# The A+FS Network
# Food Systems Learning Journey

## September 2022 – June 2023

# Final report

**August 2023**

## Executive Summary

The growing recognition that food security is underpinned by food systems, and the now-common use of the "food systems" term, inspired the SDC Food Systems Learning Journey (FSLJ). It was designed to allow the Agriculture & Food Systems network (A+FS) members to jointly build their global understanding of how food systems work in various parts of the world, and how they relate to adjacent thematic areas. The FSLJ provided (i) the means and framework to assess a food system; (ii) the tools to act upon / identify the activities and leverages to improve food systems, both through cooperation programmes and policy dialogue; and (iii) strategic insights that may inform SDC's future programmatic orientation in the realm of food system transformation.

Implemented between September 2022 and June 2023, the FSLJ encompassed a range of virtual and in-person activities: two introductory webinars to introduce the basic food systems concepts; six 2-day regional workshops; four reporting webinars and a two-day summative webinar to discuss highlights, results, and potential implications with the entire network. The FSLJ was designed to use each of the SDC Thematic Areas as an 'entry point' for each of the Regional Workshops, the most relevant for each given region being: West Africa: Climate Change; MENA: Water; East/Southern Africa: Nutrition; Central Asia: Water; South/South-East Asia: DRR; Latin America: Market Access.

While main outcomes/learnings from each Workshop were region-specific, but common points include: (1) Food systems should not only be thought of in spatial terms, but also temporal terms. (2) System analysis entails defining appropriate systems boundaries and a structured appraisal of the local context and communities before a project concept is finalised. (3) The discussion of systems boundaries can be linked to an analysis of risks and should be chosen to be wide enough to consider all critical risks. (4) Transforming food system outcomes can be achieved through more than just project activities but also stakeholder dialogues and networks. (5) Some marketing / economic goals can have negative impacts on, or can be at the detriment of, nutrition and environmental outcomes. (6) Understanding the food system helps to undertake efficient cost-benefit analyses. (7) The food system approach is useful for identifying gaps in a specific project or country strategy, which in turn can be used for developing new projects or seeking new complementary partnerships. (8) The inclusion of thematic linkages is also central to food systems thinking as these relate to the interaction between either 'drivers' or 'outcomes' or both.

Reflecting on the FSLJ overall identified more generic learnings: (1) Enhancing natural resource management and water governance are critical issues across all regions but vary in urgency and challenge. (2) There is an increasing focus on cash crops which can have a positive impact on livelihoods if developed equitably, but this can both compromise the environmental health and local nutritious food production. (3) There is opportunity for value chain and livelihood support, but this needs to be aimed at developing healthier food products. (4) The availability of fast food is on the rise in the global South so there is a need to understand how to affect consumption behaviour without undermining culture. (5) Public health resources are being increasingly challenged by the increase in diet-related disease, while under-nutrition remains a problem for many. (6) A sectorial approach is insufficient, and a food systems approach is needed that is participatory, links communities, and which accommodate the crosscutting topics of gender and youth.

Recommendations for SDC Projects: (1) Adopt a food systems approach when planning and implementing activities. (2) Undertake a coherent set series of exercises to analyse the food system and design optimal project plans (3) Include foresight and scenario analysis to identify best development pathways to 'future proof' the project and reassess plans during implementation.

Recommendations for SDC as a development agency: (1) Develop a conceptual framework for addressing development challenges related to food systems. (2) Develop a guidance document on how to encompass and implement food system thinking in project design and implementation. (3) Include food systems training as a core component in project commissioning. (4) Promote gender and youth aspects more proactively.

Recommendations for SDC Cooperation Offices: (1) Map existing projects to the conceptual framework to identify portfolio strengths and gaps. (2) Encourage cross-thematic thinking based on interdisciplinary workshops. (3) Develop region-level 'Communities of Practice' to share tools and experience of designing and implementing food system projects. (4) Create and support a network of regional 'Food Systems Champions' to offer training and act as conveners for the Community of Practice. (5) Run a series of Food System Implementation Clinics with food system specialists to help people wanting to use the concepts in different settings/processes and running into problems. (6) Identify Food System Champions within SDC to maintain activity internally by organising meetings and acting as the conduit between SDC, Regional Champions and food system specialists as needed. (7) Consider gender and youth aspects in all analyses.

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# 1. Rationale for the Food System Learning Journey

The topic of food security, embedded within the notion of food systems, has rapidly risen on political, societal, science and development agendas in recent years. The UN Food Systems Summit of September 2021 brought the need to better manage food systems into even sharper focus, while climate, the Covid-19 pandemic, recent conflicts, and soaring costs (the four 'Cs') are now in the forefront of the food security agenda, especially in many parts of the developing world. Recent events in Ukraine impacting world food and energy prices have further accentuated the overall food security challenge.

