

Food System Resilience Assessment



September, 2023

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REPRO (2019–2024)

The food system resilience assessment (FoSRA) approach was originally developed under the Food and Nutrition Security Resilience Programme ([FNS-REPRO](#)) of the Food and Agriculture Organization of the United Nations (FAO) and Wageningen University & Research (WUR). The REPRO program addressed the cause-effect relationship between conflict and food insecurity in Somalia, South Sudan and Sudan.

The program employed a livelihood and resilience-based approach in some of the least stable regions, where interventions are normally exclusively of a humanitarian nature. Its design allowed FAO, WUR and partners, international and national non-governmental organizations, government of the Netherlands and governments in target countries, to set good examples of how to build food system resilience in protracted crises and strengthen cooperation across the humanitarian-development-peace nexus.

At country level, FNS-REPRO focused on selected value chains that were chosen because they played a central role in agropastoral and farming livelihoods. The value chains selected are Gum Arabic in Sudan, animal feed and fodder in Somalia and seed systems in South Sudan.

SIPRA (2022–2026)

The FoSRA approach was further developed and implemented within the Strengthening Inclusive Partnerships for Smallholders in Rain-fed Areas (SIPRA) 4-year program, which was launched in September 2023.

The SIPRA programme intends to bring about transformative change for smallholders. It plans to establish inclusive partnership modalities between organized producers with sustainable, climate-smart production and a motivated private sector with fair modalities for engaging with producers, focusing on empowered women and youth. Through strengthened agro-MSMEs sourced by large agri-businesses, investors and sellers' reach will be sustainably linked to smallholder producers. An enabling business and policy environment will continually be fostered through advocacy and engagement with key stakeholders and knowledge institutions on systemic barriers impacting actors in the value chain. Driving the programme is the food systems approach and market-driven strategies which will select nutrition-sensitive value chains that are in sustainably high demand, and linked to state, national and possibly export markets.

Population of targeted localities is 1.6 million, direct target group is 120,000 people (24,000 producer households). SIPRA assumes 15% of the population will benefit, which is close to 240,000 persons.

Consortium lead: ZOA Sudan

Consortium partners: World Relief Sudan, SOS Sahel, Euroconsult Mott McDonald
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Food System Resilience Goals and Objectives



In relation to the Rome Based Agencies (FAO, WFP, and IFAD) focus on agriculture, food security and nutrition, resilience is essentially about the inherent capacities (abilities) of individuals, groups, communities, institutions, and systems to withstand, cope, recover, adapt and transform in the face of shocks and stressors. This implies that all interventions, must begin by identifying and building upon existing capacities and resources of local inhabitants and communities (FAO, IFAD, and WFP, 2015).

PRINCIPLES, PRACTICES AND CHALLENGES FOR STRENGTHENING FNS RESILIENCE

For SIPRA, a guiding document is the Rome Based Agencies' conceptual framework for strengthening resilience for food security and nutrition in protracted crisis contexts. This conceptual framework of resilience is guided by six principles, which were also applied to the contexts of South Darfur (FAO, IFAD, and WFP, 2015):

1. Local and national ownership and leadership

This means that all efforts must not only be participatory and inclusive but be led by local actors as much as feasible. Specifically, this means that programming decisions should be made in consultation with local stakeholders based on the ultimate foundation of strengthening existing capacities and capturing the ideas of local actors for the intended building of capacities.

"People, communities and governments must lead resilience building for improved FNS."

2. Multi-stakeholder approach

In the case of Sudan, this means that a variety of actors need to be involved to work effectively, including local organisations, communities, and governments (also see above). Depending on the exact resulting actions, it may be essential to involve specific actors, if it is a specific knowledge/ expert platform related to specific themes or local traditional leaders and/or governing structures; ultimately, resilience is a complex "thing" to build since it needs to reflect real struggles that require more than one perspective to address.

"Assisting vulnerable people to build their resilience is beyond the capacity of any single institution."

3. Combining humanitarian relief and development

SIPRA works around the IPC classification of food insecurity and takes trends into account, thinking long-term. Hence, for example in Phase 2, resilience building is a central theme, aiming to provide capacities that can be used to reduce impacts once Phase 3 is reached.

"Planning frameworks should combine immediate relief requirement with long-term development objectives".

4. Focus on most vulnerable people

In the case of Sudan, this means that SIPRA takes a conscious focus on gender and youth to build inclusive community resilience and avoid future tensions.

“Ensuring protection of the most vulnerable people is crucial for sustaining development efforts.”

5. Mainstreaming risk-sensitive approaches

Strategic links to governance actors are in place to ensure that risk management knowledge can underpin community actions and be mainstreamed.

“Effective risk management requires an explicit focus in the decision making of national governments, as well as enhanced monitoring and analysis.”

6. Aiming for sustained impact

Learning is central to SIPRA; hence, data is collected (e.g. through a FoSRA process) to determine adaptive management decisions on the basis of evidence. If strategies in Sudan fall short of expectations or are not working as expected, SIPRA strategies and actions will be adapted on the basis of programming evidence and consultations with stakeholders, to maintain a focus on results that strengthen community capacities best.

“Interventions must be evidence-based and focused on results.”

The programming of Strengthening Inclusive Partnerships for Smallholders in Rain-fed Areas (SIPRA) is based on Food System Resilience Assessment (FoSRA), which consists of a conceptual approach and several tools. In this document the approach is outlined and the tools are presented and explained so that the approach can be easily applied by other organizations engaging in similar interventions.

Food System Resilience Assessment (FoSRA) Approach



OBJECTIVES

The FoSRA approach is a continuously evolving method to assess the functioning and behaviour of a food system under the influence of shocks and stressors in protracted crises. It was initially developed under the “Food and Nutrition Resilience Programme” (FNS-REPRO), and further adapted for the use within the project “Strengthening Inclusive Partnerships for Smallholders in Rain-fed Areas” (SIPRA).

It is divided in 3 phases:

- Phase 1 with general scope and a geographical focus, towards identifying promising commodities.
- Phase 2 with focus on the role of a specific commodity (or multiple) within the food system, before combining the steps into an overall understanding of the food system.
- Phase 3 with focus on identifying and validating resilience pathways, develop strategies with relevant stakeholders and provide policy recommendations.

PRINCIPLES OF ENGAGEMENT

In this process the following principles are applied:

- Inclusiveness regarding gender, age and minorities along the value chain
- Co-creation, which is fundamental to the process, requiring the engagement and participation of several actor groups
- Ownership and lead are with local actors, following the localisation agenda
- Thinking from a system perspective to reflect on real complexities
- Continuous learning
- Thinking and working across HDP nexus silos
- Specific to the locality/context
- Foundation to evidence-based adaptive management, ensuring programming flexibility
- Focus on overall sustainability and work on root causes: assessing environmental and social outcomes, not only food and nutrition security and economic ones.

