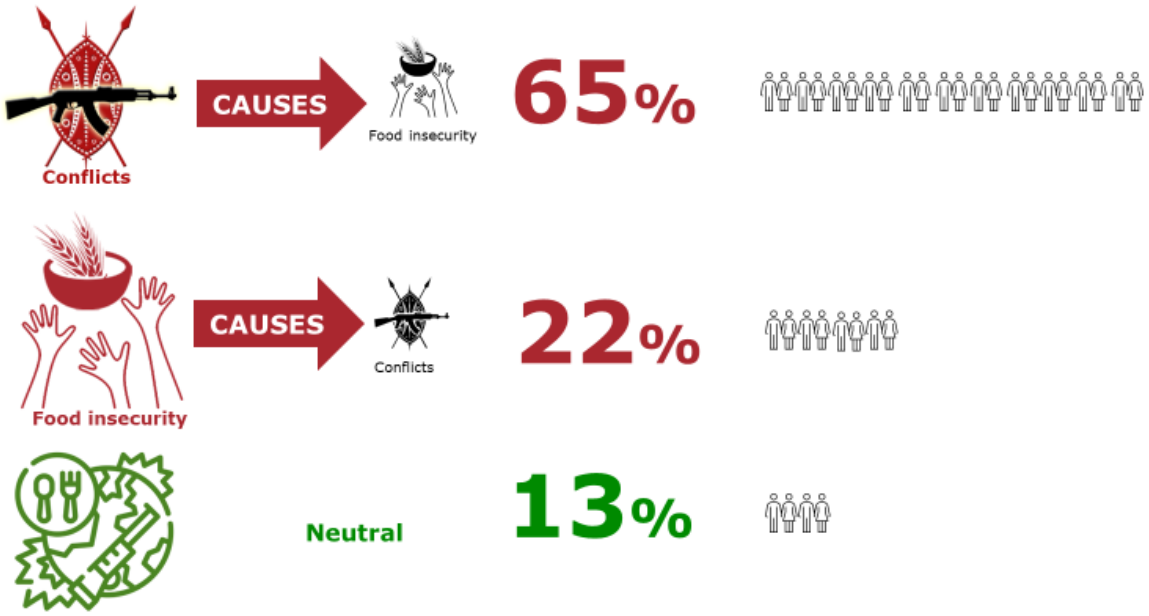


Figure 32 *The cause-effect relationship between conflict and food insecurity*

The majority of arguments by the dialogue participants highlighted that conflict is the primary cause of food insecurity in WBeG, and the minority underlined that food insecurity is the main cause for conflict. A few arguments stated other factors, highlighting the complex interrelationship between conflict and food insecurity and the need for comprehensive solutions. See Figure 32.

In total 65% of arguments listed by the dialogue participants supported the idea that conflicts are at the root of food and nutrition insecurity, highlighting a range of factors affecting how conflict disrupts food systems, in particular food production and distribution systems.

In total 22% of arguments saw food security as the main cause of conflict, the rationale being that food insecurity creates poverty and frustration/anger, leading to theft and robbery, and increased competition over productive resources resulting in conflict.

13% of the arguments centred around poor governance which results in conflict, food insecurity or both; highlighting discrimination, corruption and political rivalry and unequal access to natural resources and services supporting production.

11.2.4 Conclusion

The responses by the dialogue participants to the two statements highlight a complex and multi-directional relationship between conflict and food insecurity. Addressing food insecurity will require a holistic and multi-faceted approach that addresses the root causes of conflict while seeking to build stability and peace. At the same time, conflict resolution/transformation and peacebuilding efforts must also consider the critical role that food systems play in building stable and peaceful communities. It is only by considering both the root causes of conflict and the role of food systems that we can achieve sustainable solutions to the challenges of food insecurity and social unrest.

Achieving food security will thus require coordinated efforts from government agencies, civil societies, and knowledge institutes, and the Food and Agriculture Organization (FAO) will undoubtedly have a central role to play in this critical work. These efforts will require an eye on local realities on the ground, investing in strengthening local institutions, and a co-ordinated and well-orchestrated approach in working with humanitarian, development and peace actors.

11.3 Coping and resilience capacities

11.3.1 Resilience statements

Looking at coping strategies and resilience capacities of people in WBeG is relevant as they have an influence on people's food system outcomes; in addition, it is important to be aware of existing capacities in order to not undermine them when designing programmes, to avoid further worsening the situation.

In order to identify coping and resilience capacities, participants were given a number of statements on food system resilience, and asked to indicate if they strongly agreed, agreed, were neutral, disagreed or strongly disagreed. They indicated their choices by putting post-it notes on the wall.

Statement: Food systems in WBeG are resilient to human made and natural shocks, ensuring food and nutrition security (Wau)
A majority of 70% of arguments disagreed or strongly disagreed with this statement, mentioning that 'when a shock happens, FNS suffers', that there is a 'lack of coping mechanisms' and that 'conflict/floods leads to displacement and reduce food production.' 19% of arguments remained neutral, mentioning that 'if national political and socio-economic situation is good we are resilient.' Of the 11% of arguments agreeing or strongly agreeing, it was mentioned that 'historically those shocks happened and food system remained resilient' and that '(the) ability to recover from shocks is high'.

Statement: Food systems in Raga are resilient to human-made and natural shocks, ensuring food and nutrition security (Raga)
82% of responses indicated that they disagree or strongly disagree. Reasons given were 'because drought means we will have no produce next year' or because 'crops disappeared during crises, for example cassava disappeared, water points have been dismantled.'

Statement: People in Raga are food secure during disasters (Raga)
92% of participants indicated they disagree or strongly disagree with the statement. Reasons given included 'because during crises everyone is disturbed and there is no psychological capacity to deal with food crises' and 'because during conflict there is no freedom (of movement), and access to farms is restricted.'

In a focus group discussion (FGD) with women, results were different from the general FoSReD workshop. In the Women FGD, 17% of women indicated they agreed or strongly agreed with the statement, while 28% remained neutral and 33% disagreed or strongly disagreed. Reasons given included 'I am one of those who fled war, I came back from Sudan but continued to produce in forest despite the war' and 'although there was war we can collect wild foods, there is resilience.'

A focus group with youth yielded similar results to the general FoSReD workshop. 16% of youth agreed or strongly agreed with the statements, with the majority of 84% disagreeing or strongly disagreeing. Reasons given included 'because 2016 conflict people still suffer and eat wild foods', 'because of failed rains', 'because conflict leads to road closures' and 'floods destroy farms.'

Statement: Food security contributes to peace and stability within and across ethnic groups (Wau)
YES: 59% of arguments voiced by dialogue participants in in Wau agreed or strongly agreed with this statement, mentioning that 'people come together during farming activities, that '(the) market brings people together as they buy and sell' and that the 'food system brings people together and there is interdependency in sharing (of) resources and purchasing (of) food from other areas.' 35% remained neutral and mentioned that in 'some situations food production system create conflict between pastoralists and farmers' and that 'some production area is not accessible by consumers due to fear (of conflict).' 6% of participants disagreed with the statement.

Statement: Food security contributes to peace and stability (Raga)
YES: A large majority (97%) agreed or strongly agreed, that food security contributes to achieving peace and stability in WBeG. Answers given included 'if there is peace and stability, it is good for FNS. During war,

people cannot produce. During peace, kids can go to school', 'peace and stability increase FNS and production', people can go anywhere for cultivation, investors come, youth can be employed', 'because peace and stability is state and nation building' and 'I remain neutral, as food security is not the only factor contributing to peace. There are other factors.'

In the female group, a majority of women (64%) agreed or strongly agreed with the statement, while 37% remained neutral. Answers given include 'we don't know because of political instability, but we produce enough food' and 'food security might be there, but prices might be a problem'.

In the youth group, 100% of youth agreed or strongly agreed with the statement. Reasons given include 'food security contributes to stability', 'some families have nothing to consume they remain peaceful' and 'it is a matter of character whether or not people engage in conflict.'

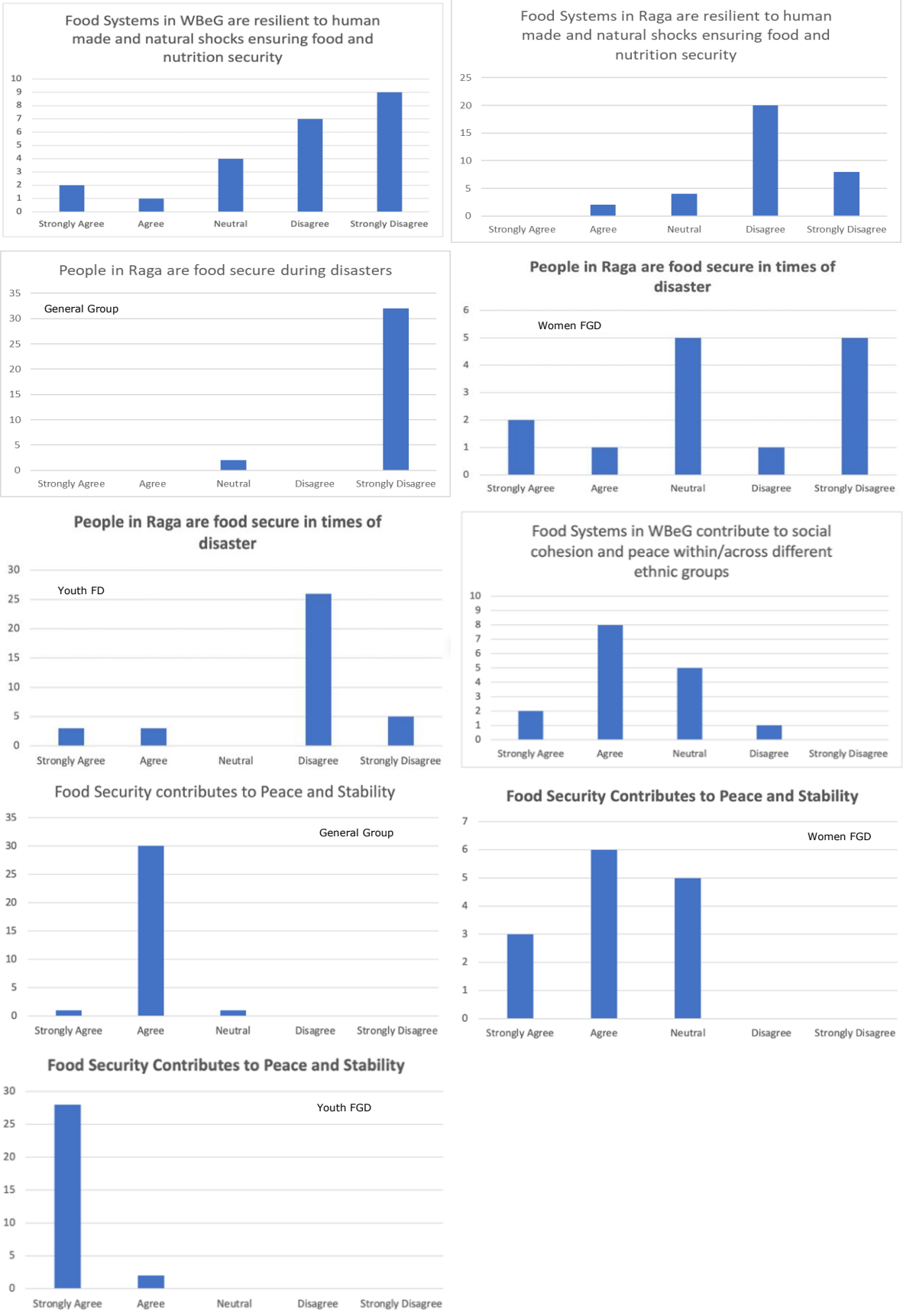
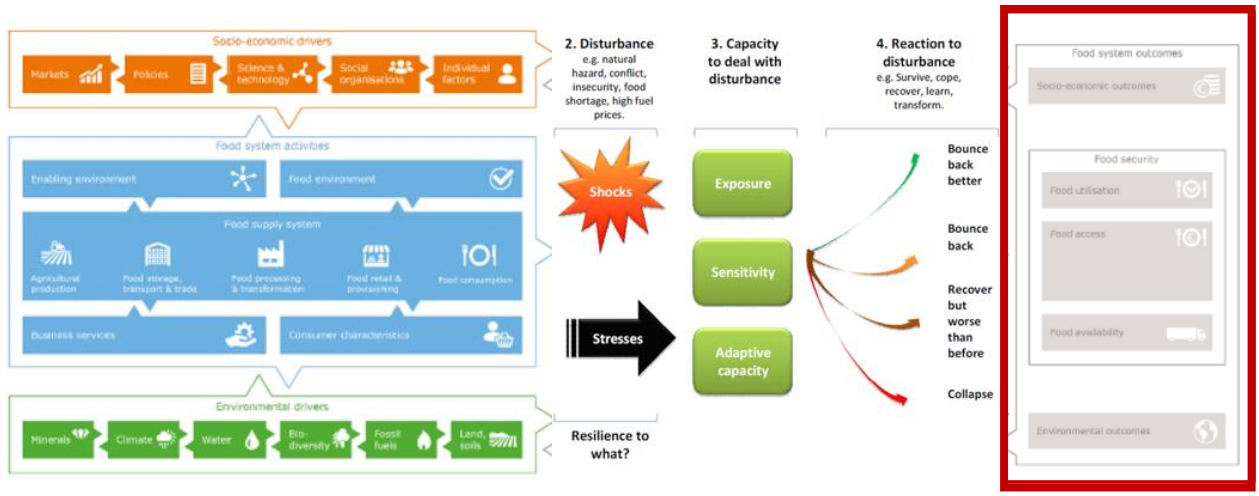


Figure 33 *Resilience statements WBeG (Wau and Raga)*

12 Food system outcomes



According to van Berkum's (2018) food system framework, there are three different types of food system outcomes to be distinguished:

- Outcomes relating to food security
- Socio-economic outcomes
- Environmental outcomes.

The following sections outline the food system outcomes of Western Bahr el Ghazal. For simplicity, we refer to the environmental and socio-economic food system outcomes as socio-ecological food system outcomes.

12.1 Overview of FNS outcomes

Acute food insecurity

This section provides insight into the food and nutrition security outcomes of people in WBeG. It starts with an overview of the acute food insecurity situation of the whole of South Sudan. Then it focuses on the most recent county-level analysis of the WBeG region. Therefore, conclusions on the FNS status are based on sources from both state and regional level.

According to the most recent Integrated Phase Classification (IPC) analysis, some 6.6 million people, amounting to more than half of the entire population, are currently experiencing high levels of acute food insecurity in South Sudan, classified as being in IPC 3 or higher. 2.2 million people are experiencing worse conditions in Emergency (IPC 4) and an estimated 61,000 people are in Catastrophe (IPC 5) (IPC, 2022).

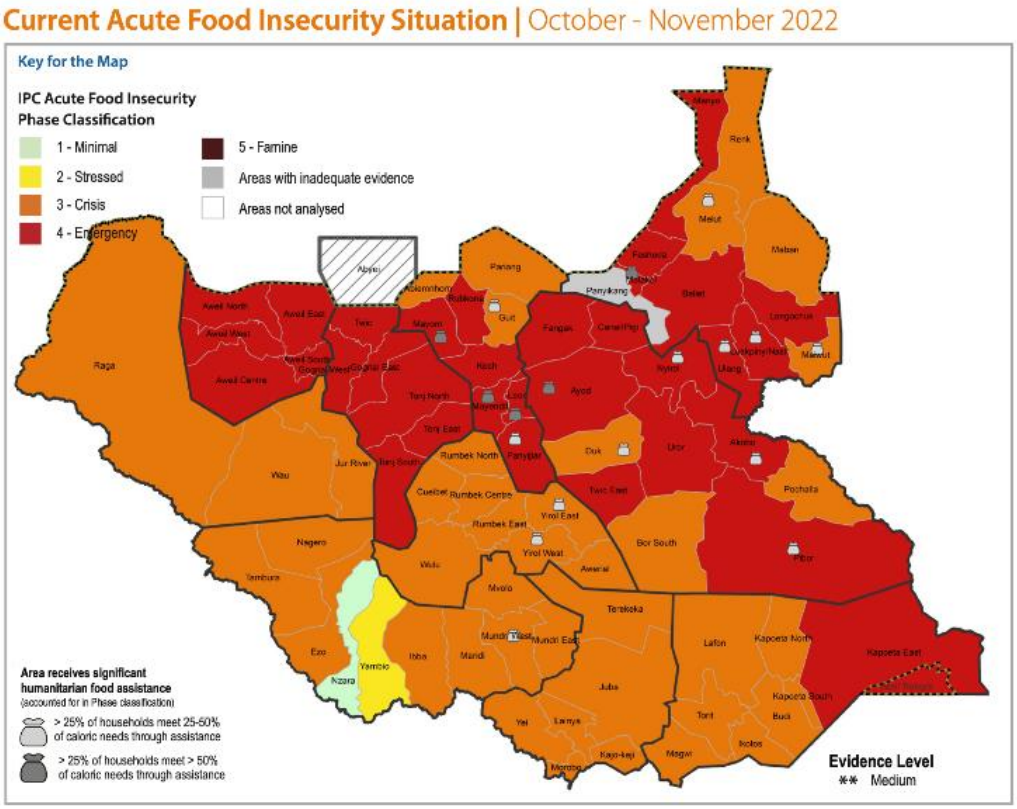


Figure 34 *The current acute food insecurity situation in South Sudan, November 2022 (IPC, 2022)*

Name	Area Phase	Total # (pp)	Phase 1		Phase 2		Phase 3		Phase 4		Phase 5		P3+	
			#	%	#	%	#	%	#	%	#	%	#	%
Western Bahr El Ghazal Group		664,156	117,000	18%	281,000	42%	218,000	33%	49,000	7%	0	0%	267,000	40%
↳ Jur River	3	283,766	56,753	20%	99,318	35%	113,506	40%	14,188	5%	0	0%	127,694	45%
↳ Raja	3	59,638	11,927	20%	20,873	35%	23,855	40%	2,981	5%	0	0%	26,836	45%
↳ Wau (Rural Only)	3	320,752	48,112	15%	160,376	50%	80,188	25%	32,075	10%	0	0%	112,263	35%

Figure 35 *Current IPC numbers in WBeG, November 2022 (IPC, 2022)*

Western Bahr el Ghazal was not considered one of the most food insecure states in the current analysis (October - November 2022).