Enhancing food system management to improve access to healthy diets for those who do not have enough is therefore of even greater importance and urgency. But it is not the only food system challenge. Addressing the growing global epidemic of diet-related diseases due to malnutrition, including overconsumption, is also increasingly important and being globally recognised. Not only will this epidemic seriously undermine national health systems particularly in poorer countries, but the overconsumption of food also comes with a major environmental cost. Agricultural production and other food system activities are already known to be a major factor in exceeding a number of planetary boundaries. Environmental degradation will hit the poorest, and especially those living in marginal lands, hardest and soonest. Nonetheless, the varied food system activities provide livelihoods for billions of people, including not only the farmers, fishers and livestock keepers, but also the very many others along the value and supply chains.

The growing recognition that food security is underpinned by food systems, and the now-common use of the "food systems" term, inspired the Agriculture & Food Security network to change its emphasis from food security in general to the food system in particular. This led to the logical name change to Agriculture & Food System network, while maintaining the same acronym. Against this background, the SDC Food Systems Learning Journey (FSLJ) was designed to allow the Agriculture & Food Systems network (A+FS) members to jointly build their global understanding of how food systems work in various parts of the world, and how they relate to adjacent thematic areas. At a summative level, it also explored regional differences and commonalities to enhance SDC's institutional understanding of food systems to inform programme and policy design in the operational and multilateral spheres.

More specifically, the FSLJ was designed to help SDC project staff and other A+FS members to:

i)   Understand
   • what a food system is in terms of its holistic complexity, and how a food system approach is different from the current programming approaches being applied;
   • how food systems work in various parts of the world and to what degree they can be profiled regionally;
   • how regional projects relate to SDC's thematic areas within a food systems approach;
   • which stakeholders are involved and what roles/responsibilities they have.

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ii) Provide
   - the means and framework to assess a food system;
   - the tools to act upon / identify the activities and leverages to improve food systems, both through cooperation programmes and policy dialogue;
   - strategic insights that may inform SDC's future programmatic orientation in the realm of food system transformation.

Implemented between September 2022 and June 2023, the FSLJ encompassed a range of virtual and in-person activities (Figure 1) through:

1) **Two introductory webinars** (virtual, global) to introduce the basic food systems concepts.

2) **Six regional workshops** each including a 2-day, in-person event: West Africa (Bamako, December 2022, in French), MENA (Cairo, December 2022, in English), Southern and East Africa (Harare, January 2023, in English), Central Asia (Tashkent, March 2023, in English), South and South-East Asia (Bangkok, March 2023, in English) and Latin America (Santa Cruz, April 2023, in Spanish).

3) **Four reporting webinars** (virtual, global), building up on the series of workshops, to bring back into the entire network the results of the regional webinars.

4) **Two-days summative webinars** (virtual, global, in English + French or Spanish translation as appropriate) to discuss highlights, results, and potential implications with the entire network.
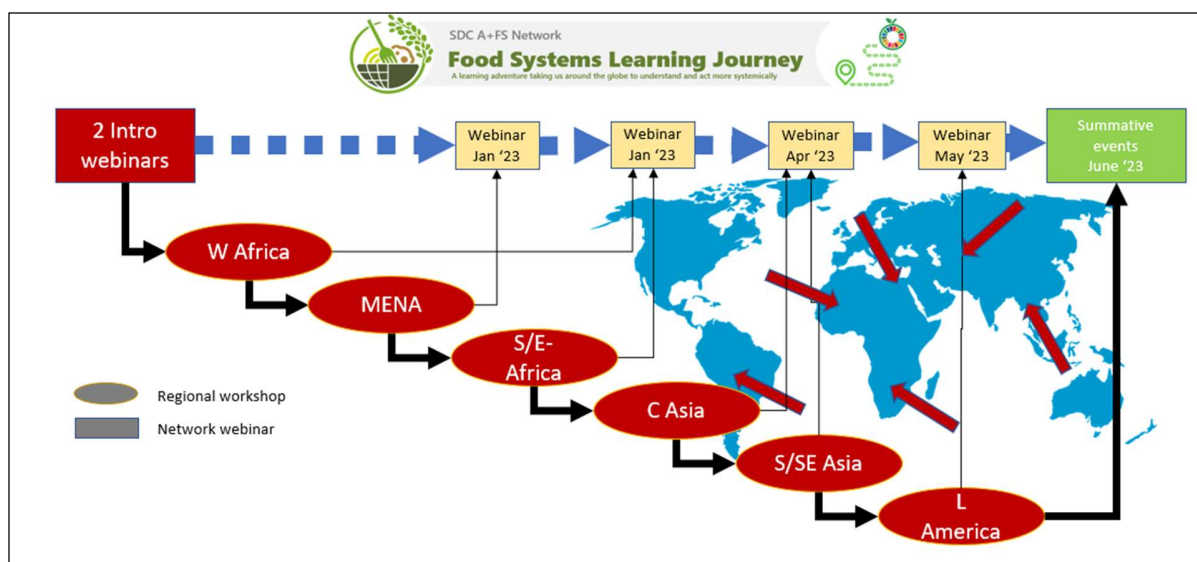