ACTORS INVOLVED IN THE PROCESS

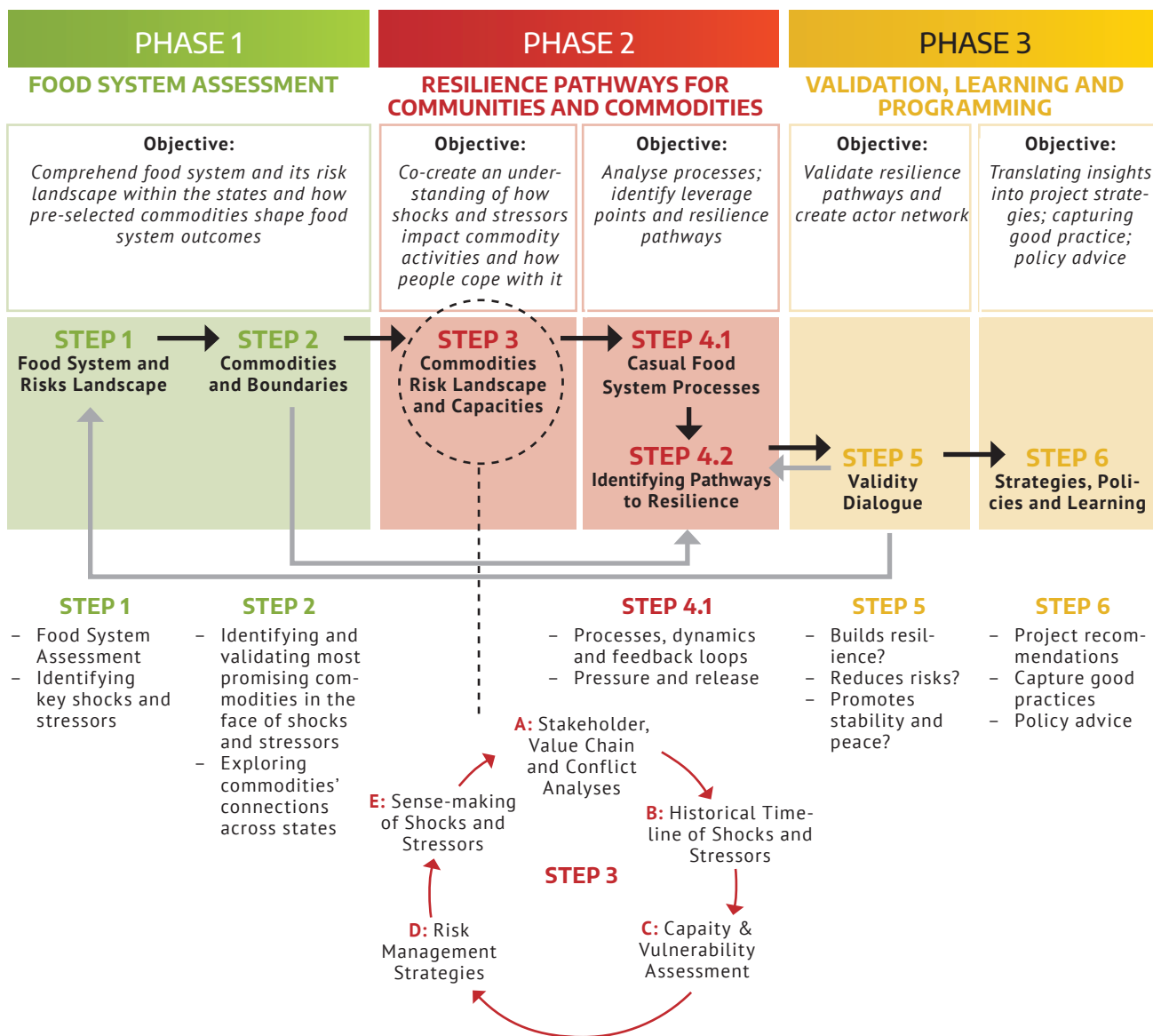
At different stages of the FoSRA, different actors are involved. There are three groups of actors:

- I. SIPRA actors, meaning ZOA, SOS Sahel, World Relief and WCDI (hereafter: SIPRA team)
- II. Local actors, such as private sector, CSOs, other (I)NGOs, governments, traditional leaders
- III. Wider community in the area, inhabitants of the target villages.

It is important to include these actors strategically to maximise the level of local ownership as well as quality of information gathered. Depending on the stage of the FoSRA, the different groups are co-creating knowledge, rather than being merely participants in a usual data collection approach.

PROCESS FRAMEWORK

The figure below shows how Phases 1, 2 and 3 fit together, as well as highlights the specific steps of the approach and their respective specific objectives. In the text below, these steps are described in further detail, accompanied by a box per step that elaborate on the 'how' and 'who'.



PHASE 1 – FOOD SYSTEM ASSESSMENT

● Step 1: Food System and Risks Landscape

- Food system assessment, based upon the van Berkum framework, and
- Identification of key shocks and stressor, including conflict.

Since available literature is generally limited in fragile countries, this also includes a participatory food system boundary mapping exercise. In addition, further information can be added after Step 5 when the validity check functions simultaneously as a multi-stakeholder dialogue.

● Step 2: Commodities and Boundaries

- Identification and / or validation of most promising commodities (in face of shocks and stressors).
- Identification and / or validation of interconnectedness of different commodities and their geographic reach of existing structures (food system and commodity boundaries). This means, for example, if a farmer grows several commodities such as Gum Arabic, Sesame and vegetables in an integrated manner, and to what extent the value chain of a specific commodity is specific to a regional or if it goes across regional boundaries. Food System Outcomes (FNS outcomes, socio-economic outcomes and environmental outcomes) are balanced against each other to identify commodities that are promising not only from a market point of view, but also in terms of equality, social cohesion and environmental sustainability. Moreover, a rapid value chain analysis takes place to deepen understanding.

STEP 1

HOW?

Extensive review of literature and existing reports. Key stakeholder interviews and dialogue.

WHO?

Actor groups I and II

STEP 2

HOW?

Extensive review of literature and existing reports
Key stakeholder interviews
Focus group discussions

WHO?

Actor groups I and II

PHASE 2 – RESILIENCE PATHWAYS FOR COMMUNITIES AND COMMODITIES

● Step 3: Food System and Risks Landscape

This step looks at the community level to create a specific understanding of how a specific commodity is impacted by the shock or stressor (incl. conflict) and assesses existing capacities, coping mechanisms and risk management strategies of several actors involved in the value chain. There is a variety of tools (A, B, C, D, E) available that are selected based on the commodity that is assessed.

STEP 3

HOW?

Selection of participatory tools such as a stakeholder assessment, drawing up historical timelines, a capacity and vulnerability assessment, amongst others.
Surveys and key stakeholder interviews to assess coping and risk management strategies.

WHO?

Actor group I facilitating II and III

● Step 4: Identify Leverage Points and Pathways

- Step 4.1 combines the insight of Step 3 and draws up causal connections, feedback loops, the progression of vulnerability of respective communities, ripple effects and dynamics.
- Step 4.2 processes the above and the result of Phase 1 into commodity-overarching food system resilience pathways that address several leverage points and pay attention to different segments of society.

STEP 4

HOW?

Analysis of information of Step 3. Causal linkage diagram and pressure and release model.
Creation of pathways within the resilience pathway matrix.

WHO?

Actor group I

PHASE 3 – VALIDATION, LEARNING AND PROGRAMMING

● Step 5: Validity Dialogue

Finally, Step 5 validates these insights and pathways for each commodity through a multistakeholder workshop, creating a common ground for FNS action as well as it opens a stable and peaceful dialogue and cooperation platform with a shared vision for the future.

● Step 6: Strategies, Policies and Learning

This step processes all these insights into SIPRA programming advice. Moreover, best practices can be documented and policy recommendations formulated.

STEP 5

HOW?

Multistakeholder validation workshop.
Presentation, group work, critical discussions.

WHO?

Actor group I facilitating II. With representatives of group III

STEP 6

HOW?

Writing up results of previous steps.

WHO?

Actor group I



CONFLICT FOCUS WITHIN THE FoSRA

The table below highlights some specific guiding learning questions related to conflict and structural root causes across the FoSRA framework. This builds a good understanding of these underlying issues to inform action pathways – some value chains have more ‘risks’ than ‘opportunities to foster peace’, which should be taken into account when selecting commodities. Steps 5 & 6 utilise the outcomes so they are not elaborated on.