In Western Bahr el Ghazal, a total of 267.000 people or 40% of the population are currently in IPC 3+ (33% IPC 3, 7% IPC 4). The remaining 60% of the population are currently in IPC 1 or 2. Wau county has the lowest share of the 3 counties of people in IPC 3+ (35%) but the highest share of people in IPC 4 (10% of the county's population). In Raga and Jur River, percentages of people in IPC 3+ are for both at 45% (IPC, 2022). These FNS outcomes, as measured by the IPC, are a direct result of drivers and shocks and stressors impacting food systems, as described in chapter 11 on food system risks. Key drivers of current food insecurity, according to the IPC, are climatic shocks, conflict and insecurity, low production and (macro-) economic stresses. This is well aligned with observations and data collected during the FoSReD-PaD workshops in WBeG.

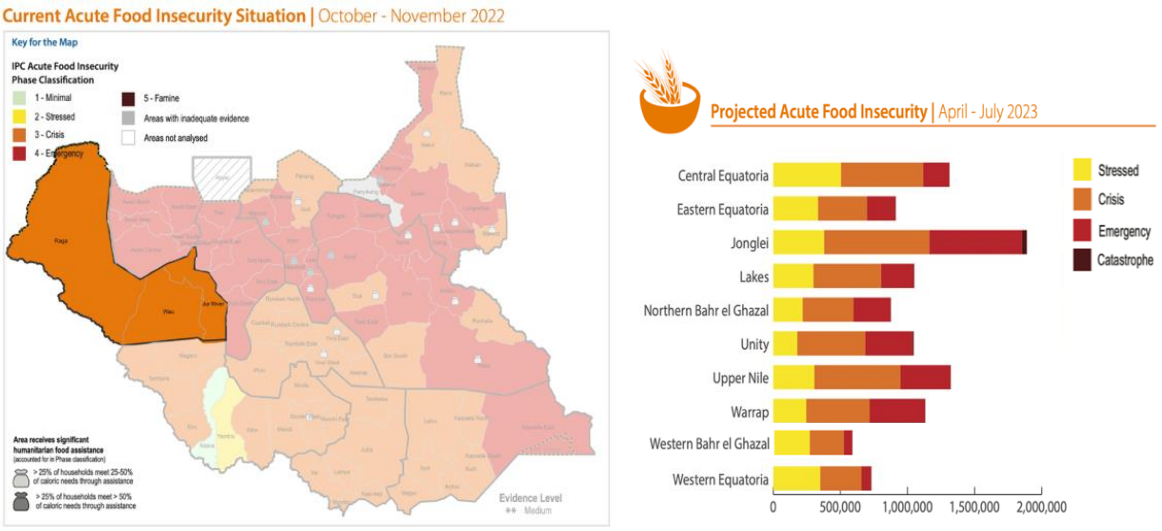


Figure 36 *Current and projected acute food insecurity situation WBeG, November 2022 (IPC, 2022)*

However, without downplaying the severity of the situation faced by a large segment of the South Sudanese population, the dialogue participants who were familiar with the realities of food and nutrition insecurity expressed some skepticism about these IPC figures. Some dialogue participants mentioned that there appeared to be a tendency to inflate the severity of the situation in some areas to attract humanitarian assistance.

In the IPC projections, it is projected that the percentage of people in IPC 3+ will decrease throughout the entire Western Bahr el Ghazal (IPC, 2022).

Acute malnutrition

Between July 2022 and June 2023, an estimated 1.4 million children under five are expected to suffer from acute malnutrition in South Sudan, based on analysis and estimations of the IPC. Currently, the 3 counties of WBeG are classified as mostly in 'alert'. Unlike in the past, not much improvement is expected during the post-harvest season. Instead, the situation is expected to deteriorate in 50 counties, including the three counties of WBeG, which are expected to move to 'serious.' Deterioration in 20 counties is likely to cause a change in classification to the worst phase.

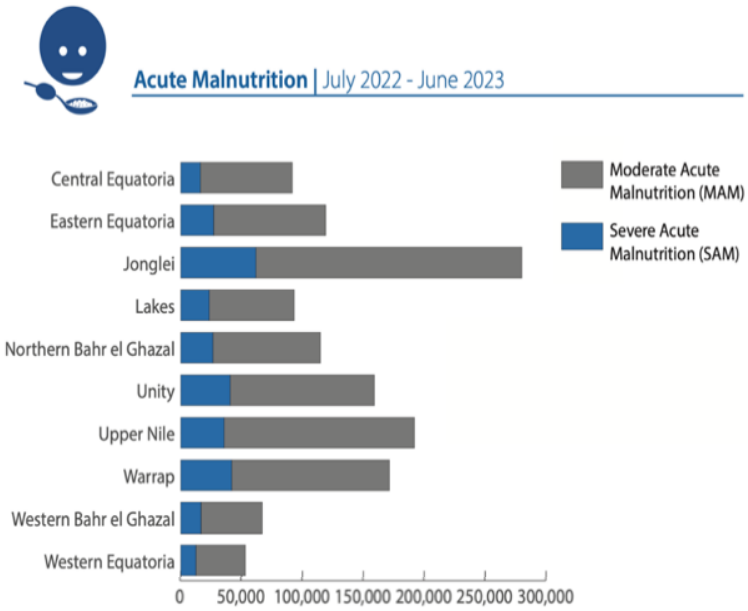


Figure 37 *Current acute malnutrition situation WBeG, November 2022 (IPC, 2022)*

12.2 Environmental and socio-economic food security outcomes

Environmental outcomes refer to the impact of a food system on natural resources and the biophysical drivers of the food system (van Berkum, et al., 2018). Thus, for simplicity, we can refer to the environmental and socio-economic food system outcomes as socio-ecological food system outcomes. The socio-economic outcomes of the food system involve 'incomes and living conditions of farmers' families and other actors in the food system, as well as the employment and wealth that these activities generate. They also involve the social, political and human capital generated by these activities' (van Berkum, et al., 2018). Some of these socio-ecological food system outcomes in WBeG are described below.

As a result of deforestation, overgrazing and bush fires, soil erosion in South Sudan is increasingly becoming a problem. Consequently rivers, lakes, dams, and irrigation canals are silting up, reducing the supply of water for drinking and irrigation. Soil quality is also declining, which negatively affects agricultural productivity (Ministry of Environment South Sudan, 2016).

Some mining, toxic dumping and fishing chemicals affect Wau, but bush-burning and charcoal burning are rampant, and over-grazing and timber lumbering are common. These human activities threaten resilience by deteriorating soil structure, decreasing agricultural productivity and biodiversity, and exacerbating erosion and runoff pollutants (Ozaslan, et al., 2015).

With few alternative sources of energy, more than 95% of the population must depend on charcoal, firewood and grass for cooking, further spurring rapid deforestation (between 1.5–2% each year).

PART III: Pathways for food systems resilience in Western Bahr el Ghazal State

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The third part of this report describes the Food Systems Resilience Hub (chapter 13) and the pathways to achieve the vision and the mission as set by the participants in the Dialogue (chapter 14).

All participants in the Dialogue unanimously agreed to establishing the Hub, which will act as a neutral and independent body to facilitate the State-level Multi-Stakeholder Partnership on Food Systems Resilience. Based on the vision and mission set by the participants in the dialogue, nine pathways were identified. For each of the pathways an initial set of key strategic actions and activities were identified; these were validated and approved by all dialogue participants. The pathways are dynamic in that the main actions and activities identified could change over the course of time in order to stay relevant to changing situations as required for operating in volatile and dynamic contexts.

Together the pathways comprise a road map for the transformation of Western Bahr el Ghazal's food systems to achieve the common vision: that *'the peoples of Western Bahr el Ghazal State produce and access sufficient nutritious and culturally accepted food over time and space, in the face of man-made and/or natural shocks and stressors and live in peace and harmony with each other and with nature.'*

Part III of the report contains the following chapters:

13. Food Systems Resilience Hub
14. Pathways definition

13 Food Systems Resilience Hub

This chapter introduces the state-level FSR Hub, the establishment of which was unanimously agreed to by all participants and parties participating in the dialogue.

In essence the Hub acts as a neutral and independent body to facilitate the State-level Multi-Stakeholder Partnership on Food Systems Resilience. The Hub's core functions are to:

- Initiate and promote the building of food systems resilience.
- Develop pathways by exploring the space and opportunity to build food systems resilience.
- Develop action plans and facilitate collaborative/concerted implementation.
- Facilitate evidence-based adaptive programming by developing a culture of learning which includes documentation of good practice and the development of policy recommendations.

13.1 Creation of the State-level Food Systems Resilience Hub

A key outcome of the Food Systems Resilience Dialogue in WBeG was the creation of the Food Systems Resilience Hub. The FSR Hub is in essence a multi-stakeholder partnership involving people and institutions in developing food systems resilience in WBeG.

Key characteristics of the FSR Hub are:
- Stakeholders share a common interest and desire to develop resilient food systems.
- Stakeholders represent all who have an influence on, or are affected by, food systems transformation.
- Building food systems resilience works across different sectors and scales to address the root causes of poor food systems performance and deliver on opportunities for improved performance.
- A dynamic process and timeframe.
- The fostering of learning and capacity building.
- A balance of top-down and bottom-up approaches, with a focus on promoting bottom-up community owned and driven approaches.
- The enabling of transformative and institutional change.

The dialogue participants unanimously agreed to establish the FSR Hub.

A steering committee will include a representative of the University of WBeG. State ministers recommended the inclusion of the Director General of the Ministry of Gender, Children and Social Welfare (MoGCSW); another important member is a representative of the WBeG State Peace Committee and/or the Ministry of Peacebuilding.

13.2 The key functions of the Food Systems Resilience Hub

To facilitate the transformation of the State's food systems, in line with the national priorities set by the National Food Systems Dialogue, the State Government has established a Food Systems Resilience (FSR) Hub. The FSR Hub is in essence a multi-stakeholder partnership bringing together people and institutions dedicated to developing food systems resilience in WBeG. The Hub acts as a neutral and independent body and is therefore created at the University of WBeG and will be facilitated with support from the University of Juba and, if required, Wageningen University.

The FSR Hub oversees four main interrelated functions.[33]

1. **Initiating and promoting FSR:** engage stakeholders in situational Food Systems Dialogue; build stakeholder support and trust; establish a steering body (the FSR Hub); establish its scope and mandate in support of the Partnership for Recovery and Resilience. This has been done – see part 2 of this report.
2. **Developing shared FSR vision and pathways:** deepen understanding and trust amongst stakeholders to build FSR; identify key issues and opportunities for building FSR; develop a shared vison for the future; co-create pathways to achieve the vision; agree on strategies for change; identify strategic actions, activities and responsibilities, and communicate findings and outcomes to relevant actors. This has been done – see part 3 of this report.
3. **Setting/deciding action plans and guiding/supporting implementation:** develop detailed action plans; encourage current interventions to contribute to building FSR; seek/lobby for additional resources and support for action plans; develop capacities for action; oversee implementation; maintain stakeholder commitment. This and function 4 are the next steps.
4. **Facilitating evidence-based adaptive programming and learning**: create a learning culture and environment; define criteria and indicators to measure progress; develop and implement a (reflective) monitoring mechanism; review progress and impact and generate lessons (good practice and emerging policy recommendations); use lessons for improvement.

13.3 The FSR Hub: the action plan based on the pathways

The FSR Hub will play a key role in the development of a state-level FSR action plan with the ultimate vision to build food systems resilience in WBeG State.

Further discussions will take place between key multi-sectoral stakeholders already engaged through the Area Reference Group (ARG) under the PfRR to formulate the plan that will encompass short-medium-long term interventions**.** The University of Western Bahr el Ghazal can assist in facilitating this process, with the support of the University of Juba, and if required Wageningen University.

The action plan will be crafted based on the nine pathways as identified and validated by the dialogue participants. The nine pathways and their main actions and activities can be found in chapter 14.

[33] Inspired by the MSP Guide: https://mspguide.org/

14 Pathways definition

14.1 Introduction to the pathways

The Food Systems Resilience Dialogue and Pathway Development (FoSReD-PaD) facilitated by the Partnership for Recovery and Resilience is a Multi-Stakeholder Partnership comprising the Western Bahr el Ghazal State Government, UN agencies, NGOs, private sector and representatives of the Western Bahr el Ghazal's peoples. The FoSReD-PaD was facilitated by a team from the University of Juba with the support of Wageningen University.

Vision and mission

The vision is:

> The peoples of Western Bahr el Ghazal State produce and access sufficient nutritious and culturally accepted food over time and space, in the face of man-made and/or natural shocks and stressors and live in peace and harmony with each other and with nature.

The mission is:

> Building resilient food systems in Western Bahr el Ghazal State.

Pathways towards achieving the vision of food systems resilience

The food systems resilience dialogue in WBeG, involving around 55 key actors and stakeholders, co-created/envisaged a total of nine pathways. Together the pathways comprise a road map for the transformation of WBeG's food systems to become more resilient and better serve the needs of smallholder farmers/agri-pastoralists and herders across the State.

The pathways are grounded in, and contribute to:

- The key priority dimensions for building Food Systems Resilience as identified by South Sudan's National Food Systems Dialogues (2021).
- South Sudan's Comprehensive Agricultural Master Plan – CAMP. [34]
- The Western Bahr el Ghazal State Development Plan 2022-24.

The pathways address critical challenges related to:

- Governance (policy, principled approaches)
- Coordination
- Public and private sector performance and programming (including key operations and services in food system development)
- Capacity building.

The pathways take a principled approach:

- Strengthen localisation and humanitarian-development-peace nexus programming.
- Encourage and facilitate community-driven initiatives.
- Ensure that building food systems resilience is inclusive and that all, in particular women and youth, can participate in and benefit equitably from food systems resilience.
- Seeing youth as opportunity in food systems transformation.
- Seek constructive engagement of local experts and expertise, thereby strengthening a local knowledge/research infrastructure.

Each pathway reflects the deliberations during the dialogue, and describes:

- The challenges
- The ambitions

[34] https://openknowledge.worldbank.org/bitstream/handle/10986/37951/cc1048en.pdf?sequence=1

- The interventions (numbered), their actions, and achievable activities that were identified through the dialogue
- The key actors/stakeholders involved.

The proposed pathways are outlined in the sections below.

14.2 The nine pathways

Pathways at a glance:

I. Strengthen food systems resilience governance

1. Strengthen FSR governance at state level to create ownership and develop a regulatory framework / set of principles to guide the development of FSR as required to deliver upon the four national food systems priority areas (South Sudan's Food Systems Dialogue – see pathways 4-7).
2. Promote coordination and information-sharing (digital inclusion), and catalyse partnerships in developing FSR.
3. Guide and support the transformation from humanitarian assistance to developing FSR.

IIa. Develop food systems resilience – address strategic challenges

4. Strengthen the resilience of food systems in the face of human-made and natural shocks (ensuring food security for all reducing the need for humanitarian assistance).
5. Build food systems resilience that contribute to social cohesion and peace - develop food systems for peace.
6. Build food systems resilience that maintains/develops natural resources, and produce a variety of food for delivering healthy diets.
7. Develop inclusive value chains and agri-businesses maximising employment for youth.

IIb. Develop a resilient seed sector

8. Promote integrated seed systems development in Western Bahr el Ghazal State as foundational to healthy food systems performance.

III. Learning, capacity building, and evidence-based programming

9. Facilitate learning, build capacities of public and private institutions, and encourage evidence-based programming for effective food systems transformation.

Please note the following:

- In the boxes below, the transformational levers are mentioned: they were created as part of South Sudan's National Food Systems Dialogue and its initiatives.
- Proposed actions and activities in the state-level Food Systems Dialogues and pathway development were aligned with the transformational levers that had been created by the National Food Systems Dialogue, to ensure alignment and consistency.

14.3 I. Strengthen food systems resilience (FSR) governance

Pathway 1
Strengthen FSR governance at WBeG State level to create ownership and develop a regulatory framework / principles to guide the development of FSR
as required to deliver on the four national food systems priority areas (pathways 4 to 7).

The challenges

Challenges identified through the dialogue:

- Lack of co-ordination between National and State Government.
- Inadequate co-ordination between line ministries and other humanitarian/development/peace partners.
- Lack of skills and expertise to strengthen FSR governance.

- Lack of early warning systems and anticipatory action.
- Lack of appropriate policies on guiding FSR.
- Limited financial resources by the government to support FSR governance.
- Lack of capacity building on modern technology or phased introduction of improved technologies.
- Transport and co-ordination networks across the state are poor, hindering effective FSR work across the State.
- Avoid corruption that could potentially undermine the government's food systems resilience efforts.

The ambitions

Ambitions identified through the dialogue:

- To increase the political interest and will to strengthen FSR governance.
- To involve academia and national/local experts in FSR governance and programming.
- For the Government, with support of key partners, to assume leadership in building food systems resilience.
- To strengthen co-ordination between the State Government and its line ministries in building food systems resilience.
- To support and strengthen Government institutions in policy development and implementation.
- To establish early warning systems, including provisions for anticipatory action.

Interventions (numbered), **actions** (bullet points) and **achievable activities** (arrows) **identified through the dialogue**:

1. Develop a **better understanding on FSR**, both as concept and as actionable approach, amongst key stakeholders/actors, and develop a **common principled approach to building/developing FSR in WBeG State**.
   - Develop and deliver a FSR training to key stakeholders and actors.
     - ➢ UoJ to develop and deliver an (online) training short training/course on food systems resilience (by adapting JRM-DRMFSR course, and/or development of MOOC/SPOC as part of the FNS-REPRO programme)
   - Develop, agree upon and adopt a set of principled approaches that guide developing FSR.
     - ➢ UoJ and WUR-WCDI to facilitate a consultative process and publish recommendations accordingly.

2. Clarify the key role and responsibilities **of key stakeholders and actors in WBeG State** in developing food systems resilience.
   - Develop clear roles of key actors (State Government, local Universities, NGOs, private sector, civil society) in building food systems resilience.
     - ➢ UoJ to facilitate a consultative process and publish recommendations accordingly.
     - ➢ Allocate capacities to regulation bodies to monitor and enforce rules.