Steps	Conflict / root cause learning focus
● STEP 1	Identification of key conflicts as shock and stressor. Understanding how conflict shapes the food system behaviour and performance
● STEP 2	<p>Drivers and outcomes of van Berkum framework with a conflict lens. Extra questions:</p> <p><i>Socio-economic:</i></p> <ul style="list-style-type: none"> • Who controls the market? Power/ monopoly dynamics present? • Who makes policies? Are these actors perceived as legit by communities? Are policies enforced? • What is the nature of social organisation – harmonious or tensions? • Individual factors: who are key players and how do they perceive and interact with each other? <p><i>Environmental:</i></p> <ul style="list-style-type: none"> • Who has access to which resources and why? • Who is impacted most by shocks and stressors, including conflict? <p>Outcomes: focus on results from socio-economic perspective, also thinking of meaningful opportunities for youth, etc.</p>
● STEP 3	<p>Reading between the lines and observing during community sessions.</p> <ul style="list-style-type: none"> • Historical timeline of shocks / stressors with focus on conflict as one issue. • Mapping stakeholders within the power force field, taking past into account. • Trade-offs in coping and risk management (e.g., charcoal) – who is impacted by who’s actions? Tensions? (also farmer / herder, etc.)
● STEP 4	<p>Conflict analysis in light of food system and commodities:</p> <ul style="list-style-type: none"> • Conflict drivers and connectors. • Risks due to unprocessed deep grievances, habits, and perception disconnects. • Type of conflicts (realistic vs. unrealistic, displaced violence)? Safety-valves? • Reflection on perceptions of action vs. reaction, trust, uncertainty. <p>Outcomes: Table of leverage points to foster peace vs. risk points → do no harm</p>



Food System Resilience Assessment (FoSRA) Tools



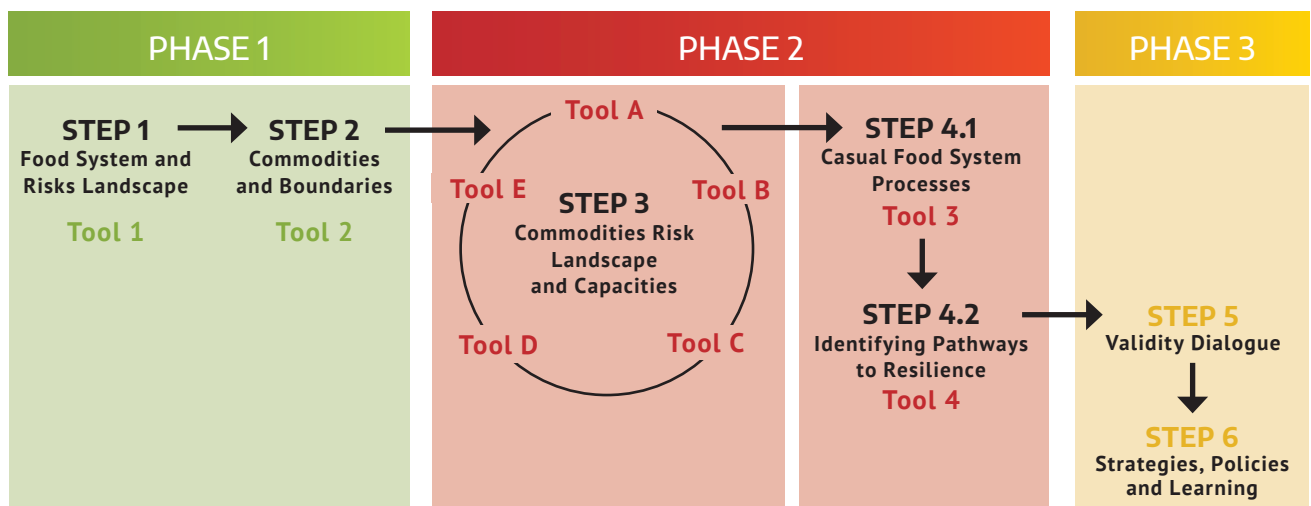
OVERVIEW OF TOOLS

Together, the 6 steps of the FoSRA process and the 9 tools below provide a thorough and effective method for analyzing food systems and their specific target points at a local and state level and form a robust basis for developing intervention pathways that will contribute to their system resilience.

Moreover, the analysis process itself builds a basis for resilience since local farmers and other stakeholders co-create a shared understanding of the food systems' dynamics and behaviors, leading to commonly agreed upon resilience system pathways and their implementation.

The 5 tools in Phase 2 are organized in steps that, in combination, analyze how shocks and stressors impact the local food system with a specific focus point on the interface of the selected target system (specific commodity) and the FNS outcomes. The tools generate insights for designing appropriate and effective context specific interventions to strengthen food system resilience.

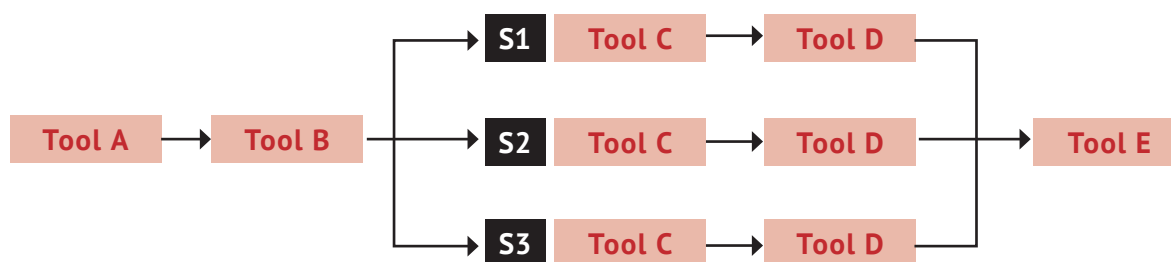
Tools B, C and D are applied directly after each other the same group of people.



Tool	Name / Objective	Method
PHASE 1 – FOOD SYSTEM ASSESSMENT		
Tool 1 (STEP 1)	<ul style="list-style-type: none"> Food System Assessment 	Desk review
Tool 2 (STEP 2)	<ul style="list-style-type: none"> Commodity/Village Selection for Assessment 	Focus group discussions

Tool	Name / Objective	Method
PHASE 2 - RESILIENCE PATHWAYS FOR COMMUNITIES AND COMMODITIES		
Tool A (STEP 3)	Stakeholder, Value Chain and Conflict Analyses <ul style="list-style-type: none"> Identify the direct and indirect stakeholders involved in commodity and their roles Describe relationship between key actors Identify flow of commodity and communication 	Key informant interviews
Tool B (STEP 3)	Historical Timeline of Shocks and Stressors <ul style="list-style-type: none"> List and prioritize shocks and stressors (S1, S2 and S3) for specific commodity from the perspective of the focus group Identify how a specific commodity is impacted by the shock or stressor over the last 10 years 	Focus group discussion (3 groups: male, female, youth)
Tool C (STEP 3)	Capacity and Vulnerability Assessment <ul style="list-style-type: none"> Identify livelihood capacities and vulnerabilities, related to the specific commodity, at 'one point in time' in the face of a shock and/or stressor 	Focus group discussion (3 groups: male, female, youth)
Tool D (STEP 3)	Risk Management Strategies <ul style="list-style-type: none"> Identify and understand risk management strategies of target communities / livelihood groups who are working with the respective commodity, in the face of recurring shocks/ stressors in geographic target areas 	Focus group discussion (3 groups: male, female, youth)
Tool E (STEP 3)	Sense-making of Shocks and Stressors <ul style="list-style-type: none"> Mapping perceptions on change and their implications for FNS programming through Stories of Change by key community members Identify additional or underrepresented perceptions, especially relating to conflict 	Key informant interviews
Tool 3 (STEP 4.1)	Causal Linkage Diagram	Workshop with stakeholders
Tool 4 (STEP 4.2)	Pressure and Release Model	Workshop with stakeholders

All tools are commodity specific. In addition, tools C and D are also shock / stressor specific. Thus, it is critical to properly identify both the number of commodities as well as number of the shocks and stressor to ensure that data collection and analyses are feasible within the given capacities, budget and time.



FoSRA Tool 1 – FOOD SYSTEM ASSESSMENT

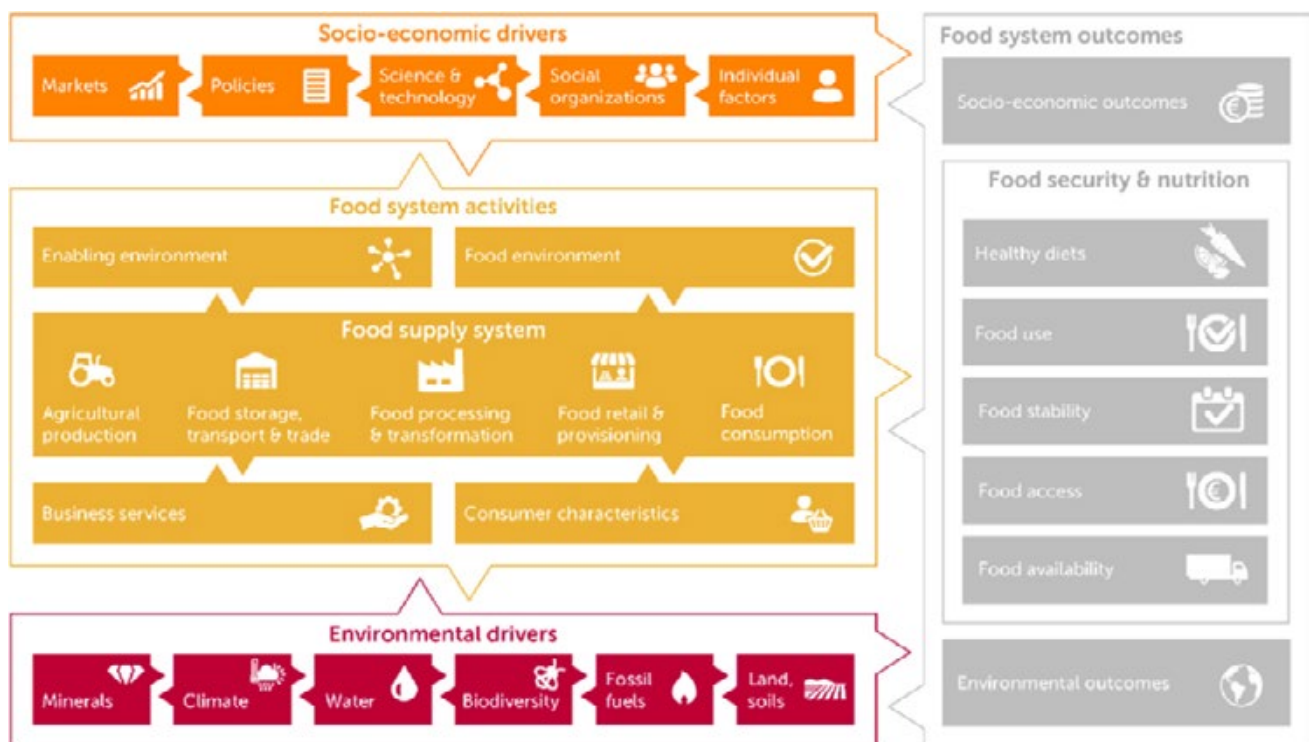


OBJECTIVE OF TOOL

The Food System Framework developed by van Berkum (2018) is used to:

- Provide a checklist of topics that should at the very least be addressed when it comes to improving food security, certainly in relation to other policy objectives.
- Map the impact of environmental and climate changes on food security by pointing to the various vulnerabilities of the food system.
- Determine the most limiting factors for achieving food security, and hence identify effective interventions aimed at improving food security.

A food systems approach (FSA) is a useful interdisciplinary conceptual framework for research and policy aimed at sustainable solutions for the sufficient supply of healthy food. An FSA analyses the relationships between the different parts of the food system and the outcomes of activities within the system in socio-economic and environmental/climate terms.



Feedback loops are a distinguishing factor in systems thinking: they occur between parts of the food chain (production, processing, distribution and consumption) and from the socio-economic and environmental outcomes of food production and consumption (such as food security and soil depletion) back to that production and consumption.

The FSA sheds light on non-linear processes in the food system, and on possible trade-offs between policy objectives. Systems-thinking is also the first step in broadening the perspective when seeking solutions for the root causes of problems such as poverty, malnutrition and climate change.

Applying a food systems framework helps identify strengths and weaknesses of the key food system components in the targeted region. Such understanding allows to decide which key commodities of the food system activities are promising and deserve an in-depth, more specific assessment.

There are three types of **food system outcomes** indicated on the right side of the figure shows the main indicators for these outcomes.

1. The socio-economic outcomes of the food system involve things like the 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.
2. Food security is often defined in the literature as a combination of food utilisation, food access and food availability. Utilisation entails the nutritional value, social value and safety of the product; access involves food affordability, allocation and preferences; and availability is about food production, distribution and exchange.
3. There are also environmental outcomes of the food system – namely, its impact on natural resources and the biophysical drivers of the food system.

The **socio-economic drivers** of the food system (shown at the top of figure) can be divided into five categories:

1. *Markets*: changes in market systems, world prices, trade relations, incomes, profits, wages and labour availability. Markets provide opportunities for matching food supply and demand, but sudden changes in supply, for example, can cause large price fluctuations.
2. *Policy*: different kinds of policy – for example, on land rights, food security, the environment, labour, trade or food safety – can influence the food system.
3. *Science & technology*: research, innovation and education in key areas for agriculture and nutrition, such as chain agreements, transport/logistics and medical or food technology.
4. *Social organisations*: 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.
5. *Individual factors*: the lifestyle, norms (e.g., animal welfare norms), attitudes and cultures (e.g., halal) that influence the choices of individual actors in the food system. These factors can be place-related and can influence consumer choices.

The **environmental drivers** indicate the biophysical context in which the food system operates. These consist of five interacting components:

1. Availability of land for agriculture and livestock farming, and related to this, the quality of soils. Intensive agricultural methods can put pressure on soil quality.
2. Use of fossil fuels in agricultural machinery and equipment, refrigeration, storage, processing and transport of food.
3. Use of minerals/microminerals, such as NPK and lime, to enrich soils and various metals such as steel, tin and bauxite for the manufacture of packaging, infrastructure and cookware.
4. Biodiversity (the variety of plant and animal life) provides different services to the food system activities, such as biomass and firewood, as well as animals for domestication, microbes that guarantee soil quality and a diversity of plant and animal species that enable pollination.
5. Water, as an important source of life. This involves not only the availability of water for irrigation, but also high-quality drinking water for cooking, and water for washing.

Tool 1

The **food system activities**, consist of five components:

1. *Food supply system (the value chain)*: in terms of added value, the emphasis of production chain activities are increasingly shifting to transport, processing or retail.
2. *Enabling environment*: creates the conditions in which the system functions. Transport, regulation, institutions and research infrastructure are part of this environment.
3. *Business services*: while not at the heart of the value chain, provide services and goods to the actors in the chain. This can involve training, agricultural inputs, technical support or financial services.
4. *Food environment*: comprises a number of determining environmental factors, such as the extent to which a product is advertised or the information on labels or quality seals determines the consumer's relationship to that product.
5. *Consumer characteristics*: consumers through their knowledge, available time, resources (purchasing power), age, sex, culture, religion, etc. develop certain preferences that influence their food choices.

APPLICATION

Method: Literature review, interview with key informants including project partners.

Output: Brief review of relevant components of the food system in the targeted region.



FoSRA Tool 2 – COMMODITY/VILLAGE SELECTION FOR ASSESSMENT



OBJECTIVE OF TOOL

Select commodities for FoSRA assessment in different regions / villages.

- Identify relevant combinations of commodities and regions / villages.

Tool 2 consists of 3 parts:

1. Selection of villages
2. Selection of commodities
3. Developing the commodity / village matrix

APPLICATION

Method: Discussions by project partners on the ground

Outputs:

1. List of selected regions / villages for assessment

The below criteria were used to select the villages / regions participating in the SIPRA project considering relevance and logistics.

- A village or a group of small, related villages within close proximity (3–5 square kilometres) with minimum of 150–250 households
- Rainfed agriculture is the main economic activity in the village
- Smallholders who own land (3–8 Mukhamas or 5–15 feddan)
- In the village at least 30% of women farmers and at least 40% young farmers
- High of number of unemployed young men and women
- Growing at least one economic crop with high potentiality for production increase and value addition (sesame, groundnuts, Gum Arabic, Karkadi, etc.)
- The village has (the potential) to access nearby markets and can be linked to agricultural businesses
- Project staff and other stakeholders can safely travel to the village
- There is no active and regular conflicts
- Villagers are interested and willing to engage, participate and contribute to the project activities
- There are no other similar large agriculture / value chain projects.