3. Produce a **land use management map / plan (including hazard/risk mapping)** to guide and inform decision-making by the WBeG State Government to achieve the potential of South Sudan's food systems transformation priorities (aligned with the Comprehensive Agricultural Master Plan).
   - Land use management plan including key infrastructure (roads and markets); population centres (cities, towns and urban centres); natural resources; identification of areas that are exposed to natural shocks (like floods and droughts) and stressors (like climate change); man-made shocks (like conflict related displacement); and stressors (like longer-term return strategies).
     - ➢ Government of South Sudan, FAO, WUR-WCDI.
   - Based on the land use management map /plan, identify key opportunities to prioritise investment in infrastructure (notably roads and markets) and agricultural development to unlock the economic potential of the State (including export of agricultural commodities to Uganda and Kenya once the new road is established).
     - ➢ Develop a yield gap atlas for WBeG State by FAO, UoJ and WUR-WCDI
   - The land use management map/plan should account for urban-rural food systems development and how these food systems interconnect with outlaying rural areas improving food and nutrition security in those areas.
     - ➢ FAO, UoJ, the University of Bahr el Ghazal, and the Roman Catholic University of Bahr el Ghazal, with support of WUR, will scope possibilities for development of land use management plans.

- Create better understanding of the urban food consumption needs, trends and supply gaps to develop peri urban value chains accordingly.

4. **Develop policy directions and operational approaches to contribute to the realisation of the four national Food Systems Dialogue priority areas.** That is, develop evidence-based food systems that: 1) are resilient to man-made natural shocks/stressors; 2) contribute to social cohesion and peace; 3) produce healthier diets and improved NRM; 4) develop value chains that are inclusive and generate meaningful youth employment.
   - Develop pathways for each of these key food systems domains (see developing food systems resilience below).
     - Initiate a consultative and interactive process to identify, develop, and MEAL pathway development, and organise consultative meetings twice a year (see also establishment FSR Hub under point 2).
     - Ensure that existing and new government and NGO project budgets are used effectively and are accountable (minimising corruption) to beneficiary groups.

5. Government to ensure that **national and international public & private investments in agriculture are 'responsible'**, and in line with the interest of communities in Western Bahr el Ghazal.
   - State Government, working with partners, and in line with national legislation, to develop a set of principles to guiding responsible agricultural investment.
     - UoJ could, with support from WUR-WCDI, work on this.

6. Ensure that current government and donor financing is aimed at building FSR.
   - WBeG State Government and its partnerships to advocate for funding that supports building food systems resilience.

Key actors

Key actors identified through the dialogue:

- State Government
- Humanitarian, development and peace actors
- Private sector actors
- Community leaders
- Youth and women, and people with special needs.

Pathway 2
Promote coordination, information sharing (digital inclusion), and catalyse partnerships in developing FSR.

The challenges

Key challenges identified through the dialogue:

- Communication and information sharing between key actors and stakeholders is generally poor; it needs dedicated attention to improve for FSR work to be co-ordinated and effective.
- Lack of commitment/ability by government to effectively deliver co-ordination.
- Lack of funding to make co-ordination, info sharing and fostering partnerships possible.
- Poor physical infrastructure and communication, making dialogues/meetings expensive and challenging (in particular for those not located in Wau).

The ambitions

Key ambitions identified through the dialogue:

- To establish a platform at state level that can bring together a wide range of key actors/stakeholders interested in and dedicated to building resilient food systems in Western Bahr el Ghazal State.
- To make co-ordination meetings involving relevant authorities stronger and more effective.
- To set up a digital platform to increase access to relevant information (for example by setting up places with good internet access at County level).
- To identify and secure the funds required to make co-ordination and information-sharing possible.

Interventions (numbered), **actions** (bullet points) and **achievable activities** (arrows) **identified through the dialogue**:

1. **Establish a Food Systems Resilience Hub in WBeG in Wau.** The FSR Hub provides an independent and neutral platform that brings together a wide range of key actors/stakeholders interested in and dedicated towards building resilient food systems in WBeG; the FSR Hub will raise awareness about the importance of FSR, provide training, facilitate learning, co-ordinate and facilitate joint or collaborative action, document good practice, and develop policy briefs advocating for building FSR.
   - UoJ are to work with a relevant actor/institute in Wau to establish and support the FSR Hub, organising two FSR Hub dialogues per year.
   - Develop/facilitate training by South Sudanese knowledge and training institutions, if required with the support of international research and training institutions, on topic areas that are key to building food systems resilience.

   ➢ Design and deliver practical training courses by WBeG State-level training and research institutes (The University of Bahr el Ghazal and the Roman Catholic University of Bahr el Ghazal), with the support of the UoJ. At their request, WUR-WCDI will consider support.

   ➢ Facilitate learning, exchange of information, documenting good practice, and development of policy briefs.

   ➢ Provide a course/workshop on Food Systems Resilience facilitated by the University of Juba with local partner institutions/agencies.

   ➢ Use the twice-yearly FSR Hub to generate/validate good practice and policy recommendations.

2. Establish a **Food Systems Resilience Portal** as a digital platform/gateway to share food systems resilience related policies, food systems regulatory provisions and requirements, information on on-going food systems programmes and their focus areas, and other FSR-related information.
   - The FSR Portal will be housed at the FSR Hub, supported/facilitated by the UoJ (with support by WUR-WCDI).

   ➢ Relevant parties will make relevant resources, reports, training materials etc. available.

3. Establish a **FSR training and resource centre** that develops and delivers training/info/resources packages to address critical challenges/gaps to building food systems resilience.
   - Establish a FSR training and resource centre in Wau with support and guidance by UoJ (which is currently establishing its own FSR resource and training centre).

   ➢ The WBeG State Government and its partners (including the Partnership for Recovery and Resilience, UNMISS and University of Juba) are to discuss the establishment of the training and resource centre.

4. Strengthen and promote **longer-term N-S-S partnerships on FSR** between local, national, regional and international universities and research centres.
   - UoJ plays a key role in North-South-South (N-S-S) partnership, currently involving the following: **N**-S-S Wageningen University; VHL University of Applied Sciences; N-**S**-S University of Juba; the Institute for DRM and Food Security Studies, Bahir Dar University, Ethiopia and Nugaal & Sanaag & Buruo, Somaliland; N-S-**S** the University of WBeG, the RC University of WBeG and the International Equatorial University/Torit University in Eastern Equatoria.

   ➢ Advocate and lobby for strengthening N-S-S partnerships linking research and knowledge institutes at local (WBeG State), national, regional and international level.

Key actors involved

Key strategic actors identified through the dialogue:

- Government and donors
- Government partners
- Telecoms
- Research and knowledge institutions.

Pathway 3
Guide and support the transformation from humanitarian assistance to developing FSR.

The challenges

Key challenges identified through the dialogue:

- The mindset and attitude of organisations and communities that have become accustomed to provision of humanitarian assistance.
- Lack of will, ideas and 'power' to transform humanitarian assistance to developing FSR.
- Insecurity and conflicts are likely to limit FSR work or erode gains in building FSR.
- Value chains that could play critical role in developing FSR are weakly developed.
- Poor infrastructure and market linkages form barriers towards building FSR.

The ambitions

Key ambition identified through the dialogue:

- To create a shared vison amongst key actors on the need and opportunity to transform humanitarian assistance into building FSR.
- To enable communities to increase food production (consumption) and food access (marketing).
- Communities to diversify their crops, animal breeds and livelihoods.
- Communities to build up their resource base.
- Communities to have better access to markets (including through road construction).

Interventions (numbered), **actions** (bullet points) and **achievable activities** (arrows) **identified through the dialogue**:

1. Create awareness and commitment amongst organisations/communities to **transition out of humanitarian assistance to building FSR**.
   - Facilitate a learning journey involving key actors on transforming humanitarian assistance to building FSR.
     - For UoJ as part of the FSR Hub, to facilitate a learning journey on how the transformation of humanitarian assistance could be used to catalyse building FSR.
     - Agencies to include learning journeys in their interventions and programmes enabling them to contribute to lessons learned and good practice / policy recommendations.
   - Engage with relevant clusters (under UNOCHA) to ensure validity-checking and buy-in.
     - For UoJ as part of the FSR Hub, to facilitate and ensure linkage with UNOCHA cluster system including the food and livelihood cluster.
     - Create linkages among the State Government, development partners, and local universities and training centres.

2. Facilitate a consultative process to develop a set of **guiding principles for humanitarian assistance to catalysing FSR** (in line with the **localisation agenda and HDP nexus programming**).
   - Promote and facilitate the localisation agenda and HDP-nexus work to fighting WBeG State food crises.
     - Facilitate a learning journey on the localisation agenda and HDP nexus programming to transform the aid architecture.
   - Create an enabling environment for developing FSR (by documenting good practices, drafting policy recommendations, and developing/implementing principled approaches to guide transformation humanitarian assistance into building FSR).
     - Support local authorities to disseminate policies and good practices in developing FSR.
   - Develop a road map to move away from humanitarian assistance toward development programming
     - Government to take leadership and consider provision of subsidies and incentives based on market opportunities.
     - Government to take leadership on regulation including enforced sustainability principles in project work.

3. Increase **data literacy/analytics/foresight to support local programming and decision making.**
   - Design and deliver a practical course on data literacy to build capacities to better use data for practical programming to local context.
     - Deliver/adapt data 'from insight to foresight' by IPC/Zero Hunger Lab/WUR.

- Decentralise data analytics and foresight enabling in line with localisation agenda to improve on state-level planning and programming.
  - For example, by piloting data analytics and foresight by the ICP – Zero Hunger Lab / WUR-WCDI.

4. Facilitate and support a **central role for education/training/research institutions and local South Sudanese and HoA experts** in the transformation of humanitarian assistance, and simultaneously strengthen the capacity of these education/training/research institutions.
   - Facilitate an evidence-based learning and capacity building agenda to transition humanitarian assistance into FSR programming, by local education/training/research institutions.

Key actors involved

Key actors identified through the dialogue:

- Government.
- Humanitarian, development and peace actors.
- Academia and knowledge institutions.
- Community.
- Donors.

14.4 IIa. Develop food systems resilience – address the strategic challenges

Pathway 4

Strengthen the resilience of food systems in the face of human-made and natural shocks.

The challenges

Key actors identified the key challenges through the dialogue:

- Dependency syndrome of people and aid organisations, having become accustomed to humanitarian assistance as the norm.
- Poor safety and insecurity resulting in displacement (in parts of Western Bahr el Ghazal State), long dry spells with wildfires burning out of control, flooding, crop pests and animal diseases. All these impact on food systems with no concerted effort/approach to strengthen food systems in the face of these shocks and stressors.

The ambitions

Key actors identified the key ambitions through the dialogue:

- Western Bahr el Ghazal's State food systems to be more resilient in the face of recurrent shocks and stressors, with government, agencies and local communities better able to anticipate and mitigate the potential impact of these shocks and stressors and respond and recover from these shocks and stressors that reduce the potential of these hazards in the near future.

A. First transformative lever – FSR governance and institutional strengthening

Box 8 *The first transformative lever to strengthen resilience of food systems: FSR governance and institutional strengthening*

First transformative lever of the National Food Systems Dialogue: strengthen resilience of food systems - FSR governance and institutional strengthening

i. Commit to the revitalised Transitional Government of National Unity (R-TGoNU) to restore and consolidate peace, security and stability. This is a pre-requisite.
ii. Governance mechanism for food systems and food security and nutrition (co-ordination of institutions and mutual accountability)
iii. Develop macro-economic management and efficient trade and taxation policies.
iv. Develop the political will to allocate the necessary financial and human resources to implement the Comprehensive Agriculture Master Plan (CAMP).
v. Reduce the over-reliance of South Sudan on food importations, while developing the surveillance capacity to ensure food quality and safety.

Interventions (numbered), **actions** (bullet points) and **achievable activities** (arrows) **identified through the dialogue:**

1. Create a better awareness and understanding amongst key actors/stakeholders on how **man-made and natural shocks/stressors impact on food systems** and develop appropriate anticipatory action (mitigation/reduction and early warning/readiness) and action (response and recovery).
   - Document and make available through the FSR Hub the impact of shocks/stressors on WBeG State food systems and the response by relevant actors/stakeholders and local communities.
     - UoJ to consider employing two JRM thesis students to document the impact of shocks and stressors and make results available to the FSR Hub.
   - Develop and deliver a course on **Landscape Resilience** strengthening the links between land use mapping, planning, and building resilient landscapes involving key actors and stakeholders.
     - A course already designed by the Global Landscape Forum could be delivered by them and/or by the UoJ, with the support of NUFFIC/REPRO.

2. As part of the land use management map / plan (pathway 1), **visualise key hazards and risks geographically and describe key food systems' components and interactions.**
   - Identify areas that are exposed to natural shocks (like floods and droughts) and stressors (like climate change), and man-made shocks (like conflict-related displacement) and stressors (like longer-term return strategies).
     - Government of South Sudan, FAO, WUR-WCDI?
   - Examine and identify key geographic areas where cropping and livestock systems interact.
     - Examine how livestock and cropping systems interact, and how these fit into landscape-level management with other components, such as soils, fuels, fibres, fruits, and food and fodder.
     - In addition, understand how these relate to resource access and management regimes relating to land tenure, governance, and plural legal systems (see also pathway 5 transformational lever 2, 'land tenure').
   - The land use management map/plan should account for urban-rural food systems development and how these food systems interconnect with outlaying rural areas improving food and nutrition security in those areas.
     - The University of Juba and Uni of Western Bahr el Ghazal, with support of FAO and WUR, will scope possibilities for development of land use management plans.

3. Establish a cost-effective and affordable **early warning system** including provisions for anticipatory action (mitigation/reduction and early warning/readiness).
   - The State Government to liaise with Central Government and relevant international/national actors (including the University of Juba) to pursue and align with current initiatives in this domain.
     - UoJ to consider providing technical advice.
     - International/local actors to identify key local staff to participate in the Joint Regional Masters Disaster Risk Management and Food Systems Resilience at the UoJ.

4. Develop a **drought/flood/forced displacement risk mitigation and response plan** (see pathway 1)
   - Identify the likelihood of major shocks/stressors affecting significant numbers of people in WBeG State and develop appropriate risk mitigation and response plan.
     - The respective State Government ministries to work with international and national partners (including the University of Juba) in the development of relevant risk mitigation and response plans.

5. Develop **courses addressing critical gaps in developing FSR.**
   - Identify as part of the FSR Hub the critical challenges in building FSR in WBeG State and seek the support of international/national actors to develop and deliver actionable courses (see also pathway 9).

B. Second transformative lever – enhancing communities' food production

Box 9. *The second transformative lever to strengthen resilience of food systems: enhancing communities' food production*

Second transformative lever of the **National Food Systems Dialogue: strengthen the resilience of food systems – enhancing communities' food production.**

i. Develop and support community-based organisations: pastoral field schools (PFS), community animal health workers (CAHWs), farmer field schools (FFS), and business field schools (BFS) - effective in the absence of formal extension services and poor infrastructure.
ii. Development, propagation and adoption of climate-resilient technologies and investment.
iii. Develop community seed production as a means to develop self-reliance and avoid the current dependency on donations/imports with extremely variable quality and questionable adaptation to local conditions.

Interventions (numbered), **actions** (bullet points) and **achievable activities** (arrows) **identified through the dialogue:**

1. Develop and promote community-based institutions that allow **programming/interventions that reflect local needs and preferences building upon, and strengthen, local capacities**.
   - Develop a common curriculum on Community Based Disaster Risk Management (CMDRM) to facilitate and support community-driven initiatives.
     - ➢ For UoJ and other research/knowledge institutions (in consultation and agreement with the National Ministry for Disaster Management and Humanitarian Affairs) to develop and promote through NGOs/CBOs a curriculum on CMDRM.

2. Develop appropriate training and resource packages that support the production of **nutritious foods** fitting with WBeG State agro-ecologies and cultural preferences
   - Develop an overview of food profiles (including nutrition content) and design of community-led/driven interventions to maintain or improve on the resilience of food systems characterised by farming, agro-forestry and silvo-pastoral systems.
     - ➢ For UoJ and other research/knowledge institutions (in consultation and agreement with the Ministry of Humanitarian Affairs and Disaster Management), with support of international/local organisations, to develop and disseminate food profiles and interventions in support of these.
   - Account for context specific indigenous knowledge to build resilience of food systems through adaptation to local agro-ecologies and conservation of bio-diversity.
     - ➢ The University of WBeG, with the support of UoJ, to undertake studies to document indigenous knowledge and practices that can play an important role to strengthen the resilience of local food systems.

3. Identify and **develop scaling strategies to increase crop production** with the potential to reduce the food gap and to contribute to healthier diets.
   - WBeG State Ministry of Agriculture and Food Security, in partnership with international/national organisations, to identify the most promising crops and their scaling strategies.
     - ➢ The University of Juba, with the support of other research and knowledge institutions, to facilitate these scoping and validations studies.

With regard to seed production and building a resilient seed sector in WBeG State, including community seed production and establishing local seed businesses, see pathway 8.

C. Third transformative lever – facilitating storage and transportation of food products

Box 10 *The third transformative lever to strengthen resilience of food systems: develop transportation infrastructure*

Third transformative lever of the National Food Systems Dialogue: strengthen resilience of food systems - facilitating storage and transportation of food products

i. Invest in road infrastructure.
ii. Develop policies to enable trade and transportation of domestic food from excess areas to deficit areas
iii. Invest in storage to reduce the costs as well as losses of agricultural produce, particularly perishables.

Interventions (numbered), **actions** (bullet points) and **achievable activities** (arrows) **identified through the dialogue:**

1. Strengthen **rural-urban food systems,** moving beyond direct production-marketing.
   - Better understand urban-rural food systems dynamics and grasp opportunities to strengthen these food systems.
     - ➢ Government, with the support of FAO/WFP and the UoJ, to study rural-urban dynamics and develop an action plan to strengthen these systems.

1. Develop strategy/principled approach for **post-harvest management,** in particular local storage to reduce post-harvest losses.
   - Set examples of improved storage facilities across a range of options (from household to state level) that are affordable and doable by different actors.
     - ➢ Government, UN agencies and UoJ to consider a study aimed at proof of concept of the 1 billion UN initiative on post-harvest reduction.

2. Invest in **road infrastructure** (domestic food from food surplus to deficit areas) through government plan and consultations with relevant UN organisations, NGOs and local communities.
   - Decisions on investing in road infrastructure should also be informed by the decisions that have been made about the development of value chains and agribusiness, including the generation of revenue for road and market maintenance. This is because most value chains can be developed more easily when a good road infrastructure is in place.