2. Filled out scoring sheet (see below) for the commodities

- Make a long list of potential commodities to focus on (8–10), comes out of Tool 1
- Using the parameters below in the table, evaluate each commodity on a scale from 1 to 10 ((1: least relevant; 10: most relevant)

Tool 2

The parameters are covering 7 components: (1) contribution to income generation; (2) contribution to conflict mitigation; (3) anchoring to existing interventions or existing capacities / network, etc.; (4) impact on gender, youth and minorities; (5) contribution to food and nutrition security; (6) contribution to natural resource management (NRM) / environmental sustainability; and (7) contribution to resilience.

- Identify 3 commodities with the highest score for FoSRA assessment (or number of commodities that is feasibly within project).

Component	Food System Outcome	Commodity 1	Commodity 2	Commodity 3
1. Contribution to income generation	Potential to increase overall income for...	.....	.....	.....
	... adult men	.....	.....	.....
	... young men	.....	.....	.....
	... adult women	.....	.....	.....
	... young women	.....	.....	.....
	Potential of the commodity to be profitable	.....	.....	.....
	Potential for growth / upscaling	.....	.....	.....
	Has a stable national demand (in addition to international interest, also see resilience section below)	.....	.....	.....
	Potential to increase stability of income	.....	.....	.....
	Total of Component 1:			
2. Contribution to conflict mitigation	Potential to reduce the risk of conflict	.....	.....	.....
	Potential to foster dialogues / peace (local level, e.g. win-win profits, cooperation)	.....	.....	.....
	Has potential to foster dialogues / peace (national, e.g. through policy work)	.....	.....	.....
	Total of Component 2:			
3. Anchoring to existing interventions or existing capacities / network, etc.	Potential to build upon / strengthen capacity	.....	.....	.....
	Potential to build upon existing enabling environment including infrastructure	.....	.....	.....
	Total of Component 3:			
4. Impact on gender, youth and minorities	Potential to reduce overall inequalities (gender, age, tribes, etc.)	.....	.....	.....
	Potential impact on young and adult women (participation, voice, income, etc.)	.....	.....	.....
	Potential impact on young and adult men (participation, voice, income, etc.)	.....	.....	.....
	Total of Component 4:			
5. Contribution to food and nutrition security	Potential to increase food availability (in total)	.....	.....	.....
	Potential to increase food availability of nutrition gaps	.....	.....	.....
	Potential to support overall healthier diets (awareness)	.....	.....	.....
	Potential to increase food affordability	.....	.....	.....
	Potential to increase food safety	.....	.....	.....
	Matches food preferences of the area	.....	.....	.....
	Potential for intercropping	.....	.....	.....
Total of Component 5:				
6. Contribution to NRM / environmental sustainability	Potential to positively impact land use (reforestation, etc.)	.....	.....	.....
	Potential to restore soil health	.....	.....	.....
	Low emissions in the process	.....	.....	.....
	Potential to maintain / increase biodiversity	.....	.....	.....
	Potential to contribute to more sustainable use of water	.....	.....	.....
Total of Component 6:				
7. Contribution to resilience	Resilient to common shocks and stressors (droughts, conflict, etc.)	.....	.....	.....
	Potential to contribute to diversifying livelihood strategies of communities	.....	.....	.....
	Resilient to (potential future) international trade barriers	.....	.....	.....
	Total of Component 7:			
TOTAL				

3. Matrix of regions / villages and commodities

The next step is to make a combination of the selected commodities and villages. The matrix below shows the combinations in the SIPRA project.

To make assessment feasible, 3 localities were selected in each of the 4 project states (South Kordofan, East Darfur, South Darfur and Central Darfur). The assessment was implemented in 3 villages in each locality. In case of South Kordofan, the selected localities were the following: Kadulgi, Elreef Elshargi and Algoaz.

In South Kordofan 4 commodities were selected: groundnut, sesame, sorghum and hibiscus. The combinations lead to implement the assessment for groundnut, sorghum and hibiscus in all three localities, while assessment for sesame was implemented only in Borno, Elreef Elshargi locality.

The matrix can be also used for monitoring purposes:

- Green field: assessment has been finished
- Yellow field: assessment in progress
- Red field: assessment has not started yet

		Locality 1			Locality 2			Locality 3		
South Kordofan	SOS Sahel	Kadulgi			Elreef Elshargi			Algoaz		
		Dummba	Njamdou	Alsumma	Kigaaljougba	Sarafadai	Borno	Galabarh	Mugou	Umjagoga
	Groundnut	Red			Yellow				Red	
	Sesame					Yellow				
	Sorghum		Red		Yellow		Red			
Hibiscus			Red			Yellow		Red		
East Darfur	ZOA	Adila			Abu Karinka			Ad Du'ayn		
		Adila	Almazroub	Al Deraiga	Alkhitma	Alnayir	Um Rakouba	Hijlija	Almonjar	Um Lablan
	Groundnut	Yellow						Red		
	Millet		Yellow			Red	Red			
	Gum Arabic			Yellow			Red			
Sorghum				Red				Red		
South Darfur	ZOA	Mershing			Beleil			As Sunta		
		Adwa	Amarjadid	Abuhamra	Alreel	Hijair	Jemayza Arbiha	Alnebik	Alkebish	Talha
	Groundnut								Red	
	Millet	Red					Red			
	Sorghum			Red				Red		
Sesame		Red								
Central Darfur (Mohamed Teabin)	World Relief	North (Shamal) Jabal Marra			Central (Wasat) Jabal Marra			West (Garib) Jabal Marra		
		Solo	Omo	Arshin	Giro	Jadeed	Monobo	Boldong	Korgei	Golol
	Potato		Green				Red	Red	Red	
	Broad bean			Green		Red	Red	Red	Red	
	Tomatoes	Green			Red		Red	Red	Red	
	Bee keeping			Green			Red	Red	Red	

FoSRA Tool A – STAKEHOLDER, VALUE CHAIN AND CONFLICT ANALYSES



OBJECTIVE OF TOOL

Stakeholder and value chain analysis for selected commodity:

- Identify direct and indirect stakeholders involved in commodity and their roles
- Describe relationship between key actors
- Identify flows of commodity and communication
- Assess issues around conflict.

APPLICATION

Method: Key informant interview

Output: Filled out questionnaire

KEY INTERVIEW QUESTIONS

1. Direct actors and their roles

Who are the main actors involved in this commodity?
Where are they (geographically) located?
What are the actors' roles / activities within the value chain of this commodity?
What are their characteristics (e.g., gender, age, education, tribal background)?
Which actors are missing / should also be more involved?

2. Indirect actors

Who supports each link in the value chain?
What support services and what operational services are necessary for the activities in the chain?
Who provides the inputs?
What services do they provide?
What services are lacking?
Who could provide the missing services?
What motivates the indirect actors?
How is power distributed amongst the partners, and how is it being used?
What kind of relationship is there with key partners? Is it good, bad or indifferent?

3. Product and information flow

Who does each actor sell his/her product to?
What type of information flows between the actors?
Who provides whom with what information?
How do the different actors communicate with each other?