3. Develop **market infrastructure** (to link demand and supply of domestic food).
   - Through government plans and consultations with relevant UN organisations, NGOs and local communities.

4. **Develop strategies to narrow the food gap with footprint actors** (in particular FAO and WFP) and NGOs in WBeG State.
   - Explore the potential of concepts such as P4P modality (to reduce yield gap in EES) and the creation of a State- based grain reserve (in support of relief assistance).
     - ➢ Negotiate with established actors such as WFP and FAO for local traders to make use of institutionalised storage capacity to bulk emergency food supplies and/or market grain crops.
     - ➢ WFP to look into potential P4P strategies as an integral part of the humanitarian-development agenda as a way to use humanitarian procurement to stimulate production, then transition to sustainable value chains.

Key actors involved

The following key actors were identified by the dialogue:

- Government
- UN agencies (WFP, FAO, UNHCR and IOM in particular), NGOs and CSOs
- Private sector
- Community

Pathway 5
Build food systems resilience that contributes to social cohesion and peace: develop food systems for peace.

The challenges

The following key challenges were identified through the dialogue:

- Conflicts between farmers and herders.
- Food insecurity and its potential to contribute to conflict.
- Poor understanding of the cause-effect relationship between conflict and food insecurity, and therefore a lack of smart/strategic programming.
- Land disputes.
- Poor road connectivity which isolates some communities.

The ambitions

The following ambitions were identified through the dialogue:

- To implement peace agreements (in particular the Marial Bai agreement).
- To establish inter-communal dialogues, in particular in areas where food systems interact (in part livestock and cropping systems).
- To develop awareness and practical action in developing food systems in ways that contribute to social cohesion and peace.
- To develop and use evidence-based land use policies that contribute to social cohesion and peace.

Box 11 *The transformative levers to enhanced food systems: food systems and peace*

Transformative levers, National Food Systems Dialogue: food systems and peace

A. Develop **community-based peace-building mechanisms**, allowing evidence-based dialogue and peacebuilding and negotiated community development programming for peaceful coexistence among communities through equitable access to natural resources.
B. Build capacity for enhanced **land tenure security**.
C. Protect and invest in human capital, particularly women and youth and social cohesion through **community-driven development interventions.**

Interventions (numbered), **actions** (bullet points) and **achievable activities** (arrows) **identified through the dialogue**:

A. First transformative lever – peace architecture and Food Systems for Peace

1. WBeG State Government and its partners to institutionalise the State's **peace architecture as foundational to food systems transformation**.
   - The government to take leadership and work with relevant local partners to document, on the basis of good practice, the different elements that make up the State's peace architecture, including the roles of traditional/indigenous leaders.
     - ➢ Develop and disseminate a WBeG State position paper and principled approach to further strengthening the States' peace architecture (see also the WBeG State 2022-24 development plan).

2. Develop **food systems for peace** (FS4P) by creating a common foundation amongst key actors/stakeholders (including government) on conflict sensitivity, conflict transformation, and peacebuilding, and by developing principles and practices to develop FS4P.
   - UoJ (in part the Institute for Peace, Development, Security and Strategic Studies), in co-ordination with the Conflict Sensitivity Resource Facility, to develop and deliver a course on FS4P.
     - ➢ PfRR and UoJ to deliver the FS4P workshop as part of the FSR Hub portfolio.

3. Strengthen WBeG State's peace architecture by applying the **localisation agenda and humanitarian-development-peace nexus programming.**

- The government to take ownership and responsibility to develop a policy/principled approach, putting to practice the localisation agenda and programming along the humanitarian-development-peace nexus.
  - PfRR and UoJ to take the lead in working with government and local actors to develop a principled approach in respect of the localisation agenda and nexus programming.

4. WBeG State Government and its partners to strengthen urban and rural communities **access to the rule of law and justice** to act as an antidote to impunity.

B. Second transformative lever – enhance land tenure security

1. Enhance land tenure security by developing / making more explicit indigenous land use rights in WBeG State's land rights, policies, and frameworks.
   - Undertake a study on land rights and indigenous land use mapping across WBeG State to inform WBeG State's land rights, policies, and frameworks.
     - UoJ and the WBeG State Line Ministry, in consultation with UNMISS and national authorities, to undertake the study (including workshop validating key findings and implications for land tenure rights and security).
   - Ensure evidence-based land use policy that contributes to social cohesion, peace and territorial integrity.

2. Increase understanding on interaction of livestock and cropping systems and how traditional/current law land rights and tenure are being managed.
   - Derive programming principles to promote interdependency/synergy along traditional conflict lines.
     - UoJ and the WBeG State Line Ministry, in consultation with UNMISS and national authorities, to undertake such a study (including workshops validating key findings and implications for land tenure, rights, and security).

C. Third transformative lever – developing food systems for peace

1. Deepen understanding of conflicts and their impact on WBeG State's food systems, to devise **strategies to avoid/minimise impact of conflicts on food systems.**
   - As integral part of the Food Systems for Peace workshop, deepen and validate understanding on conflicts; the Government to disseminate findings.
     - UoJ and respective WBeG State Line Ministries, in consultation with UNMISS and national authorities, to undertake such a workshop.

2. Facilitate **community-driven initiatives to developing food systems for peace.**
   - Respect and support community-led initiatives that seek (additional) investments that promote synergies/complementary & interdependency and reduce potential competing claims over critical resources to sustain livelihoods (farming/agro-pastoral/silvo-pastoral food systems).
     - The relevant WBeG State line ministries, its partners and peace committees, to facilitate such initiatives upon request by the Ministry of Peacebuilding.

3. Engage/**dialogue with parties in areas where livestock and cropping systems interact with potential for conflict.**
   - Where appropriate, invest in seed systems for forage / fodder and protein-rich feed to improve livestock feed and livestock productivity. Promote short-cycle crops (sorghum) or crops with residue used as fodder (like cowpea, moringa); promote the use of fodder tree fences (protecting gardens).
     - Work with agri-pastoralists on the restoration/improvement of rangeland management and water resources.
     - Work with farmers on the production of protein-rich fodder crops in areas with livestock migration.

4. Develop food systems in such ways that it will contribute to producing and making food available in sufficient quantities at favourable market prices (making food more affordable) and **develop the potential for food to bring people together and contribute to cohesion when access is sought**.
   - WBeG Chamber of Commerce should champion this together with other key actors.

Key actors involved

The following key actors were identified through the dialogue:

- Both National and State Government
- Lawyers, judges, chiefs, local authorities
- Peace Committee WBeG State and the Ministry of Peacebuilding
- UN agencies and international partners, NGOs
- Communities (including farmers and herders).

Pathway 6

Build food systems resilience that promotes sustainable use and maintenance of natural resources and produces a variety of foods for delivering healthy diets.

The challenges

The following challenges were identified through the dialogue:

- Poor management of natural resources.
- Lack of policies on NRM or active dissemination thereof.
- Low to non-existing research capacity on NRM and healthy foods at state level.
- Cultural taboos and/or poor awareness on healthy foods by citizens of WBeG State.
- Poor agricultural infrastructure, inadequate extension services and farmer organisation/co-operatives.
- Poor safeguarding of food safety and quality on imported goods.

The ambitions

The following ambitions were identified through the dialogue:

- To promote the sustainable management of natural resources/ecosystem so that the WBeG State peoples are able to produce and access healthy foods.
- To develop and disseminate relevant policies, legislation and action points.
- To strengthen social organisations to increase agricultural production and crop diversity in line with peoples' cultural preference.
- To innovate and create scalable forms of farming, including vegetable farming.

Box 12 *The transformative levers to enhanced food systems: sustainable use and maintenance of natural resources, and healthier diets*

Transformative levers, National Food Systems Dialogue: sustainable use and maintenance of natural resources, and healthier diets.

A. Strengthen **farmer organisations and cooperatives**.
B. Support **responsible public and private investment** that respects the environment and enhances governance and equity in accessing productive natural resources.
C. Enhance the **awareness and knowledge related to nutrition and healthy diets** by promoting nutrition-sensitive agriculture and value chains, promoting food diversification, awareness-raising regarding healthy diets, and promoting sustainable consumption patterns, including behaviour change communication.
D. Enhance the **nutrition of infants and children**.
E. Develop **animal value chains**.

Interventions (numbered), **actions** (bullet points) and **achievable activities** (arrows) **identified through the dialogue**:

A. First transformative lever – food diversification through farmer/herder/women's/youth organisations and co-operatives.

1. **Inventorise the current crop portfolio** in WBeG State across the main agro-ecological settings.
   - Undertake assessments and disseminate findings.
     - University of Juba has been undertaking seed systems assessments on the basis of the current crop portfolio, on the basis of which seed catalogues (including indigenous vegetables) can be developed.

2. Develop a principled approach to support **food diversification** through CBOs and co-operatives.
   - Document and disseminate good practice and (emerging) policy recommendations to support food diversification by CBOs and co-operatives.
     - The relevant line ministry, with international/local partners, to undertake a field-based study to document and disseminate findings.
     - UoJ to undertake - with a student from their Joint Regional Master programme on Disaster Risk Management and Food Systems Resilience (JRM-DRMFSR) - a study into the nutrition gap and cost of diet currently consumed by different people groups in WBeG State, and to provide findings and recommendations accordingly.

3. Aim for **increased food production and supply** by working with farmers, agri-pastoralists and herders, in ways that promote sustainable use and management of natural resources.

4. Establish **a training and demonstration Trainer of Trainers (ToT) centre** (training instructors, lead farmers and youth), including demonstration plots in selected areas, through UoJ/Yei CTC, with a focus on training lead farmers and youth.
   - Construct/upgrade a physical training centre with appropriate training grounds to provide innovative training and extension methods.
     - Request EWSKF to set up a practical training and learning plot for vegetable production.
     - Set up agro-base incubation hubs for skilled youth and agribusiness centres to support value addition.
     - Develop support to school feeding schemes by linking with demonstration plots, including nutrition awareness training.

B. Second transformative lever – support responsible public and private investment

1. Government to ensure that **national and international public and private investments in agriculture are 'responsible',** and in line with the interest of communities in Western Bahr el Ghazal.
   - State Government, working with partners, and in line with national legislation, to develop a set of principles to guide responsible agricultural investment.
     - UoJ could, with support from WUR-WCDI, work on this.

2. Guide/help agribusiness and financial intermediaries **to make investment decisions that increase the resilience of food systems.**
   - State Government and partners to develop methodology and design/deliver training to ensure investments contribute to building food systems resilience.
     - UoJ could, with support from WUR-WCDI, work on this.

3. **Ensure food safety and quality standards**, in part for imported foods.
   - The National Government and partners (in particular WFP) to develop food safety and quality standards and ensure their implementation.
     - The National Government and WFP to take the lead in development of food safety and quality standards.

C. Third transformative lever - awareness and knowledge related to nutrition and healthy diets

1. Raise awareness and design a comprehensive approach to **develop food systems for healthier diets**.
   - Develop and deliver courses that contribute to awareness and guide action for improved diets.
     - UoJ have offered to deliver the course **Making Horticulture Work for Healthier Diets and Income Generation**.
     - Develop guiding principles to ensure that food systems interventions focus on, or at least includes, the nutritive aspect of the system.

2. **Diversify crop production** for healthier diets.
   - MAFS and partners to document existing and potential nutrition-dense food crops (including vegetables) and indigenous wild forest foods (IWFFs).
     - For MAFS and partners to promote the crop diversity that best fits the local agro-ecology and local crop preferences.

3. **Introduce and promote new crops / crop varieties** that have the potential to contribute to healthy diets.
   - Introduce cowpea as a strategic and nutrition-dense food crop in areas characterised by chronic/acute food insecurity.
     - MAFS and partners to work with cowpea breeders of the UoJ to introduce and promote cultivation of cowpeas.

D. Fourth transformative lever - enhance the nutrition of infants and children.

1. Enhance awareness and knowledge related to healthy diets and nutrition for infants and children.
   - Develop and apply guidelines to nutrition education programmes.
     - UNICEF and FAO to develop materials to sensitise pregnant/lactating mothers, and mothers with small children, about the importance of nutrition and to offer practical training/starter kits to produce healthier foods.

E. Fifth transformative lever: develop animal value chains.

1. Aim for increased food production and supply by working with livestock producers to develop economic value of livestock.
   - Raise awareness about commercial potential of livestock amongst youth and progressive livestock producers/keepers.
   - Develop comprehensive approach to support development of animal value chains.
     - Improve access to natural resources in particular water and pasture, identify and demarcate grazing routes, rehabilitate/improve pasture and rangelands, introduce improved fodder species (such as Sudan and Napier grass) in pilot locations, and promote the production and storage of fodder (including establishment of fodder banks).

Key actors involved

The following key actors were identified through the dialogue:

- Line Ministries
- UN agencies (UNICEF) and NGOs (such as AVSI, DORCAS-ZOA and CORDAID)
- Civil society
- Private sector
- Farmers associations.

Pathway 7
Develop inclusive value chains and agri-businesses that maximise youth employment.

The challenges

The following key challenges were identified through the dialogue:

- Poorly functioning markets and poor market information systems on demand and supply.

- Lack of access to capital for value chain / agri-business development.
- Lack of exposure among target groups to (the potential of) modern farming techniques.
- Lack of decision-making power (and access to resources) by youth and women; gender as well as inter-generational household power dynamics.
- Youth are seen as having a negative attitude to involvement in agricultural value chain development and agri business activities/enterprises.
- High illiteracy rates among women and youth groups hinders participation in value chain / agri-business development.

The ambitions

The following ambitions were identified through the dialogue:

- For the Government, with support of key actors, to take the lead to develop a vision to support development of value chains and establish agri-business incubation hubs.
- To change mindsets through sensitisation and job creation/facilitation in value chain / agribusiness development.
- To improve market linkages, linking supply with demand, that support small agri-business and value chain development, adding value over different stages of the chain.
- To develop visions and strategies (including inter-generational power relations) to see youth as an opportunity in small agribusiness and value chain development.
- To revive the old national schemes within the State (like fruits and kenaf) to ensure their good management and governance.

Box 13 *The transformative levers to enhance food systems: value chains /agri-businesses and maximising youth employment*

Transformative levers, National Food Systems Dialogue: value chains /agri-businesses and maximising youth employment

A. Promote **small business development** to cater for emerging markets in urban areas.
B. Enhance **access to finance** for small/medium businesses
C. Promote **value chain development** that is inclusive and maximises youth employment (this lever is added as part of the State-level Food Systems Dialogue).

Interventions (numbered), **actions** (bullet points) and **achievable activities** (arrows) **identified through the dialogue**:

A. First transformative level – innovative financial institutions/mechanisms

1. Enhance **access to financial resources**.
   - Promote innovative financial institutions and mechanisms, both community-owned and community-driven (like Village Savings and Loan Associations), as well as those that are private sector/market based.
     - Undertake a study to map good practice and policy recommendations on strengthening community and private sector-based financial institutions.
     - Link agribusiness to financial institutions.
     - Conduct training need assessment.
   - Evaluate and **strengthen performance of co-operatives and producer associations** (including access to land and credit by youth / women).
     - Undertake a study to map good practice and policy recommendations on strengthening and promoting co-operatives.

B. Second transformative level - small-medium business/enterprises

1. Promote **small business development**.
   - Support food systems entrepreneurs to cater to emerging markets in urban areas and to strengthen urban-rural food systems.
     - Train entrepreneurs in business development, food safety, and good agricultural practice.
     - Train entrepreneurs in the VSLA concept and group dynamics.

C. Third transformative level – inclusive value chain development (maximising youth involvement).

1. Identify and develop **strategic value chains** in an inclusive manner, maximising youth employment.
   - Identify and develop strategic value chains that have the potential to narrow the current food gap (such as maize or sorghum).
     - Irish potatoes for youth groups in peri-urban Wau
   - Identify and develop strategic value chains that have the potential to contribute to better nutrition through healthier diets (such as cowpea).
     - Cowpeas for women's groups in the state.
     - Fish for youth groups in peri-urban Wau.
     - Groundnuts and livestock value chains in the state.
   - Identify and develop agroforestry/silvo-pastoral value chains (partly to counter climate change) to ensure resilient landscapes by developing economic incentives (particularly options in shea, gum and honey).
     - Shea for youth and women's groups, particularly in Jur river.
     - Honey for youth groups, particularly in Raga.

2. Access seed money to develop **models of inclusive value chain development that maximise youth employment** that can serve as 'investment vehicles' (including policy/BoStandard elements).
   - Interest RVO Netherlands in funding the development of selected value chain options.

3. **Develop the ToT network in value chain identification and development** at universities/training centres.
   - Via Yei CTC / UoJ, develop FARE training/resource packages, and produce certified FARE ToT trainers at local Universities/training centres in WBeG.

4. Create a **challenge/development fund** for the community-driven/private sector, incubating start-ups in value chain development and agri-business.

5. Encourage (peer) **exchange visits, knowledge sharing, and learning**.

Key actors involved

The following key actors were identified through the dialogue:

- Women and youth leaders
- Community leaders
- Development partners
- Government institutions
- Landlords.

14.5 IIb. Develop a resilient seed sector

Pathway 8
Develop a resilient seed sector in Western Bahr el Ghazal State.

The challenges

The National Seed Systems Dialogue, held in September 2022 in Juba, identified the following:

- Seed systems are not resilient. The focus by the international community is on formal seed systems and intermediate seed systems (in particular seed relief); and most farmers (around 85%) depend on the informal seed sector (such as farmer saved seed, social seed networks and local seed markets), while there is however little to no interest/investment in such systems.
- Overall, actors in the seed sector often do not have the required knowledge and expertise, as seed is seen as part of food security. Therefore, awareness-raising on seed systems is crucial, including assessment reports that provide insights on seed systems performance and programming options to strengthen the resilience of seed systems depending on local context and foresight.

The Western Bahr el Ghazal State-level Food Systems Dialogue identified the following:

- Absence of a seed policy framework to guide and promote seed sector development.
- Inadequate expertise to carry out research and crop breeding.
- Poor land governance system.
- Weather extremes and climate change require seed to promote drought/flood-proof crop varieties and introduction of new crops.
- Lack of access to credit to invest in and develop the seed sector.
- Inadequate equipment/machinery for cost-effective seed production and development of viable seed value chains.
- Economic shocks impacting the seed systems.
- Conflict and insecurity in parts of WBeG State makes seed sector development challenging.