4. Relationships between key actors related to this specific commodity

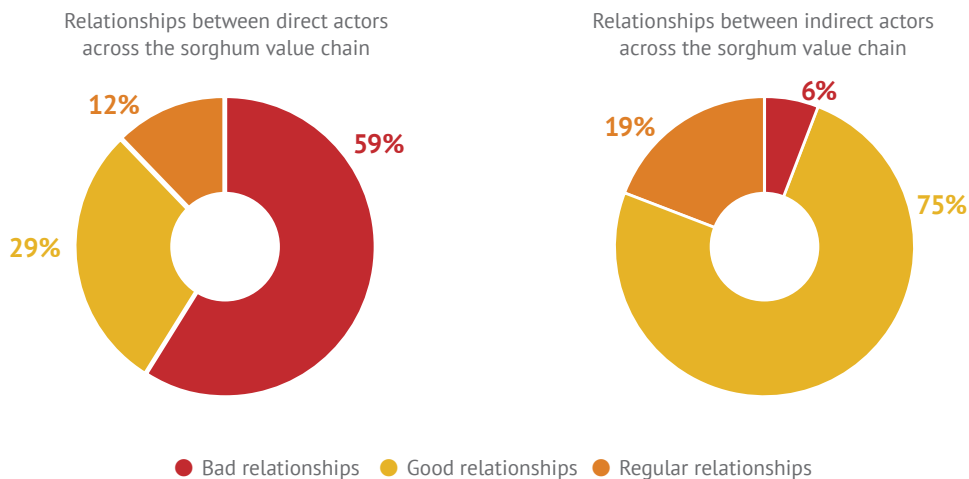
How would you describe the relationships between direct actors? Good, bad, or regular? Why?
 How would you describe the relationships between indirect actors? Good, bad, or regular? Why?

5. Issues around conflict

Are there particular groups (ethnic, age, gender) which are more affected by hazards than others? If so, which ones?
 Who has access to which resources? How does this influence social dynamics and tensions?
 Who makes policies? Are these actors perceived as legitimate by communities? Are policies enforced?
 How do you perceive conflict in this area?
 Can you explain, from your own perspective, what the essence of the last conflict was?
 How was it resolved?
 How are tensions now?
 Do you feel like communities processed grievances or are there still engrained perceptions of “the other”? If so, what are mechanisms / interventions / capacities in place to address this? Are they effective? What is missing?
 Do you see a connection between conflict / stability and commodity xxx?

As example, in case of South Darfur and sorghum value chain, some of the key information that emerged from the questions above was the following:

- Several direct actors were identified by male respondents, no data was obtained from female respondents. Interestingly, wholesalers and traders were perceived to be present and also missing by different respondents. Other missing actors: big traders, companies, financial Services, government, INGOs/ NGOs, Ministry of Agriculture, private sector, traders, transporters, wholesalers.
- Indirect actors within the sorghum value chain were community members and farmers who acted as key input providers. Seeds and agricultural equipment were the most common services provided by input providers. A wide selection of services was perceived to be missing within the sorghum value chain: financial services, agricultural equipment, agricultural extension / training, agricultural inputs, improved seeds, loans, farmer training, funding, marketing techniques.
- The majority of relationships between direct actors were said to be bad in nature. However, no further detail was provided as to why this was the case.
- Overall, good relationships were apparent between indirect actors, however no explanation was provided as to why this was the case. Regular relationships were also identified amongst indirect actors and the reason was perceived to be a lack of coordination amongst actors. No explanation was provided for the presence of bad relationships.



FoSRA Tool B – HISTORICAL TIMELINE OF SHOCKS AND STRESSORS



OBJECTIVE OF TOOL

Identification and prioritization of recurring shocks and stressors in geographic target areas which occurred in the last 10 years looking at frequency and impact on livelihood activities related to one specific commodity (as identified in Tool 2).

Shocks are defined as “external **short-term deviations** from long-term trends, deviations that have substantial negative effects on people’s current state of well-being, level of assets, livelihoods, or safety, or their ability to withstand future shocks” (Zselezky and Yosef, 2014).

In contrast, **stressors** are **long-term pressures** (e.g. degradation of natural resources, urbanization, political instability or diminishing social capital) that undermine the stability of a system (i.e. political, security, economic, social or environmental) and increase vulnerability within it (Bujones et al., 2013).

A resilience approach acknowledges the need to measure shocks and stressors within complex systems and over extended periods of time (Mock et al., 2015). To identify recurring shock and stressors (hazards) in project target areas which occurred in the last 10 years and considering impacts, is the starting point for gaining an understanding on critical food system behavior in face of shocks and stressors over time.

Communities often face a wide variety of shocks and stressors. Each shock and stressor has its own unique impact and thus, one needs to identify which one occurs most frequently and/or has the most severe impact on the livelihoods of people in target area, and specifically people working on this specific commodity, in order to formulate strategies to address the impact.

The nature of protracted crises is that they are long-term and cannot be understood without looking into the past – its impacts are long-term and develop over time. One can learn lessons by exploring the pasts these crises develop over time scales and spaces.

To address impacts of shocks and stressors in a protracted setting, it is useful to regard them in their interaction and sequence to each other, gaining a deeper understanding of the risks faced by the community. Shocks and stressors have to be prioritized in order to further define which shocks and stressors are to be explored sequential in Tools C, D, E.

APPLICATION

Method: Focus group discussion with 6–10 (male, female, youth and/or mixed) local representatives of predominant livelihood groups (i.e. farmers, pastoralists), target communities, elders and youths.

Output: A timeline of shocks and stressors that impacted the specific commodity, going as far back as people can remember, but at a minimum of the last 10 years on sheet A1 or on a flipchart.

- Make a clear difference between ‘**shock**’ and ‘**stressor**’
- List **top 3** according to **frequency** and
- List **top 3** according to **impact** with a historical timeline
- Identify the most worrisome shocks and stressors and the reasons for it
- Describe the 3 most important aspects from most worrisome to least worrisome.

The table below indicates the key questions of the tool and a range of potential answers.

KEY QUESTIONS OF TOOL B	
<p>1. What have been the three main priority shocks and stressors in your community in the last 10 years? (Rank in order)</p> <p>Drought Civil war / tribal clashed Human diseases (Malaria, Ebola, Covid 19) Flood Wildfire Livestock diseases Dry spell Soil erosion Agricultural pests and diseases Crop early damage by pastoralists</p>	<p>3. Which shock or stressor do you worry about the most and why?</p> <p>Drought Migration Flood Shortage in drinking water Low agricultural production Fires</p>
<p>2. What are 3 key impacts of the most impactful shock or stressor on your livelihood?</p> <p>Decrease in crop production Death of livestock Reduced income Environmental impact of wildfires Decrease in livestock production Sale / destocking of livestock Lack of drinking water Migration</p>	<p>4. Why do you worry about this shock and stressors the most?</p> <p>Scarcity of food commodities Covid-19 Human diseases (Malaria, Ebola, TB) Crime Other Food insecurity Conflict Loss of income Discontinued education</p>

In the SIPRA projects, shocks and stressors were categorised according to youth, women and male respondents perceptions. The following emerged in case of the sorghum chain in South Darfur:

A. Priority shocks and stressors perceived by youth

- 1st choice: Crop early damage by pastoralists / animals and flood
- 2nd choice: Agricultural pests and diseases
- 3rd choice: Soil erosion

B. Priority shocks and stressors perceived by women

- 1st choice: Drought, agricultural pests and diseases & crop early damage by pastoralists / animals (same frequency)
- 2nd choice: Agricultural pests and diseases
- 3rd choice: Flood and civil war / tribal clashes

C. Priority shocks and stressors perceived by men

- 1st choice: Crop early damage by pastoralists / animals, civil war / tribal clashes and flood (same frequency)
- 2nd choice: Crop early damage by pastoralists / animals and soil erosion (same frequency)
- 3rd choice: Agricultural pests and diseases

FoSRA Tool C – CAPACITY AND VULNERABILITY ASSESSMENT



OBJECTIVE OF TOOL

Identification of livelihood capacities and vulnerabilities related to a specific commodity at one point in time' in face of a shock and/or stressor.

This exercise identifies **capacities** and **vulnerabilities** of groups, communities, individuals, or livelihoods in face of a **specific shock or stressor**. The basis of the capacities and vulnerabilities analysis (CVA) framework, as described in by Anderson and Woodrow, is a simple matrix for viewing people's vulnerabilities and capacities in four broad, interrelated areas: physical/material, social/organizational, motivational/attitudinal and political/institutional (see Table below using drought as an example of stressor). **Vulnerability** is composed of different interrelating factors along these four dimensions.

On the other hand, groups, communities, individuals or livelihoods typically have **capacities** that can address these **vulnerabilities** in order to reduce risk for disasters.