The ambitions

The following ambitions were identified as part of the State-level Food Systems Dialogue:

- To establish a resilient integrated seed sector in support of a sustainable food system, producing a variety of healthy foods.
- To develop a more resilient seed sector in WBeG, to improve timely access to seed varieties/classes wanted and needed by farmers for affordable prices.
- Seed system development should focus on main staple crops, vegetables (including indigenous vegetables), and fodder and forage for livestock.

Interventions (numbered), **actions** (bullet points) and **achievable activities** (arrows) **identified through the dialogue**:

1. Contribute to and benefit from the **national seed policy and seed regulatory framework.**
   - Ensure that through a multi-stakeholder dialogue process South Sudan's seed policy is relevant to and guides development of a resilient seed sector in WBeG State.
   - Validate seed law, regulations and guidelines as relevant to the development of a resilient seed sector in WBeG State, including harmonisation with regional seed policies to enable cross-border seed flows.
   - Develop guidelines and principled approaches by seed sector actors/practitioners on key issues, in anticipation of the review of South Sudan's seed policy and law (currently South Sudan does not have an enacted seed policy and law).
     - ➢ This has already been done as part of the seed systems resilience assessments in WBeG State by UoJ with WBeG State actors.
   - Establish/strengthen appropriate bodies in WBeG State to implement the seed regulatory framework (the State Seed Council, State Seed Authority, State Seed Variety Release Committee, and the State Seed Quality Control Board).

2. Strengthen **seed sector coordination, information sharing (digital inclusion), and partnerships.**
   - Establish the WBeG State Seed Hub (the University of Bahr el Ghazal and the Roman Catholic University of Bahr el Ghazal, with the support of UoJ) and link it with the National Seed Hub (UoJ).
   - Set up a WBeG Seed Portal and link it with the National Seed Portal.
   - Explore interest in partnership key seed actors to work on seed systems development.
     - ➢ Develop a seed catalogue (including indigenous crops)
     - ➢ Develop a seed distribution calendar (UoJ)

3. Support the **transition from seed relief to seed sector development.**
   - Undertake seed systems assessment and pathway development as the basis for development of a strategy to build resilient seed systems in Wau, River Jur and Raga Counties.
   - Specify the role of seed relief programming in becoming instrumental and catalytic for seed sector transformation.
     - ➢ Develop a set of principles for *doing no harm* in seed distributions, based on the ISSD-Africa seed emergency response toolkit; and for building seed systems resilience in volatile areas impacted by shocks and stressors, based on localised seed systems assessments and resilience pathways (FNS-REPRO). [35]
     - ➢ UoJ to work with WUR on this as part of the REPRO programme.

[35] https://issdafrica.org/2022/06/28/new-practical-guide-seed-systems-in-conflict-affected-areas-a-context-analysis-tool/

4. Strengthen **farmer-based seed systems.**
   - Develop the professional capacity of local seed producers (individual lead farmers, community-based seed schemes and local seed businesses) in the area of quality seed production and marketing, organisational development, and build strategic linkages with seed service providers for the timely delivery of inputs and services.
   - Broaden local seed producers' crop/variety portfolio with locally-preferred and climate-resilient crops and varieties, potentially through links with community seed banks.
   - Facilitate participatory plant breeding and participatory variety selection, to support farmers' access to locally adapted and preferred crop diversity.

5. Support the development of the **private seed sector.**
   - Improve the procedures for seed certification by STASS-MAFS
     - REPRO and IFDC to take the lead.
   - Take measures to reduce the relatively high cost of local quality seed production.
   - Design processes for transition of seed relief to support of seed business.

6. Establish a **decentralised seed quality assurance system.**
   - Introduce Quality Declared Seed certification for community based/LSBs seed classes.
   - Establish decentralised seed labs meeting ISO standards in two counties (placement still to be determined)
   - Strengthen Seed Quality Control Boards at State and county levels.

7. Establish a State **gene bank linked to community seed banks** and the national gene bank.
   - Establish a gene bank at a specified location with the support of UoJ.
   - Link the state-level gene bank with the national gene bank for the storage and exchange of germ plasm.
   - Link the state-level gene bank with at least two local community seed banks for collection and exchange of germplasm / conservation of popular land races in areas with high risk of loss of germ plasm.

8. Strengthen **crop breeding** and introduction to **new varieties.**
   - Build the capacity of ARD, UoJ and Yei CTC in participatory plant breeding and participatory variety selection.
   - Support private seed companies with an interest in establishing their own crop breeding programmes.
     - Pilot the production of improved cow pea seed varieties and develop dissemination strategies.

9. Establishing **public-private partnerships in foundation seed production.**
   - Engage with MAFS and other national seed actors to see if this is a good opportunity and realistic endeavour.

10. **Capacity-building of key government departments and public institutes.**
    - Provide access to training on seed systems development and transformation.
      - To be provided by UoJ and WUR-WCDI (short courses).
    - Enhance the research capability of the agricultural staff at WBeG State / UoJ through access to studies, training, exposure visits and by actively involving staff in seed programming.
    - Make available a short course catalogue (including scholarships).
    - Promote training to young professionals in seed breeding and production.

Key actors involved identified through the dialogue:
- MAFS.
- Policy makers.
- Ministry of Agriculture.
- Research institutions.
- Farmers, farmer organisations and associations.
- Financial institutions.
- Relevant line ministries, including Chamber of Commerce.

14.6 III. Learning, capacity building and evidence-based programming

Pathway 9
Facilitate learning, build capacities of public and private institutions, and encourage evidence-based programming for effective food systems transformation.

The challenges
The following key challenges were identified through the dialogue:
- Limited opportunities for learning on FSR; limited knowledge/experience of FSR.
- The low capacity of education in the State to build the relevant knowledge and skills of staff.
- The lack of coordination amongst learning institutions, NGOs and CSOs.
- The lack of training centres and research centres at state level for capacity building.
- Inadequate resources made available by central government for programming by WBeG State.
- No culture on evidence-based programming.

The ambitions
The following ambitions were identified through the dialogue:
- To develop a conducive environment, with opportunities for learning and putting learning into practice.
- To establish a training and research centre.
- To capacitate public and private institutions to support the building of FSR and vibrant and dynamic communities.
- To establish evidence-based programming as the norm to build FSR and support community-driven initiatives.
- The community to produce a variety of foods and to market them to neighbouring states and countries.

Interventions (numbered), **actions** (bullet points) and **achievable activities** (arrows) **identified through the dialogue**:

A. Learning

Food Systems Resilience Training and Resource Centre (universities)

1. Establishment of a **FSR Training and Resource Centre** in a central location in Wau.
   - UNMISS or other actors to consider constructing a Food Systems Resilience Training & Resource Centre (FSR-TRC) in Wau – including good internet access.
   - FSR Training and Resource Centre to develop a practical training and demonstration site.
     - Invite East West Seed Knowledge Foundation (EWSKF) to start demonstrations and outreach on vegetable production.

2. Capacity building and technical training
   - Provide short Trainer-of-Trainer (ToT) courses that address critical gaps to building food systems resilience, offering practical and actionable approaches/solutions.
     - UoJ with support of WUR, to deliver short ToTs on FSR:
       a) *Food systems resilience* (how to build food systems resilience in protracted food crisis situations)
       b) *Reducing climate vulnerability in fragile areas* (how to adapt to climate change and weather variability in fragile and food insecure areas)
       c) *Food systems for peace* (explores the cause-effect relationships between conflict and food insecurity and how to develop food systems that contribute to social cohesion and peace)
       d) *Landscape resilience* (employs a landscape approach to build food systems resilience)
       e) *Making agriculture work for healthier diets.*
   - Provide short ToT courses that address critical gaps in building seed systems resilience, offering practical and actionable approaches/solutions.
     - UoJ with support of WUR, to deliver short ToTs on seed systems resilience:
       a) *Climate change, seed systems and community seed banks*
       b) *Establishing community seed banks* (using field-based training materials)

3. UoJ and Yei CTC to **develop competence-based ToT courses** in close consultation with and support from research/training institutes and the NGO sector in WBeG State.
   - The WUR REPRO/NUFFIC programme to train staff of UoJ and Yei CTC, with trainers to be employed by WBeG State.
   - UoJ with the assistance of JRM students and the support of WUR-WCDI/VHL, to develop training for the Ministry of Humanitarian Affairs on community-based disaster risk management.

4. The UoJ, The University of Western Bahr el Ghazal and the Roman Catholic University of Bahr el Ghazal to build capacity in the field of **DRM and food systems resilience.**
   - Scholarships to be funded by interested agencies for selected students and junior University staff to participate in Joint Regional Masters Disaster Risk Management and Food Systems Resilience in Juba.
   - Provide scholarships for selected staff/organisations to participate in the joint regional masters' degree in Disaster Risk Management and Food Systems Resilience.

5. Encourage a culture of exchange / field visitations that facilitates joint learning, documenting good practice, and the development of policy recommendations.

Vocational / business skill training

1. Establish/strengthen technical and vocational education and training (TVET) including practical training grounds.
   - TVETs focusing on knowledge/training/resource packages that can be decentralised into FFSs and APFSs.
     - Government, FAO, NGOs and local universities and training centres to develop a longer-term vision for FFS and APFS, including the development of practical training grounds (the University of WBeG has a number of sites within the peri-urban area of Wau Town).

B Capacity building and career path development.

1. Make available a list of training, studies and courses that build key knowledge and skills to develop FSR; lobby donors and programmes to avail scholarships.
   - Develop opportunities with partners for WBeG State scholarships.

2. Develop critical human resources for universities, training centres and the private sector.
   - Develop competence-based market-driven curricula to produce graduates in demand by the market / sector / FSR development.
   - Develop career trajectories for students graduating from WBEG's universities / TVET / FSR Training/Resource Centre.

3. Offer career trajectories for students and junior staff of institutions by offering internships/thesis research/action research opportunities in programmes that contribute to building resilience, especially in I/NGOs and UN agencies including WFP and FAO.

C. Evidence-based programming

1. Encourage evidence-based programming.
   - Develop and deliver a course on evidence-based programming and develop good practice and programming principles.

Key actors involved

The following key actors were identified through the dialogue:

- Government, in particular the ministries of agriculture, forestry and animal resources.
- Knowledge institutions, in particular with support from the University of Juba.
- Private sector
- Development partners.

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Appendix 1 List of participants in Wau/WBeG FoSReD-PaD

In total 55 participants (including facilitators) representing academia, UN organisations, NGOs, CBOs, civil society, the private sector, and the State Government were involved in the FoSReD-PaD co-creation process from September 28th to October 7th, 2022, in Wau town.

S/No	Name	Title	Institution
1	Samuel Nicola	Minister of Information	Government
2	Andal Wadalalla	Ministry of Cooperatives	Government
3	Stephen Robo	Regional Coordinator	CEPO
4	Sam Muhumure	Head of Field Office	UNMISS
5	Norbert Wiyodyowa	PTR	UNMISS
6	Thomas Aromye	PCLFS	NRC
7	Samuel Jacinto	Academia	University of Bahr El Ghazal
8	Lemi Geofrey Sabuni	Master Trainer	ACTED
9	Pascal Debons	FNS Advisor	Wageningen
10	Julius Kaut	Consultant WCDI	NFP
11	Abraham Gai	Livestock Officer	FAO
12	Drichi Philip	FSL P.M	PCO-SS
13	Martin Damazo	Deputy Director of Extension	M.A.E &F
14	Owar Ojulu	Academia	Catholic University
15	Diing Jiel Andrea	Food and Nutrition Supervisor	Maltser International
16	Joseph Luka	Wau ARG	Member
17	Abraham Ayii	Ministry of Peacebuilding	Staff
18	James Onesimo	Program Policy Officer	WFP
19	Peter Bay	Program Associate	WFP
20	Miyuki Yamashti	Safety Net	WFP
21	Maha Sadik	Academia	The University of Juba
22	Liza Nelson	Director	SSNBS
23	David Achuil	FSL Officer	World Concern
24	Kuot Adiang	Academia	University of Juba
25	Tony Ngalamu	Academia	University of Juba
26	Mimi Wanga	Seed Extension Assistant	FAO
27	Maria Francis	Student	Catholic University
28	Kara Morris	Field Extension Assistant	FAO
29	Edward Lino	Deputy Director	M.A.E &F
30	Grace Alek	Assistant Program Manager	PCO-SS
31	Ater Thon	Medical Officer	IOM
32	Lilian Simon	Statistician	M.A.E &F
33	David Lawrence	Chairperson	Youth Union
34	Dr. Abdalla Ramadan	Professor	University of Bahr El Ghazal
35	Edal Peter	Member	Women's Association
36	Jane Gone	Nutrition Officer	UNICEF
37	Christina David	Staff	SSBC
38	Teresa Pasquale	Staff	Women Association
39	Nixson Gabriel	Staff	SSBC
40	Francisca Elia	Veterinary	Youth Center
41	Armin Hoso	Head of Field Office	UNHCR
42	Shadia Ishaz	Member	Women Association
43	Khamisa Juma	Chairlady	Women Association
44	Linda Hussein	CEO	WOTAP
45	Joyce Paul Mathew	FNS Supervisor	Malteser International
46	Gerrit Jan Uffelen	FNS Academia	Wageningen/Juba

S/No	Name	Title	Institution
47	Christina Ali	Minister	Ministry of Gender
48	Ann Daniel Ali	Director General	Ministry of Gender
49	Eva Baguma	HOP Wau	WFP
50	Jaap Vuijk	HAC	Help a Child
51	Suzan Zakaria	Women's Initiative for Peace	University of Bahr El Ghazal
52	Joseph Richard Mbuka	Director General	Ministry of Cooperative
53	Jimmy Awany	DRC	Peace building
54	Victor Sogbii Leben	Consultant	HAC
55	Fernanda Saadalla	Micro-saving Officer	ZOA/DORCAS

Appendix 2 List of participants in Raga/WBeG FoSReD-PaD

In total 40 participants (including facilitators) representing academia, UN organisations, NGOs, CBOs, civil society, the private sector, and the State Government, were involved in the FoSReD-PaD co-creation process in Raga town.

S/No	Name	Title	Institution
1	Alnour Ali Wedatala	Chief	Government
2	Ezaldien Hassan	Farmer	Private sector
3	Martin Hassan Darnas	Chief	Government
4	Al Sadig Shaib	Extension Dept. Assistant	Government
5	Ashaib Shaib Shuma	Agric. Extension Dept.	Government
6	Simon Vito Alfala	Chairperson	Raga Catholic church
7	Bashier Hussein Suleiman	Islamic representative	Religious
8	Dominic Joseph	Pastor	RCC
9	Zaid Salim	Islamic representative	Religious
10	Pascaule Armado Kamando	Employee - Water Corporation Dept.	Government
11	Justin Thomas Jul	Youth Union Raga	Government
12	Zubeir Abdulrahman	Senior Agric. officer	Government
13	Sebit Abdulrahim	Teacher	Government
14	Dahia Abdulrahman	Agric. Ext. Dept.	Government
15	Saleh Andal Saleh	Farmer	Private sector
16	Louis Joseph	Education officer	Government
17	Karlo Kamsur	Director – Fisheries Dept. Raga	Government
18	Thomas Goonikor	Education director	Government
19	Pasquino Lino	Youth Union Raga	Government
20	Dahia Hamid Abo	Farmer	Private sector
21	Samia Mohamed Soliman	Cleaner/Dept. of Education	Government
22	Rita Jamus Tabur	Member	Raga Women Union
23	Gismalla Hassan	Youth Union Raga	Government
24	Dichack Ali	Chairperson/Youth Union Raga	Government
25	Juma Kachino	HCO – Raga	Private sector
26	Angelo Bilal	Trader	Raga market
27	Kosho Dagiki	Chairperson	Raga Trade union
28	Idris Hamid	Officer/Raga Forestry Dept.	Government
29	Thuraya Karama Andal	Member	Raga Women Union
30	Khogeli Sebit	Driver/ drivers' Union	Private sector
31	Allajabu Ibrahim	Writer	Private sector
32	Abdullah Gasim	Youth Union Raga	Government
33	Khamis Dahia	Chief	Government
34	Khamisa Awad	Supervision office	CHD
35	Sida Taban	Nut. Officer	AFOD
36	Kuot Adiang	Academia	University of Juba
37	Kaut Julius	Consultant	Wageningen WUR
38	Samuel Jacinto	Academia	University of Bahr El Ghazal
39	Morris Louis	Acting Commissioner	Raga County/government
40	Peter Bay	Program Associate	WFP

Appendix 3 Wau-WBeG workshop schedule

Day	Topics	Format and tools
1 (Sept 28th)	Introduction – explaining food systems resilience assessments; how it fits the Food Systems Dialogue in South Sudan; what a system approach can bring above and beyond humanitarian 'sector approaches'; importance of localisation and nexus agenda.	Presentation Statement polls Roundtable discussion
2 (Sept 29th)	Food system description and analysis	Presentation
	food system boundaries definition	Food system mapping
	Food system activities analysis	Roundtable discussions on food production-transport-storage-transformation-consumption (past, current, future trends, problems and opportunities)
3 (Sept 30th)	Food system drivers	Drivers' prioritisation Drivers group exercises (challenge, actions)
	Food system value chains	Value chains ranking Value chains group exercises (mapping, institutions, drivers-trends-issues- opportunities, future scenarios, inclusion)
	Food system and conflict	Food system and conflict statements Food conflict type identification Conflict trees (causes, triggers, effects)
4 (Oct 1st)	Visit and reflection on current food system interventions	Projects visit
5 (Oct 2nd)	Food system pathways definition	Group discussions with key actors – 0 draft
6 (Oct 3rd)	Food system and conflict (continuation)	Group discussions
	Food system pathways definition	Group discussions – enrichment of 0 draft
7 (Oct 4th)	(deeper dive) Food system and farmers/herders' conflicts	Conflict timeline Conflict impact and resilience capacities – group discussion
	(deeper dive) Food consumption	Key informant interviews
8 (Oct 5th)	(deeper dive) Food system and natural disaster	Key informant interviews
	(deeper dive) Food value chains and youth inclusion	Key informant interviews
	(deeper dive) Food trade and transport	Key informant interviews

Appendix 4 Resource and training packages on building food systems resilience

The University of Juba (UoJ), in particular its School of Natural Resources and Environmental Studies, plays a key role in the development of a range of knowledge/resource/training packages designed to address critical challenges to building more resilient food systems.