APPLICATION

Method: Focus group discussion with 6–10 (male, female, youth and/or mixed) local representatives of the specific livelihood groups (i.e., sorghum farmers, beekeepers, pastoralists), target communities, elders and youths.



Output: Filled out table on A2 sheet or on flipchart / most impactful stressors identified in Tool B.

- Indicate in the top left field of the table which most impactful shock/stressor is examined and for which commodity
- Identify and describe vulnerabilities of your community or livelihood group in the face of the indicated shock/stressor
- Identify and describe capacities of your community or livelihood group in the face of the indicated shock/stressor.

CAPACITIES AND VULNERABILITIES (CVA) MATRIX WITH DROUGHT INDICATED AS SHOCK/STRESSOR

Shock or Stressor: Drought	Vulnerabilities	Capacities (what is in place)
<p>Physical/Material What productive resources, skills, and hazards exists? (e.g., environmental degradation, (un)safe infrastructure)</p>	<ul style="list-style-type: none"> • Lack of proper infrastructure such as bridges, dams, water piping • Lack of financial resources 	<ul style="list-style-type: none"> • Simple technology for warning systems • Improved distribution of water gauges
<p>Social/Organizational What are the relations and organization among people? (e.g., level of education, existence of social safety nets, vulnerable livelihoods)</p>	<ul style="list-style-type: none"> • Unwillingness to leave • Bottom-up approach to risk • Socio-economic restraints force them to stay 	<ul style="list-style-type: none"> • Social cohesion, cooperation between scientists and communities, awareness of present risk
<p>Motivational/Attitudinal How does the group/community view its ability to change? (e.g., community's view on its ability to create change)</p>	<ul style="list-style-type: none"> • Religious and cultural restraints prevent affected from acting 	<ul style="list-style-type: none"> • Recognition of the need of community involvement • Increased awareness and willingness to reduce risk
<p>Political/Institutional What are political/institutional capacities or vulnerabilities? (Political is optional, depending on the level of political sensitivities in the context)</p>	<ul style="list-style-type: none"> • Institutional action mainly focused around relief • Dissonance between responsibilities of local government and their actions, responsible for evacuations but delegating that responsibility to civil society 	<ul style="list-style-type: none"> • Civil society organisations and community representatives take on a large role in risk reduction, organizing evacuation, warning and informing communities of risk and onset

FoSRA Tool D – RISK MANAGEMENT STRATEGIES



OBJECTIVE OF TOOL

Identification and understanding of risk management strategies that are present in target communities / livelihood groups, in the face of recurring and impacting shocks/stressors in geographic target areas.

Following the rationale of the Disaster Risk Management Cycle (DRMC), risk management strategies are proposed along four interrelated phases:

1. Preparation
2. Mitigation
3. Response
4. Recovery – from recurring and impacting shocks/stressors.

For project purposes, the ‘response’ phase is replaced with ‘coping’ strategies. This tool is applied in project areas, with the purpose to determine to what extent do communities, individuals, households, livelihood groups:

- prepare for impacts from shock/stressor that relate to your activities with that specific commodity
- mitigate the negative effects from a shock/stressor to their livelihood with that specific (before or during)
- cope with negative effects on their commodity related livelihood while it is happening
- recover your livelihood from a shock / stressor after it has happened.

APPLICATION

Method: Focus group discussion with 6–10 (male, female, youth and/or mixed) local representatives of predominant livelihood groups (i.e., farmers, pastoralists), target communities, elders and youths.

Output: Risk Management Strategies

- Using the **most impactful shocks and stressors as identified in Tool B**, **describe** risk management strategies applied when dealing with this shock/stressor
 - How does your community / livelihood group / region minimize (mitigate) the negative impacts of a disaster? – E.g., building codes and zoning; vulnerability analyses; public education.
 - How does your community / livelihood group / region **prepare** for a disaster before it happens? – E.g., preparedness plans; emergency exercises/training; early-warning systems.
 - How does your community / livelihood group / region **cope** while they are being affected by a disaster? – E.g., ability of people, organizations and systems, using available skills and resources, to manage adverse conditions, risk or disasters.
 - How does your community / livelihood group / region recover from a disaster after it has happened? – E.g., humanitarian aid, temporary housing, savings, grants, medical care.
 - Which of the identified factors from the above questions are done by the community/locality/ livelihood groups themselves (internal) and which are done by outside actors (external)?

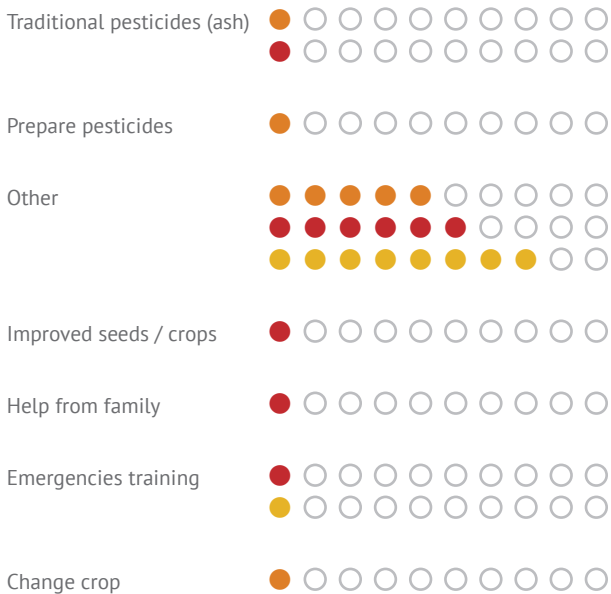
RISK MANAGEMENT STRATEGIES

Specific shock/stressor	What does your community do to minimize the effects of disaster? (mitigation)	What does your community do to prepare for a disaster preparedness?	What does your community do to cope with disaster? (coping)	What does your community do to recover from disaster? (recovery)
Internal perspective (what communities do themselves)	1. 2. 3. 4.	1. 2. 3. 4.	1. 2. 3. 4.	1. 2. 3. 4.
External perspective (support coming from outside, e.g., government or international organisations)	1. 2. 3. 4.	1. 2. 3. 4.	1. 2. 3. 4.	1. 2. 3. 4.

In South Darfur, risk management strategies were analysed per demographic group. Preparation activities for each group illustrated that this information was not applicable, however preparedness plans were the second most common activity amongst youth and female groups. The majority of respondents in men, women and youth groups selected 'other' as their main choice corresponding to mitigation activities. Livelihood diversification was the most common coping strategy for men whilst humanitarian aid and grants were the most common answers for women and youths respectively. The below figures reflect the risk management strategies within the sorghum value chain in South Darfur.

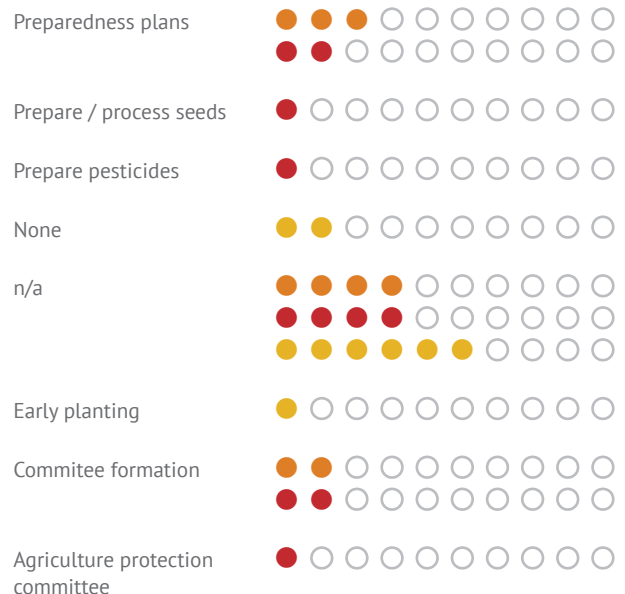
How does your community / livelihood group / village minimize (mitigate) the negative impacts of a disaster?

FREQUENCY (0-10) PER GROUPS



How does your community / livelihood group / village prepare for a disaster before it happens?

FREQUENCY (0-10) PER GROUPS



● Youth group ● Male group ● Female group

FoSRA Tool E – SENSE-MAKING OF SHOCKS AND STRESSORS



OBJECTIVE OF TOOL

Sense-making of shocks and stressors (conflict focus)

- Mapping perceptions on change and their implications for FNS programming through Stories of Change by key community members
- Identify additional or underrepresented perceptions on conflict dynamics

APPLICATION

Method: Key informant interview

Output: Filled out questionnaire

KEY INTERVIEW QUESTIONS

1. Shocks and stressors

What has been the main changes in the nature and number of shocks and stressors over the last 10 years?
What have been the main changes in terms of impacts of shocks and stressors on the lives and livelihoods of people over the last 10 years?
What do you think should or can be do about this?

2. Risk management strategies

What have been the main changes in preparing for the impacts of shocks and stressors over the last 10 years?
What have been the main changes in reducing the impacts (mitigation) of shocks and stressors over the last 10 years?
What have been the main changes in coping with the impacts of shocks and stressors over the last 10 years?
What have been the main changes in terms of recovering from the impacts of shocks and stressors over the last 10 years?

3. Resilience capacities

What have been the main changes in the capacity to withstand (absorptive) the impact of shocks and stressors over the last 10 years?
What have been the main changes in the capacity to adapt (adaptive) to alternative livelihood options in the face of shocks and stressors over the last 10 years?
What have been the main changes in the capacity to transform (transformative) to new livelihood strategies in the face of shocks and stresses over the last 10 years?

4. Commodity programming

What beneficiary/community needs should be considered in design & implementation of commodity xxx?
What beneficiary/community preferences should be considered in design & implementation of commodity xxx?
What beneficiary/community existing capacities should be considered in design & implementation of commodity xxx?

Additional questions related to conflict are being asked to make sense of underlying and possible mismatching perceptions, processing of grievances and the role of the commodity within remaining tensions.

ADDITIONAL QUESTIONS

1. Are there particular groups (ethnic, age, gender) which are more affected by hazards than others? If so, which ones?
 2. Who has access to which resources? How does this influence social dynamics and tensions?
 3. Who makes policies? Are these actors perceived as legitimate by communities? Are policies enforced?
 4. How do you perceive conflict in this area?
 5. Can you explain, from your own perspective, what the essence of the last conflict was?
 6. How was it resolved?
 7. How are tensions now?
 8. Do you feel like communities processed grievances or are there still engrained perceptions of “the other”? If so, what are mechanisms / interventions / capacities in place to address this? Are they effective? What is missing?
 9. Do you see a connection between conflict / stability and commodity xxx?
-

1. Loss of income could be due to
 - b. low/ decreased crop production which could result from crop damage by pastoralists and hence farmer herder conflict. However, as a result of loss of income, farmers have started to seek help from family members as a coping mechanism against the shock/stressor.
 - c. displacement of populations which also fuels food insecurity/ scarcity as the farmers are unable to access their cropland. As a coping mechanism affected people seek help from family members.
 - d. loss of livelihood. This may result from shrinking land due to the growth of pastoralism.
 - e. lack of finance could affect farmers ability to acquire pesticides, which poses a problem because due to the changing climate more frequent pests & disease plagues occur, damaging crops and resulting in lower yields. This in turn creates a loss of income and livelihoods.

2. Leverage points that may enhance resilience are
 - a. that following soil erosion, farmers may adopt new agricultural practices as a coping mechanism which leads to the capacity of having the will to learn and create change which can for example lead to the outcome of improved seeds and crops.
 - b. result of weak governance and a lack of state power, a lack of finance occurs, which leads to the coping mechanism of seeking out grants is performed. That could result in increased capacity of collaboration, people working together within the grant to achieve better outcomes.

3. The result of adverse climatic effects such as drought and flood, farmer herder conflict as they compete over the same resources, which in turn could fuel the occurrence of crime and insecurities. Due to the vulnerabilities of a lack of law enforcement and a lack of protection/ security, the outcome of property damage and food insecurity may arise. A coping mechanism for this is seeking humanitarian assistance.



FoSRA Tool 4 – PRESSURE AND RELEASE MODEL



OBJECTIVE OF TOOL

Identify progression of vulnerability.

While the casual linkage diagram made sense of food system processes and identified existing capacities and risk management strategies, including their impact on food system dynamics, this tool focuses on understanding the underlying levels of vulnerability of the communities within that food system. It describes the progression of vulnerability, looking at the shocks and stressors (right side) and the levels of vulnerability (left side: unsafe conditions caused by dynamic pressures caused by root causes) – combined leading to the blue circle highlighting the disaster, which is in this case famine and violent conflict. This makes sense of how a hazard leads to a disaster, and where communities lack resilience capacities to cope with them.

Shocks and stressors themselves change the set of resources available to households (e.g., through the destruction of crops or land by floods) and alter the patterns of recoverability of different groups of people. Shocks and stressors sometimes intensify some people's vulnerability, and this insight improves upon those interpretations that see disasters simply as the result of natural events detached from social systems.

Economic and political circumstances, and the specific situations affecting particular livelihood opportunities, often force or encourage people to engage in practices that worsen the impact of shocks and stressors. Such desperate measures, taken in order to survive in the short term, include rapid deforestation, farming inappropriately and speculatively on steep slopes which had hitherto been avoided, overgrazing, living on flood plains (Abramovitz 2001).

APPLICATION

Method: Workshop with relevant stakeholders.

Output: Pressure and Release Model and list of key challenges.
Below is an example of a pressure and release model for South Darfur in the SIPRA project.

The key challenges can be summaries as follows:

- Lack of political stability and protection
- Lack of functioning natural resource management policies
 - Land access rights
 - Anti-soil erosion measures
 - Lack of access to finance
- Inadequate cropping systems.

South Darfur

Unsafe conditions

- Tensions between farmers and pastoralist / land users
- Lack of appropriate protection
- Low land availability and poor land quality (soil erosion)
- Displacement
- Low income
- Bad value chain actor relationships, limited information
- Lack of finance / insurance systems
- Lack of climate proof livelihoods

**FAMINE;
VIOLENT CONFLICT**

Shocks and stressors

- Conflict (civil, political)
- Conflict (communal, farmer-pastoralist)
- Crime and insecurity
- Drought / dry spell
- Flood
- Degraded land / soil erosion
- Livestock disease
- Agricultural pests
- Wildfire

Dynamic pressure

- Lack of access to finance
- Weak governance systems (e.g. perceived legitimacy in making and enforcing land policies)
- Inadequate cropping systems
- Insufficient and not timely anti-erosion measurements

Root causes

- Climate change
- Long-term tensions and geopolitical perceptions
- Lack of stability / protection
- Lack of information



Food System Resilience Assessment (FoSRA) Phase 3



Phase three consists of two steps, the ‘validity dialogue’ and ‘strategies, policies and learning’ which take the assessment one step further, now moving from the assessment towards action planning. The phase has three core objectives:

- to validate the assessments’ outcomes
- to engage a wider group of actors and co-create a shared understanding and vision
- to ensure that the outcomes of the assessment shape activities within the project and beyond its scope.

IMPLEMENTATION

Workshop with relevant stakeholders, such as government, local universities, private sector, UN departments (I) NGOs and CSOs.

Disseminating the results of the analysis and co-create action plan to the pathways. This process can take different shapes, depending on the context and actor group. Approaches such as World Café are useful tools to facilitate the dialogue sessions. For more tools see [MSP guide](#).

Since it is not feasible to address all identified pathways to transform a food system as one programme, it is important to get the buy-in of other actors active in the region. It is of specific importance to have local governing actors as part of the process in order to ensure alignment with national food system pathways, as well as political commitment. At the core of the dialogue is creating a network of trust relations and shaping a shared vision for the future of the region.

OUTPUT

- An established platform of actors for food system resilience
- Action plan to address resilience pathways
- Concrete recommendations for the initiating SIPRA project.