The UoJ forms part of a North-South-South partnership in which a number of universities and training centres work together in the design and delivery of these services. These initiatives are supported by the Dutch government through the NUFFIC Orange Knowledge Programme and the Food and Nutrition Security RESilience PROgramme (FNS-REPRO).

The resource and training packages on building food systems resilience were developed In close cooperation with the Wageningen Centre for Development Innovation, Van Hall Larenstein University of Applied Science, Wageningen Plant Research, East West Seed Knowledge Foundation, Zero Hunger Lab of Tilburg University, Alliance Bioversity International – CIAT, Bahir Dar University and Hargeisa University.

A short overview of the main packages is provided below.

Joint Regional Master's Programme and Professional Short Courses
The Joint Regional Master's Programme on Disaster Risk Management and Food Systems Resilience is a joint collaborative effort by knowledge and education institutes in South Sudan, Ethiopia, Somaliland and the Netherlands. In South Sudan UoJ is the key partner in its design and delivery with currently over 30 students.

Implementation of JRM at Juba University, South Sudan.

The key content of the programme consists of the following modules:

Joint Regional Master's DRM-FSR	
Module 1	Disaster risk management
Module 2	Building resilient livelihoods and food system in protracted crisis contexts
Module 3	Sustainable development and governance
Module 4	Research methods and tools
Module 5	Research applications / thesis

There are a number of aligned short courses, aimed at mid-career professionals, that together with the Joint Regional Master's Programme offer integrated learning pathways to support the development of resilient food systems.

The short courses for mid-career professionals:

1. **Reducing climate vulnerability in fragile areas**
   This course focuses on the role of a changing climate in food security in areas of protracted crises.
2. **Landscape resilience**
   This course takes a landscape perspective on food security, acknowledging that a resilient landscape embeds resilient food systems in the first place.
3. **Food system resilience**
   This course focuses more specifically on food systems and how they perform and produce outcomes towards the vision of a food-secure future.
4. **Making agriculture work for healthier diets**
   This course looks more at the nutritional side of food security, looking at making agriculture work not only for increased income but also for healthier diets.

Making Horticulture Work for Healthier Diets And Income Generation

A regional online course on making horticulture work for healthier diets, which links policy makers with practitioners.
This online course introduces the importance of healthier diets, analyses its current status (particularly in protracted crisis contexts) and its contexts; identifies gaps; and explores opportunities to promote healthier diets by developing context-specific pathways. Design of evidence-based monitoring and evaluation systems is part of the course. Course participants will assess the need for policy advocacy and design tailor-made strategies. Course participants will apply concepts and approaches learnt from peers through discussions, group work and presentations.

The course runs for 8 weeks online, with a study load of eight hours per week and a break in between. The course targets professionals working with UN/NGOs, private sector and government.

Practical nutrition training
This training, developed as part of the Nutrition and Income Generation Intervention (NIGI), provides practical, hands-on experience to improve diets through horticulture. Topics include the importance of nutrition for health; the roles various food groups play in supporting overall health and wellbeing; and how to prepare nutritious foods, linking the preparation of foods to what is grown in nutrition-sensitive home gardens. The training is linked to home gardens in which trainees who were previously involved in the NIGI project show how to grow a variety of nutrient-dense foods. The activities of the 2022 growing season will also be filmed to support those who are only able to participate in the training online.

Project Site of Nutrition Training

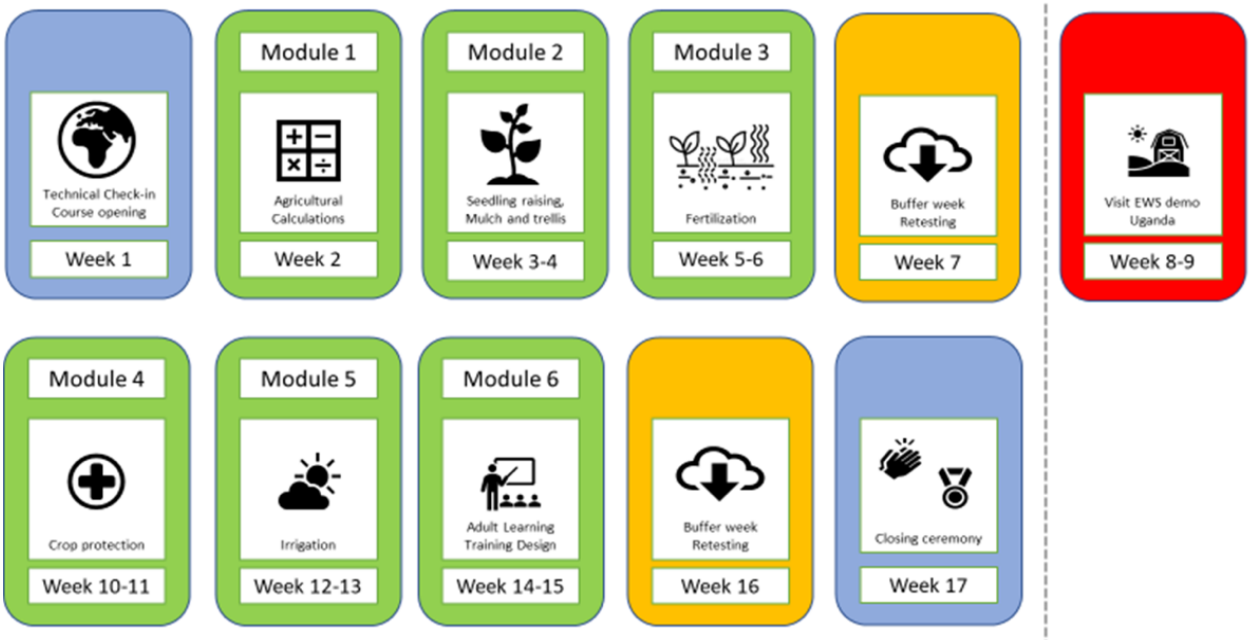
Practical, hands-on horticulture training at demonstration plots

This training provides a highly practical and hands-on on approach to knowledge and skill development through a combination of online and on-site training. The training covers the following topics: agricultural calculations, raising seedlings, mulching, trellising, crop production, fertilisation, irrigation, adult training, and design.

This course is linked with practical work on the ground at demonstration plots in Uganda (for in-course follow-up courses, there will be training demonstration plots established in South Sudan itself). Some of the work is done as virtual field tours due to Covid-19. To support the in-country activities, a team from South Sudan has been trained by East West Seed Knowledge Foundation.

Participants of Horticulture Training at Project Site

Climate Change, Seed Systems and Community Seed Banks
Two foundation courses cover the following key topic areas:



Horticulture Training Outline

- Key features of protracted crisis situations relevant to food and seed systems and the situation in the Horn of Africa
- Seed systems resilience assessments in protracted crisis situations
- Participatory crop improvement for resilient seed systems in protracted crisis
- Seed quality assurance and quality seed production
- Managing a community seed bank in a protracted crisis situation
- Promoting an enabling policy environment
- Practical application of knowledge: for instance, developing proposals to establish a community seed banks; producing quality seed; developing curricula; and integrating key course learnings in ongoing projects.

The foundation courses are linked with the development of specialised in-country courses and real-life practical work, including the establishment of community seed banks, introduction of decentralised seed testing capacities, and the production of improved seeds. In Three farmers' handbooks on the development and management of community seed banks (*Establishing a community seed bank*[36]; *Technical issues*[37], and *Management, networking, policies and a final checklist*[38]) were developed in Arabic, Bari, Dinka, Ndogo, Nuer and Azhandi.

Online training on data literacy to build capacities to utilise data for practical programming
The goal of this online training is to provide participants with the knowledge and skills to understand the basics of data analysis and dietary optimisation and how data can be used for evidence-based programming to narrow the nutrient gap in local contexts. In addition, through assignments, participants will be made more aware of how these skills can be applied within their local context to improve food and nutrition security programming.

This course consists of the key modules:
- Module 1: introduction and descriptive analytics
- Module 2: diagnostic analytics
- Module 3: predictive analytics
- Module 4: prescriptive analytics.

[36] https://hdl.handle.net/10568/92000
[37] https://hdl.handle.net/10568/92001
[38] https://hdl.handle.net/10568/92002

Appendix 5 Key informant interviews

Understanding the causes, effects and triggers of conflict in WBeG

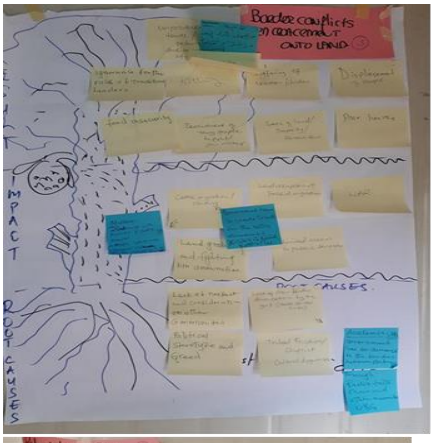
Each main type of conflict was explored and a conflict tree was drawn. The conflict tree distinguishes three important issues:

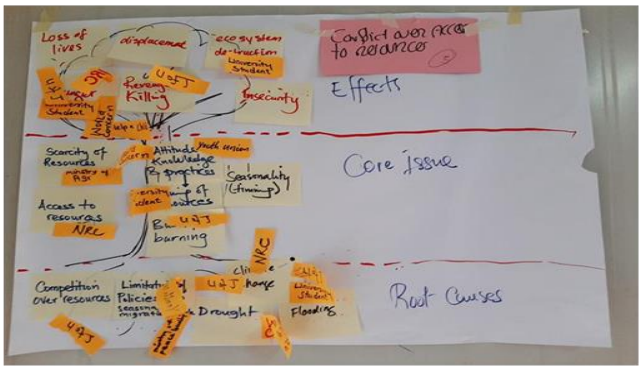
- Core issues (triggers)
- Underlying and immediate causes (root causes)
- Effects (consequences)

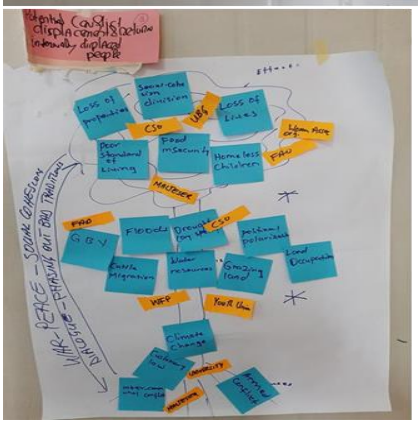
A conflict tree was designed for each main conflict type:

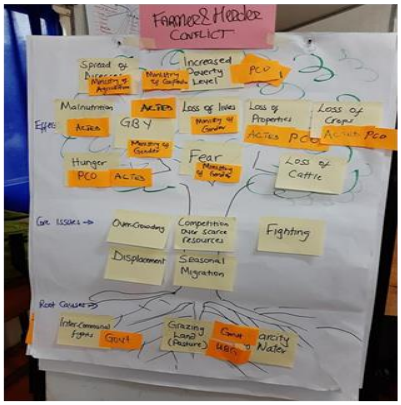
- Farmer-herder conflicts
- Political and armed conflicts
- Conflict over access to resources
- Border and encroachment conflicts

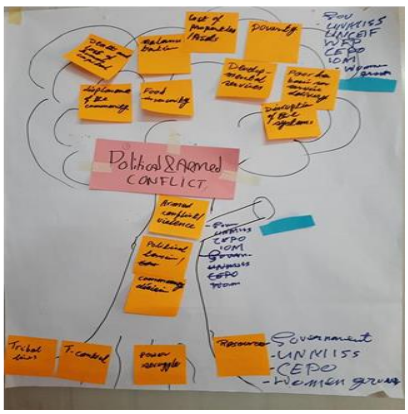
Displacement and return conflicts (potential)











Conflict tree results, Wau

As a next step, participants developed a more detailed narrative about the conflict dynamic, its impact and the risk management strategies available. To that effect participants worked for a specific type of conflict on:

- A conflict timeline identifying the most severe years and constructing a historical narrative.
- Question 1: What is the impact of farmer-herder conflicts on the food supply system (production, storage/transport/trade, processing/retail/provisioning, consumption)?
- Question 2: What risk management strategies are available, considering prevention, mitigation, response and recovery?

Farmer-herder conflicts timeline:

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Severity	X	X	X	X	X	XX	XXX	XX	X	X

Conflict Timeline Farmer-Herder Conflicts, Wau

Farmer-herder conflicts are a yearly occurrence during the dry season between January and June/July when herders from Warrap State enter Jur River County in search of pasture and water. According to the conflict timeline drafted by participants, in 2015 and 2016, there was conflict between SPLA and SPLA-IO. In 2017, there was a build-up of farmer-herder conflicts and large-scale violent escalation in 2018 with around 1000 displaced. Conflict receded in 2019.

The Marial-bai cattle migration agreement was first reached in 2017 and reviewed in 2019. It was signed by cattle herders from Gogrial and the farming community in Western Bahr el-Ghazal State to regulate the movement of cows and their herders in search of pasture and water. Among other provisions, the agreement stipulates that farmers are entitled to compensation for any crops that are eaten or destroyed by cattle, and for pastoralists to be recompensed whenever farmers resort to killing intruding animals. Cattle keepers are committing to not carry tension-inducing weapons and to not begin their migration till January (when farmers will typically have harvested their crops).

Question 1: What is the impact of this conflict on the food supply system (production, trade/transport, storage, transformation, retail, consumption)?

1. Production: Farmer-herder conflict generates loss in crop/animal and potential displacement (temporary or in cases permanent). Temporary displacement and loss of crops in Jur River during the migration season is estimated to affect 20% of the population. This magnitude has been greatly reduced with the Marial-Bai agreement.
2. Trade/transport: Farmer-herder conflict can also cut off villages from Wau town, stopping the food supply to/from town. An example is of recent conflict in Bagari when the road to Wau was not safe due to the presence of herders. Farmer strategies were to send only women to bring goods to market (as men could be killed) or to take the long road to avoid migration routes (which increased prices). Another example is conflict along the Tambura road (link with IO conflict) that can cut the supply of fruits (like banana, pineapple, orange).
3. Retail: Farmer-herder conflict disrupts the food supply and availability of food in Wau market. This leads to price increase, increased competition between buyers, and more bargaining power for sellers.
4. Consumption: farmer-herder conflict will affect the income of the affected households. This limitation on purchasing power, and potential price increase, will trigger two main strategies 1) food consumption reduction and 2) reduction in dietary diversity.

Question 2: What risk management strategies are available considering prevention, mitigation, response and recovery?

Prevention:

1. Regulation of cattle migration through Marial Bai agreement setting clearly defined rules around water and pastures (how, when, where, who...).
2. Information dissemination is needed so rules and right to access land are known. For example, Missiria migration from Sudan was accompanied by the organisation of a pre-migration conference to ensure knowledge of the rules and also included trade of goods.
3. Problem of gun carrying by herders. This is seen as a sign of hostility in WBeG. The guns are mainly for safety for herders when they go through Warrap state where most cattle wrestling happens. One possibility (but judged unrealistic by the group) would be to leave guns at the entrance of WBeG.
4. Shift in farming: farmers on migration routes have abandoned the farming of cassava as it is a long-maturing crop (maturity happens during cattle migration and crops can be lost); rather, they focus on short-cycle crops and varieties of sorghum, groundnut and sesame. The conflict has generated a new food production system.

5. Fencing: culturally farmers only fence gardens. It is possible to fence fields with adapted trees such as acacia or eucalyptus. Tree nurseries at community level have been done but mostly focus on fruit trees or wood trees (mahogany), not on fencing trees, using multi-purpose trees including trees that produce fodder for livestock.
6. Planting of fodder: it is possible to produce fodder (barsim, alpha-alpha). The crop/branches can be fed to animals, it is good for nitrogen fixing, and cow manure is used as fertiliser. This can also be done in Warap to reduce cattle migration. Healthy cattle will generate more income. For example, the moringa tree has multiple benefits as it is nitrogen fixing, has nutritive leaves, and can be used as fodder. The seeds are in high demand but there is not enough supply. The key is to manage trees for economic benefit. The mentality is that there are many trees, so why care? Some activities have been initiated at Halima research centre.

Mitigation/response:

1. Enforcement of agreement through rule of law and deployment of police and tribunal. Jur river people are OK with cattle migration as Jur and Warrap are interconnected as Dinka resident also live in Jur. Wau is not part of the cattle migration corridor in the MB agreement and has a no-cattle entry position. The perspective is *'we are not changing because of peoples coming from the outside'*.
2. Committees are in place for the Marial Bai agreement. Violations are solved in court. Mobile court is expensive as judges come from outside the state, they have a high salary and police presence is high. UNMISS is looking for mobile courts to become permanent.

Recovery:

1. The main system is relying on community solidarity for seeds and food. Usually chiefs call a meeting to gather contributions by all. This happens mainly between households within the same Boma.
2. Saving groups formed in VSLA are also a strong solidarity mechanism in case of losses.
3. Legal compensation does happen for losses of crop or livestock but takes time.
4. Humanitarian assistance might come but later.

Appendix 6 Dialogue participant perspectives on the four key strategic challenges to transform WBeG's food systems

1. Food systems in Western Bahr el Ghazal are resilient to human-made and natural shocks/stressors ensuring FNS (number of arguments: 27).

Strongly Disagree 37,0% all statements	Disagree 33,3% of statements	Neutral 18,5% of statements	Agree 3,7% of statements	Strongly Agree 7,4% of statements
3 **Conflicts and displacement interrupts food production & can make food systems collapse.**	3 Combination of human-made (conflict) and natural shocks (floods) always affects food production negatively.	**When political and socio-economic conditions are good/stable we are resilient; if these factors are negative we are less resilient.**	**Historically we have seen many shocks/stressors while food systems remained some-how resilient.**	The ability to recover from shocks and stressors is high
There is still a large presence of armed forces in WBG and we are not sure how things will evolve.	2 Many people have become food aid dependant.	Some people depend on relief food and imported food while others into mixed farming will sell livestock when crops fail.		**There is fair level of interaction and eagerness to share, interact, cooperate and exchange of ideas to make food systems more resilient.**
Man-made shocks like conflict affects peoples' ability to produce their own food, how to store it, and how to process it.	Because there are consecutive shocks of high intensity we recover more slowly than before.	Poor access it agricultural inputs and credit to improve production and productivity.		
Shocks like droughts and floods limits people's ability to produce; without proper assistance people loose their productive assets such as livestock.	There is a lack of knowledge and skills.	The impact is severe and recovery takes long.		
Flooding contributes to crop failure as well as displacement of people.	Because state government is not taking action resilience is on the decline.	Lack of enabling factors that drive for sustainable and resilient food systems in WBG.		
There is a lack of coping mechanisms that jeopardises efficient recovery.	There are many aspects affecting food systems negatively.			
A ack of knowledge and skills tor recover from shocks.				
WBG is not prepared for shocks and stressors and therefore we suffer a lot.				

2. Food systems in Western Bahr el Ghazal contribute to social cohesion and peace within and across different ethnic groups (number of arguments: 17).

Strongly Disagree 0% all statements	Disagree 5.9% of statements	Neutral 35.3% of statements	Agree 52.9% of statements	Strongly Agree 5.9% of statements
	When there is a shortage of food availability and access to food is difficult it may create conflict.	2 **People depending on different food systems may be in conflict in times of scarcity, in particular farmers and herders.**	3 **With food being produced markets bring different people together and as they buy & sell grow stronger relationships.**	**Food systems bring different communities together creating mutual benefits, e.g. people from Wau buy food from other areas in WBG and by doing so share important resources with those producing food.**
		2 **Because of insecurity and/or fear access to part locations and communities is difficult, and therefore interaction is difficult and as a consequence limited options to grow social cohesion.**	2 **There is interaction between different food systems contributing to social co-existence, increased interdependency and stronger relations.**	
		When food is not available in sufficient quantities it may become a source of dispute.	2 People come and work jointly together on their farms as group and doing so builds stronger relationships.	
		When people seek access to food it potentially can bring people together and contribute to cohesion.	People produce a variety of crop/livestock products with markets contributing to food security instilling further interest amongst people in peace & stability.	
			Different parts of WBG produce unique foods which are being shared across the state vice versa (such as honey from Raja).	

3. Food systems in Western Bahr el Ghazal contribute to healthier diets (number of arguments: 20).

Strongly Disagree 5,0% all statements	Disagree 45,0% of statements	Neutral 0% of statements	Agree 30,0% of statements	Strongly Agree 20,0% of statements
There is a very high level of malnutrition amongst pregnant women, lactating mothers and children - this reflects a very poor diet.	2 **Lack of awareness: most people don't know importance of balanced diets.**		2 Farmers grow different types of food.	2 **Farmers have diversified cropping systems that produce a variety of foods contributing to nutrition security.**
	2 People do not produce / consume healthy diets.		The lands in WBG are rich and produce a variety of crops.	**We produce healthy organic foods; our farmers do not use inorganic fertiliser**
	Remoteness of some communities makes that knowledge on healthy diets and support to produce healthy diets is not available.		Variety of foods is available at household level.	Communities supplement their diets by seasonal food items such as honey and wild foods.
	Limited access to information on the what and why of healthy diets.		**In WBG vegetables and fruits are being produced, but mainly seasonal.**	
	The amount of food produced is still low, in particular fruits (but high potential)		Farmers like to grow vegetables - they are much liked.	
	Production of healthy foods and its storage for marketing are issues.			
	Despite opportunities to produce healthy foods has a high price (compared to grain based staple crops).			

4. Agribusiness and value chains in WBG are inclusive and generate employment for youth and women (number of arguments: 23).

Strongly Disagree 4,3% all statements	Disagree 21.7% of statements	Neutral 13,0% of statements	Agree 39,1% of statements	Strongly Agree 21,7% of statements
There are no well-established value chains that generate employment.	2 **There is no commitment by youth; women are committed and work seriously on value addition and value chains.**	**The agricultural sector is not well developed and there is no concerted effort to promote development of value chains.**	3 **Youth and women groups are increasingly and eagerly involved in value chain development.**	2 Most youth are involved in or rely on agriculture - they will be very interested in value chain development.
	In need serious effort by government and other actors to develop potential of value chains for youth and women.	It is inclusive, but no system or serious effort to generate employment for youth/women.	2 There used to be a lot of employment by women/youth in marketing: G/nut paste, cassava, flour milling, juice making.	Youth is increasingly involved in transportation of food items matching supply and demand.
	Current value chains in WBG are not inclusive and generate little employment for youth and women.	There is no system in place to generate employment for youth and women.	Youth are increasingly involved in transportation of agricultural produce.	Youth is involved in storage of ag produce creating associated employment.
	Limited access to finance, cultural norms, poor education and, for women in part domestic responsibilities, limit potential for value chain development.		Increase in youth/women involvement in milk business and fish.	Many of the actors along the potential value chains are youth and women - they will involve eagerly when opportunities exist.
			Strong potential and interest in value chain development; engagement of youth in this will make communities proud.	
			In most rural areas collective work by community members contribute to successful food systems.	

Appendix 7 Potential action agendas based on the perspectives of dialogue participants and a context- and subject- based literature research

Statement 1: Food systems in Western Bahr el Ghazal are resilient to human-made and natural shocks/stressors, ensuring food and nutrition security.

For food systems in WBeG to be more resilient to human-made and natural shocks (thus ensuring FNS), the following proposals for action were generated, based on the perspectives expressed by the dialogue participants (presenting both the strengths as well as the weaknesses/challenges of current food systems performance) and a semantics-based search of the relevant literature.

Government agencies:

- Develop a legal framework and policies that support building resilient food systems.
- Invest in public infrastructure such as roads, bridges, electricity, water, and communications that facilitate access to inputs, markets, and services for farmers and consumers.
- Enhance social protection schemes such as cash transfers, food vouchers, and school feeding programmes, that reduce vulnerability and enhance livelihoods of food-insecure households.
- Support peacebuilding initiatives that address the root causes and consequences of conflict and displacement.
- Enhance disaster risk reduction and management strategies that prevent or mitigate the impact of natural hazards on food systems.

FAO:

- Support the development and implementation of a national strategy for building resilient food systems in WBG state.
- Provide evidence-based analysis and advice on the drivers of, impacts on, and solutions for food system resilience.
- Strengthen the institutional and human capacities of government agencies, civil societies, farmer groups, and other stakeholders to plan, implement, monitor, and evaluate resilience interventions.
- Facilitate multi-stakeholder dialogue and collaboration on food system resilience issues.
- Mobilise resources and leveraging partnerships for resilience programming.
- Deliver timely and effective humanitarian assistance to food-insecure populations affected by shocks.

NGOs and civil society:

- Raise awareness and educate people about the importance and benefits of resilient food systems.
- Lobby for policy reforms and budget allocations that support resilient food systems.
- Provide assistance such as seeds, tools, and equipment to smallholder farmers to improve their productivity and sustainability.

Farmers organisations:

- Participate in farmer field schools or extension services that can provide training, advice, and support on climate-smart agriculture practices.
- Establish savings and credit groups that can provide financial services such as loans, savings, insurance etc. to members.

- Form cooperatives or associations that can negotiate better prices, terms, and conditions with input suppliers, processors, traders, and buyers.
- Develop community seed banks and local seed production that can preserve and multiply local varieties of crops and trees.
- Engage in collective action such as lobbying for policy change, demanding accountability from government agencies, or advocating for their rights.

Knowledge institutes (like the University of Juba and Wageningen University and Research)
- Conduct research on food system resilience using a multidisciplinary and participatory approach that involves stakeholders from different sectors and levels.
- Provide education and training programmes on food system resilience for students, professionals, policymakers etc.
- Communicate and disseminate research findings and best practices on food system resilience to various audiences through publications, events, media etc.
- Develop innovative solutions such as new technologies, products, services etc. that address the challenges and opportunities of food system resilience.

Statement 2: Food systems in Western Bahr el Ghazal contribute to social cohesion and peace within and across different ethnic groups

For food systems in WBeG to contribute to social cohesion and peace within and across different ethnic groups) the following proposals for action were generated, based on the perspectives expressed by the dialogue participants (presenting both the strengths as well as the weaknesses/challenges of current food systems performance) and a semantics-based search of relevant literature.

Government agencies:
- Improve water management, road construction, security provision, and policy support for food systems development.
- Provide public goods and services that can improve food system performance and resilience.
- Create an enabling environment for food system actors to operate freely and safely.

FAO:
- Provide technical assistance, capacity building, input distribution, and monitoring and evaluation for food system interventions.
- Provide technical assistance and capacity building for food system actors to improve their skills, knowledge, or practices that can enhance their productivity and sustainability.
- Provide input distribution such as seeds, tools, or livestock, that can help food system actors recover from shocks or cope with stressors.
- Monitor and evaluate the impact of food system interventions on food security, nutrition, livelihoods, and peace outcomes.

NGOs and civil society:
- Promote dialogue, conflict resolution, social inclusion, and awareness-raising among different food system actors.
- Facilitate dialogue and mediation among conflicting parties who may have grievances or disputes over food system issues.
- Promote social inclusion and empowerment of marginalised groups such as women, youth, or minorities who may face discrimination or exclusion from food system opportunities.
- Raise awareness among food system actors about their rights, responsibilities, and potential contributions to peacebuilding.

Knowledge institutes (like the University of Juba and Wageningen University and Research):
- Conduct research, analysis, innovation, and dissemination of best practices for food system resilience, sustainability, and transformation.
- Conduct research and analysis that can generate evidence-based knowledge and insights on food system challenges and opportunities in WBeG.
- Innovate and test new technologies, approaches, or solutions that can improve food system performance and resilience.
- Disseminate best practices and lessons learned from successful experiences or cases that can inspire or inform other food system actors.
- Promote stakeholders' working together to 1) help improve the livelihoods of people in WBeG State who depend on food systems for their survival, and 2) contribute to building a more peaceful society that values diversity.

Statement 3: Food systems in Western Bahr el Ghazal contribute to food diversity and healthier diets

For food systems in WBeG to contribute to healthier diets, the following proposals for action were generated, based on the perspectives expressed by the dialogue participants (presenting both the strengths as well as the weaknesses/challenges of current food systems performance) and a semantics-based search of relevant literature.

Government agencies:
- Launch education campaigns to raise awareness about the importance of balanced diets throughout the population.
- Provide support for farmers to increase production and storage for marketing healthy foods through various means such as providing access to credit or training on improved farming techniques.
- Promote diversified cropping systems that produce a variety of foods contributing to nutrition security through research and extension services.
- Work with civil society to promote the consumption of seasonal food items such as honey and wild foods, through education campaigns or by supporting local producers.
- Work with civil society to provide remote communities with access to information on healthy diets through various means such as mobile clinics or community health workers.

FAO:
- Collaborate with government agencies and civil society in launching education campaigns to raise awareness about the importance of balanced diets among the population.
- Provide technical assistance and support for farmers to increase production and storage for marketing healthy foods.
- Support research on diversified cropping systems that produce a variety of foods contributing to nutrition security.

NGOs and civil society:
- Collaborate with government agencies to launch education campaigns to raise awareness about the importance of balanced diets among the population.
- Support local producers of seasonal nutrition-dense food items.
- Collaborate with government agencies to promote the consumption of seasonal food items such as honey and wild foods through education campaigns.
- Work with government agencies to provide remote communities with access to information on healthy diets through various means such as mobile clinics or community health workers.

Knowledge institutes (like the University of Juba and Wageningen University and Research)**:**
- Increase awareness of the importance of balanced diets and healthy foods through research and the dissemination of information.

- Provide support to produce healthy diets and make knowledge on healthy diets available to remote communities through research and the establishment of community gardens.
- Work to increase the amount of food produced, particularly nutrition-dense foods and fruits, through research and the provision of practical training and resources to farmers.
- Promote the production of healthy foods and its storage for marketing, through research and the establishment of food-processing facilities.
- Make healthy foods more affordable through research and the establishment of food cooperatives.
- Conduct research on diversified cropping systems that produce a variety of foods contributing to nutrition security.
- Provide extension services for farmers on improved farming techniques that can help increase production and storage for marketing healthy foods.

Statement 4: Agribusiness and value chains in WBeG are inclusive and generate employment for youth and women

For agribusiness and value chains development in WBeG to become inclusive and generate employment for youth and women, the following proposals for action were generated, based on the perspectives expressed by the dialogue participants (presenting both the strengths as well as the weaknesses/challenges of current food systems performance) and a semantics-based search of relevant literature.

Government agencies:
- Provide an enabling policy environment for agribusiness development.
- Invest in infrastructure such as roads, electricity, water supply.
- Provide security and stability for farmers.
- Facilitate access to land tenure rights.
- Support extension services and agricultural research.

FAO:
- Provide technical assistance and guidance on value chain analysis, development, and management.
- Support market linkages and information systems.
- Provide quality seeds, tools, equipment, and inputs.
- Support climate-smart agriculture practices and resilience-building.
- Coordinate with other UN agencies and humanitarian actors.

NGOs and civil society:
- Advocate for the rights of youth and women in agriculture.
- Mobilise and empower youth and women to participate in decision-making processes.
- Provide training and capacity building on value chain development.
- Facilitate access to finance, markets, inputs, and services.
- Promote social cohesion and peacebuilding among communities.

Private sector:
- Invest in agribusiness opportunities along the value chains.
- Provide quality products and services at competitive prices.
- Create employment and income-generating opportunities for youth and women.
- Adhere to social and environmental standards and corporate social responsibility principles.

Farmers' organisations:
- Access collective bargaining power for inputs or services.
- Negotiate better prices for their produce.
- Share information or knowledge among members.
- Provide mutual support or assistance.
- Represent the interests of farmers along the value chains.

Youth groups:

- Engage actively in agribusiness activities along the value chains.
- Seek new skills or technologies that can improve their productivity or profitability.
- Network with other youth groups or mentors who can inspire or guide them.
- Participate in advocacy or policy dialogue on issues affecting them.

Women's groups:

- Engage actively in agribusiness activities along the value chains.
- Seek new skills or technologies that can improve their productivity or profitability.
- Network with other women's groups or mentors who can inspire or guide them.
- Participate in advocacy or policy dialogue on issues affecting them.

Knowledge institutes (like the University of Juba and Wageningen University and Research):

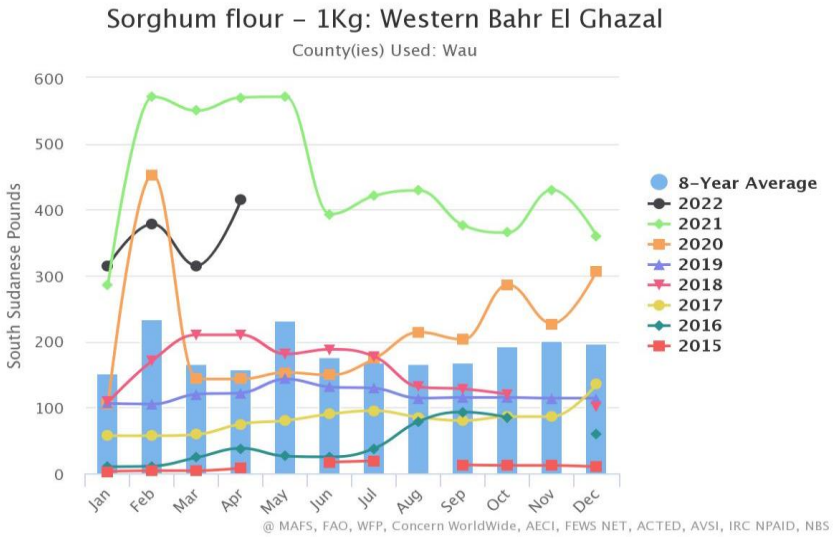
- Conduct applied research on agribusiness and value chain development.
- Provide evidence-based recommendations and best practices.
- Develop innovative solutions and technologies.
- Strengthen knowledge exchange and learning platforms.
- Collaborate with local universities, research and training institutes.

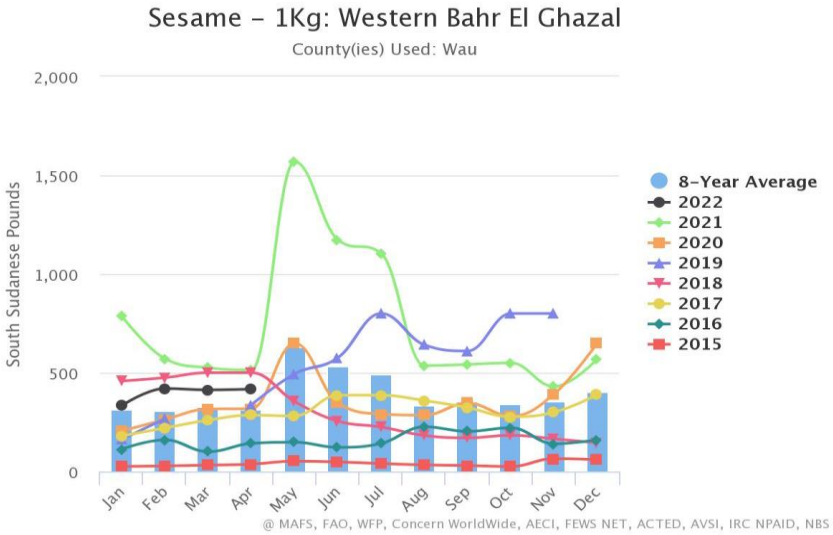
Appendix 8 Status of agricultural policies

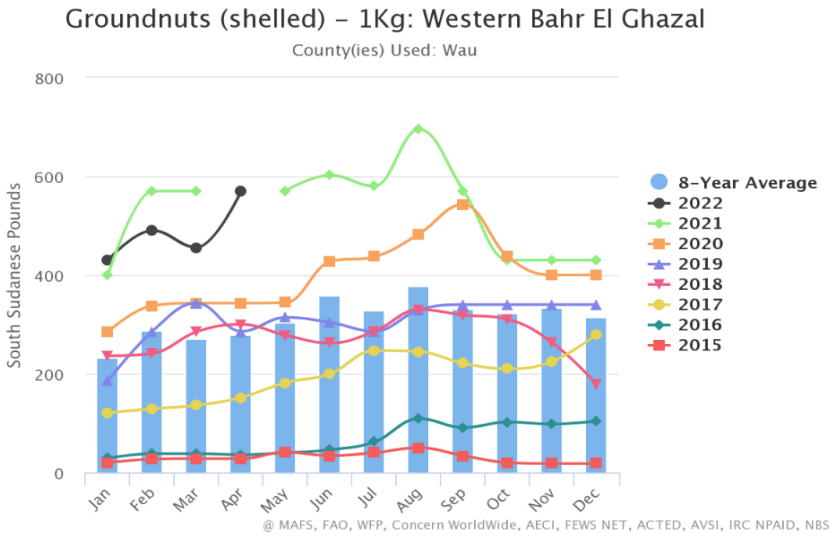
Policy document	Status
Agriculture sector policy framework	Passed by the National Assembly on 12 December 2013. Yet to be reviewed by senior management of MAFS.
Agriculture mechanization policy	Approved by full Council of Ministers on 8 February 2013.
Agriculture market policy	Drafts presented by external consultant to MAFS to be reviewed and validated by the senior management of MAFS.
Horticulture policy	Approved by full Council of Ministers on 15 March 2013.
Seed policy (drafted in July 2012) Seed bill (October 2013)	Not yet presented to the Economic Cluster of the Council of Ministers (to be reviewed by the senior management of MAFS).
Food security policy	Approved by the full Council of Ministers on 8 May 2013 with amendments, on its way to the Transitional National Legislative Assembly (to be reviewed by the senior management of MAFS).
Rural finance policy	Draft presented by external consultant to be reviewed and validated by the senior management of MAFS. be reviewed by the senior management of MAFS).
Soil health policy	Approved by the full Council of Ministers on 15 February 2013 (to be reviewed by the senior management of MAFS).
Rural development policy	Approved by the full Council of Ministers on 8 May 2013 (to be reviewed by the senior management of MAFS).
National Agriculture and Livestock Extension Policy (NALEP)	Approved by the Council of Ministers in 2012, it promotes pluralistic and participatory extension services, including private extension and advocates for research priorities and extension messages to be driven by farmer needs.
Policy Framework and Strategic Plan 2012–2016 for livestock and fisheries	Outdated. Latest available document from the former Ministry of Animal Resources and Fisheries (MARF) that was promoting investment in training capacity for animal husbandry best practices, range and livestock research, water development for livestock use, wildlife conservation and management, community based natural resources management for drought preparedness.
Fisheries Policy for South Sudan 2012–2016	Outdated. Was aimed to maximize production and avoid overfishing, while preventing the destruction of fragile wetlands.

Source: FAO and The World Bank (2022)

Appendix 9 Staple food prices in WBeG (2015 – 2022)







Source:(CLIMIS, 2021).

Appendix 10 Dialogue participant perspectives on the cause-effect relationship between conflict and food insecurity

Conflict is the main cause of food insecurity in Western Bahr el Ghazal

Strongly Disagree 0% all statements	Disagree 14.0% of statements	Neutral 0% of statements	Agree 51.2% of statements	Strongly Agree 34.9% of statements
	3 **Food insecurity is only partly the result of conflict; conflict can however play a major role in creating food insecurity.**		7 Conflict reduces access to farms and farmland and erodes food production; in face of large scale armed conflict farmers and communities vacate their lands.	3 Conflict (in particular armed conflict) displaces people and displacement causes lack of production.
	Conflict may be a contributing factor but not the main cause of food insecurity in WBG: the main cause is the broken government system.		3 **Conflict affects and may even displace farmers hence reducing their potential/ability to produce food.**	2 Conflicts make ag production risky reducing food production.
	We have conflict in WBG but we have our land distributed (to avoid major conflicts).		2 During conflicts supply and demand routes are hindered, looting of communities/markets/traders cause food insecurity.	3 Conflict shifts people's priorities from producing food to live, to saving their lives thereby compromising food security.
	All the resources needed for achieving FNS are available in abundance, conflict should not be the main cause for food insecurity.		2 Conflict leads to insecurity and economic crisis and loss of employment.	Conflict made that up to 70% of farmers came to towns due to safety/security concerns during the height of crisis.
			2 Conflict hinders free movement of people goods which is required to have food security.	Intercommunal conflicts and spread of firearms has made conflict violent impacting FNS.
			Conflict is risky for producers (both farmers and herders).	WBG faces conflicts with famer-herder conflicts become violent seasonally.
			Intercommunal conflicts such as in Jur River County results in food insecurity.	Conflict and tension directly impacts food production systems.
			Conflicts between farmers and livestock keepers in Jur River and Wau County contribute to food insecurity.	Because of conflict farmers leave their area at short notice seeking safety and leaving farmland and everything behind.
			Over the years conflict has caused the loss of trust and motivation to farm and produce food (for the market).	**Conflict reduced human capital and workforce to produced food.**
			WBG used to be food secure; conflict has changed all that - conflict has made food scarce.	Conflict affects all aspects of live and livelihoods including peopl.es' psycho-social well being
			Conflict causes poverty, poverty causes food insecurity.	

Food and nutrition insecurity is the main cause of conflict in Western Bahr el Ghazal

Strongly Disagree 8,3% all statements	Disagree 37,5% of statements	Neutral 25,0% of statements	Agree 16,7% of statements	Strongly Agree 12,5% of statements
The conflict in WBG is about tribal politics and not about food insecurity.	3 **Our problem is not food insecurity: the causes of conflict are political and/or tribal differences, disputes over land between farmers and herders, and the culture**	Main cause of conflict is unequal access to resources and services as a result of corruption and discrimination (political rivalry)	2 **Lack of food leads to robbery, stealing and lack of employment hence arise chaos and conflict in communities.**	**A hungry man is an angry man.**
What creates conflict and insecurity is competing control over rich natural resources.	2 Food insecurity can create issues and some conflict amongst individuals and communities, however the main causes of conflict are political.	Most of the conflicts in WBG are political and often induced by parties from neighbouring states.	When there is not enough food it can lead to conflict.	**When hungry, people can do anything to get food.**
	The main cause of conflict in WBG is political; it is about power and resource sharing.	2 Food insecurity is a cause ..., however disputes over pasture and land, in part. between farmers and herders, are the main drivers of conflict.	Food insecurity affects the economy of the country and the livelihoods of people which may lead to conflict.	Conflict can be created in order to get food.
	2 Before conflict started there was no food insecurity as currently; food insecurity came after conflict.	Conflict can result from unequal access to resources that people need to produce or access food.		
	WBG now has stability/security, good soils, plenty of rain, and an agro-based community - so there is no shortage of food and food cannot be the main cause of conflict.	Even in situations of food insecurity people will continue to produce albeit on smaller scale.		

Appendix 11 Statements on the role of upgrading the physical road infrastructure in WBeG

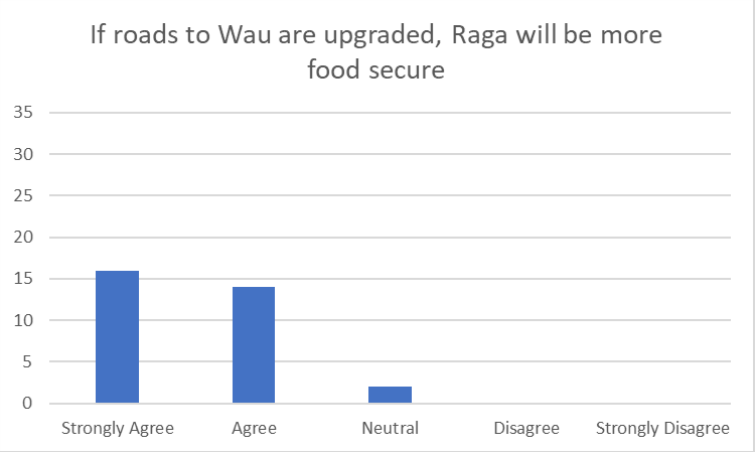
Statement: If roads to Wau are upgraded, Raga will be more food secure.
YES: 94% of participants indicated that upgrading the road between Wau and Raga would lead to increased food security.

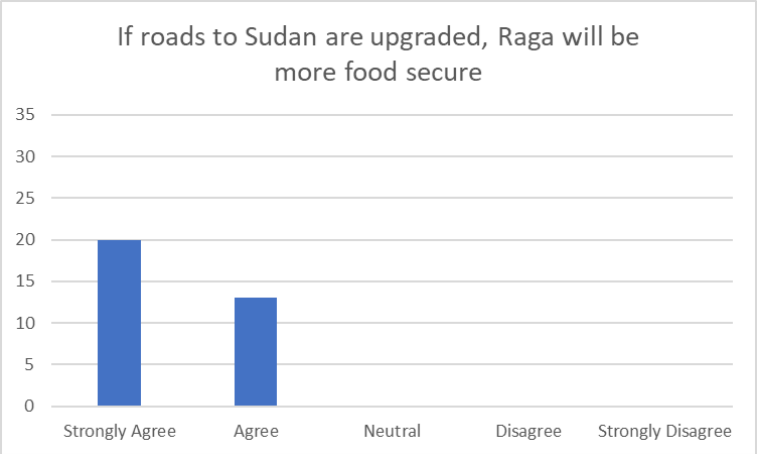
Statement: If roads to Sudan are upgraded, Raga will be more food secure.
YES: All participants agreed or strongly agreed that upgrading the road to Sudan would lead to increased food security.

Statement: If roads to Wau are upgraded, there will be an increase in agricultural production.
YES: All participants agreed or strongly agreed that upgrading the road between Wau and Raga would lead to an increase in agricultural production. One participant answered that '*the current road infrastructure is poor so people use donkeys and motorcycles. They can store food in the market but the problem is transportation costs, especially to Wau. Another problem is the rainy season.*' Upgrading road infrastructure could contribute to addressing these problems.

Statement: If roads to Wau are upgraded, producers will sell more produce.
YES: All participants strongly agreed that upgrading the road between Wau and Raga (which is the only road to Wau) would lead to an increase in agricultural production. One participant answered that 'if the roads are upgraded, it will help transporting produce, and food from Wau could be brought. But the relation also goes the other way around.'

Statement: Upgrading roads contributes to peace and stability.
YES: All participants agreed or strongly agreed that the upgrading of roads contributes to peace and stability. Additional insights from the workshop in Raga is that participants identified three primary roads; one going north to Sudan, one going south to Wau, and a third to Boro. The majority of participants indicated that the road to Sudan is most important, as most food items come from Sudan and are significantly cheaper than those coming from other areas. However, a key problem identified was that during the rainy season the road to Sudan is not accessible, leading to most food items coming from Wau during that period of time. During the dry seaons, vendors come from Wau to Raga to buy cheaper food items from Sudan in Raga and to ship them to Wau. The majority (77%) of participants would prioritise the road to Sudan being upgraded rather than the road to Wau. The road to Sudan was also perceived as more important because of returnee movements, with some families returing from Sudan to Raga. Participants stated that more people would return if roads were better.




If roads to Sudan are upgraded, Raga will be more food secure
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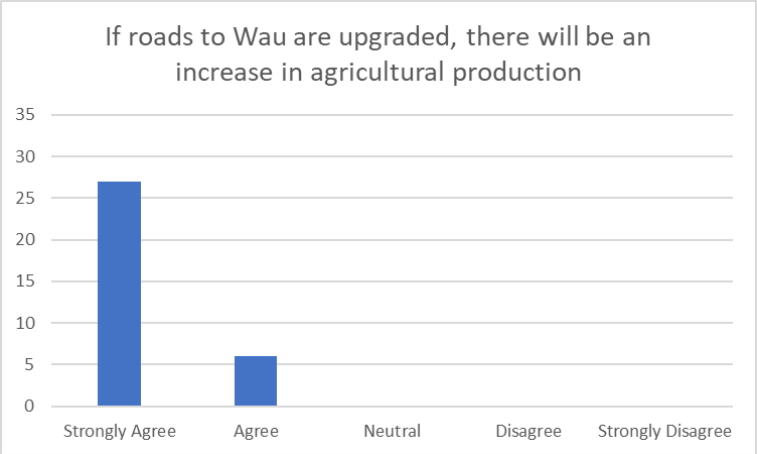
If roads to Wau are upgraded, there will be an increase in agricultural production
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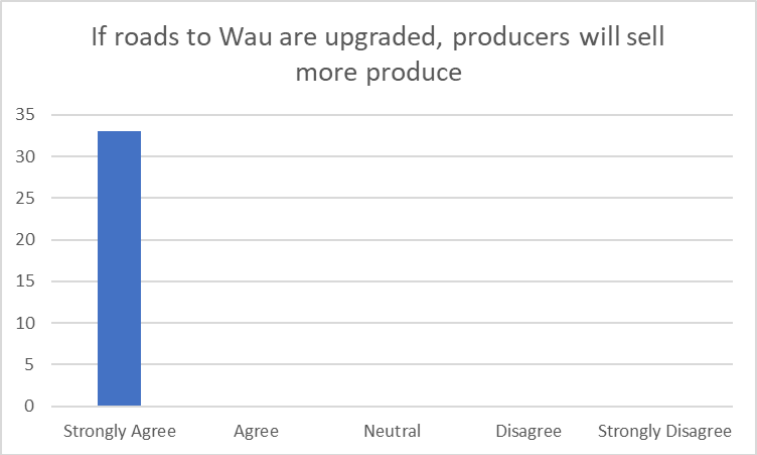
If roads to Wau are upgraded, producers will sell more produce
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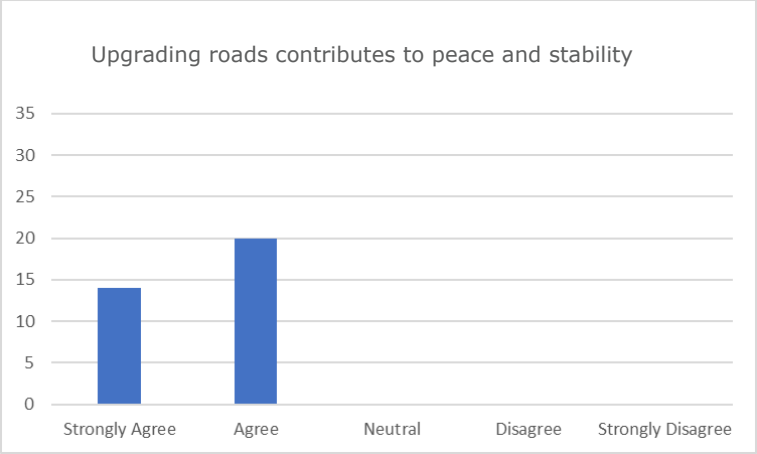
Upgrading roads contributes to peace and stability
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Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree

Appendix 12 Dialogue on socio-economic drivers

During the Wau participant dialogue different socio-economic drivers were explained. Ranking exercises on the most important local driver were organised, and participants were also asked to identify action for improvement.

Group 1: Which is the first, second and third most important driver impacting poor food / nutrition security outcomes in Western Bahr el Ghazal? Explain why! Describe for each of these the key challenge they present to food system outcomes. Could you also do this for the remaining two drivers?

Table 14 *Socio-economic drivers, challenges and strategic actions: Group 1*

Drivers	Key challenges	Strategic actions
1. Policies	• Lack of subsidies provided to farmers • Inactive quality control systems • Formulation of policies not based on context	• Formulation of policies based on context
2. Science	• Inactive research centres • Academia and government institutions not collaborating	• Collaboration among institutions
3. Social organisations	• Few cooperatives and inactivity • Farmers not knowledgeable on the concept of cooperative • Lack of sustainability	• Strengthen cooperatives and link them to finance providers
4. Markets	• Inflation due to poor price control system • Market supply is not based on market demand hence low price of food commodities	• Price regulation • Align supply and demand
5. Individual factors	• Cultural norms • Living standards	• Awareness • Capacity building

Group 2: Which is the first, second and third most important driver impacting poor food / nutrition security outcomes in Western Bahr el Ghazal? Explain why! Describe for each of these the key challenge they present to food system outcomes.

Table 15 *Socio-economic drivers, challenges and strategic actions: Group 2*

Drivers	Key challenges	Strategic actions
1. Individual factors	• Negative social, cultural and economic norms • Poor farming practices and poor attitude toward productivity • Negative gender roles and responsibility	• Training and capacity building • Awareness and sensitisation
2. Social organisation	• Tribal conflict and social frictions • Land ownership • Poor socio-economic infrastructures • Poor gender dynamic • Poor access to market and financial services	• Strengthen social cohesion through community dialogue for peaceful coexistence • Enabling and strengthening cooperatives • Strengthening financial system • Financial literacy campaign
3. Markets	• Poor road and transport network • Currency fluctuation and inflation • Market deregulation • Illegal taxation • Limited trade linkage between communities due to conflict	• Construction of road network • Currency stabilisation policies • Tax and market regulation • Market facilitation and linkage • Improve production, post-harvest handling, value addition among small farmers groups • Build on cooperative and groups formation

Appendix 13 Dialogue on environmental drivers

During the Wau participant dialogue the different environmental drivers above were discussed. A ranking exercise on the most important local driver was organised. Participants were also asked to identify strategic action for improvement. Below is a summary of the key findings to emerge from the workshop.

Group 1 and 2: Which is the first, second and third most important driver impacting poor food / nutrition security outcomes in Western Bahr el Ghazal? Explain why! Describe for each of these the key challenge they present to food system outcomes.

1. Climate:
   - Late onset rain, drought, poor harvest
   - Heavy rain, displacement
   - Changing rainfall pattern influencing cattle migration and causing tensions

2. Water:
   - Scarcity in the dry season: Jan to June, leading to migration and affecting farming practices
   - Limited availability of clean drinking water causing conflict and diseases

3. Land and soil:
   - Decline of soil fertility due to climate change and water runoff resulting in poor yields
   - Access to farmland is linked with communal ownership
     - Limited knowledge of soil types to optimise crop production
     - Dispute between farmers and cattle keepers

Formulate for each of these, three key strategic actions to improve on food system outcomes.

1. Climate:
   - Policies to reduce the impact of climate change
   - Strengthen research and development, dissemination of appropriate technologies
   - Awareness of climate change
   - Early warning system
   - Planting early varieties
   - Construction of dykes

2. Water:
   - Policies for water management
   - Identification of source and water patterns
   - Irrigation system
   - Rainwater harvesting

3. Land and soil:
   - Land policy revision
   - Research and linkage between communities and research institutions
   - Application of organic and inorganic fertilisers
   - Crop rotation and inter-cropping
   - Good agri-practices

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To explore the potential of nature to improve the quality of life

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