*Figure 1: The FSLJ events*

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## 2. Food Systems Concepts and Tools

### 2.1. Balancing food system outcomes: health, environment, livelihoods

Nearly every country in the world faces serious health problems linked to the consumption of either too little nutrient-rich food or too much energy-dense food. Adding the numbers in each of the three categories of malnutrition (i.e. (i) not enough calorie, (ii) not enough nutrients and (iii) too much calorie) indicates that about half the global population is affected. The multiple burdens of malnutrition are the new normal and poor diets constitute the number-one driver of the global burden of disease[1]. Further, current methods of producing, processing, packaging, transporting, retailing, and consuming food are significantly impacting the environment, and the food system is responsible for about one third of anthropogenic greenhouse gas emissions. However, the food sector is the main source of employment worldwide[2], and is especially important in the agro-economies prevalent in most developing countries.

These health, social, economic and environment aspects are *outcomes* derived from the way people across the food system undertake their *activities* along the 'value chain', ranging from primary production to consuming food and managing waste. While some aspects of these outcomes might be desirable, other aspects are not, and hence can undermine equity and other social issues, and degrade the natural resource base upon which our food security depends. Improving food security and other food system outcomes in a fair and balanced way is especially important for poorer and more vulnerable people.

The food system challenge is therefore to achieve food security for all in a growing, wealthier, urbanising world population in a fair and just manner while minimising further environmental degradation and maintaining vibrant food system livelihoods and economies. This is complicated by the background of 'megatrends' of natural resource depletion, reduced agrobiodiversity, stagnating rural economies, changing climate and a host of social, geopolitical, economic and cultural changes. The 'food system approach' helps to understand and analyse the reasons ('drivers') of the challenge, and to identify the most promising options for enhancing, and better balancing, food system outcomes related to nutrition and health, fair and just livelihoods and economies, and the environment.

### 2.2. The value of Food System framing

A 'food systems' framing encourages systems thinking, which involves understanding the relationships and dynamics between different components of the system. It recognizes that changes in one part of the system can have ripple effects on other components. This approach

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[1] Ingram, J. (2020). Nutrition security is more than food security. *Nature Food* **1**, 2. doi.org/10.1038/s43016-019-0002-4

[2] Lang, T, and D Barling. "Food security and food sustainability: reformulating the debate." The Geographical Journal 178, no. 4 (2012): 313-326.

helps identify unintended consequences and potential leverage points for intervention to promote more sustainable, resilient, and equitable food systems.

Systems thinking and systems approaches have a long history in multiple disciplines including organisational management, ecology, and engineering. Systems thinking is useful because it helps in building the bridges across traditional disciplinary and sectoral boundaries and accounts for multiple perspectives on situations and problems when developing interventions. It provides frameworks and tools for considering longer temporal scales, systemic impacts, the outcomes of actions, and the learning for all necessary stakeholders. Because of these features, systems thinking and systems approaches are useful when addressing 'wicked' and 'super wicked' problems[3] where direct causal links and ultimate solutions cannot be reached.

Applying systems thinking to food system issues provides a more comprehensive and systemic approach to the multiple embedded and interlinked systems within it. It also helps to identify and work with the multiple stakeholders across the food system, and to plan for longer-term and system-wide benefit when it comes to developing solutions that manage trade-offs across environmental, food security, and socio-economic outcomes for increased sustainability.
Systems thinking thereby allows for the consideration of the situation in its totality, its interaction with the wider environment, and its constituent parts and their interactions. all based on incorporating different perspectives.


## 2.3. The Food System concept

### *2.3.1. Working with a Food System model*

A food systems model (the 'conceptual frame'), like the one depicted here in Figure 2, serves as a foundation for comprehending and investigating the essential relationships, trends, and trade-offs that form the basis of any desired transformation in how the system operates. By using indicators for the three outcomes, it becomes possible to evaluate whether food systems are aligning with or deviating from broader societal and environmental objectives. The drivers aid in understanding the forces impacting food systems and shaping their evolution, with these drivers themselves being influenced by the outcomes.

The food system consists of a range of activities performed by various actors, including primary production, processing, retailing, and consumption (see Figure 2). It operates within a network of interacting value chains and relies on supporting services like infrastructure, transport, finance, information, and technology. The behaviour of actors is influenced by institutional factors such as policies, regulations, consumer preferences, and social norms, which create the rules governing the food system. Additionally, the food system is influenced by external drivers, including population, wealth, technology, markets, environment, and politics. The outcomes of

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[3] A 'wicked' problem is a problem that is difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognise. A 'super wicked' problem is where time is running out, there is no central authority, those seeking to solve the problem are also causing it, and policies discount the future irrationally.

the food system impact economic and social well-being, food security, and environmental sustainability. It is important to recognize that actors within the food system have different interests, influence, power, and perspectives.
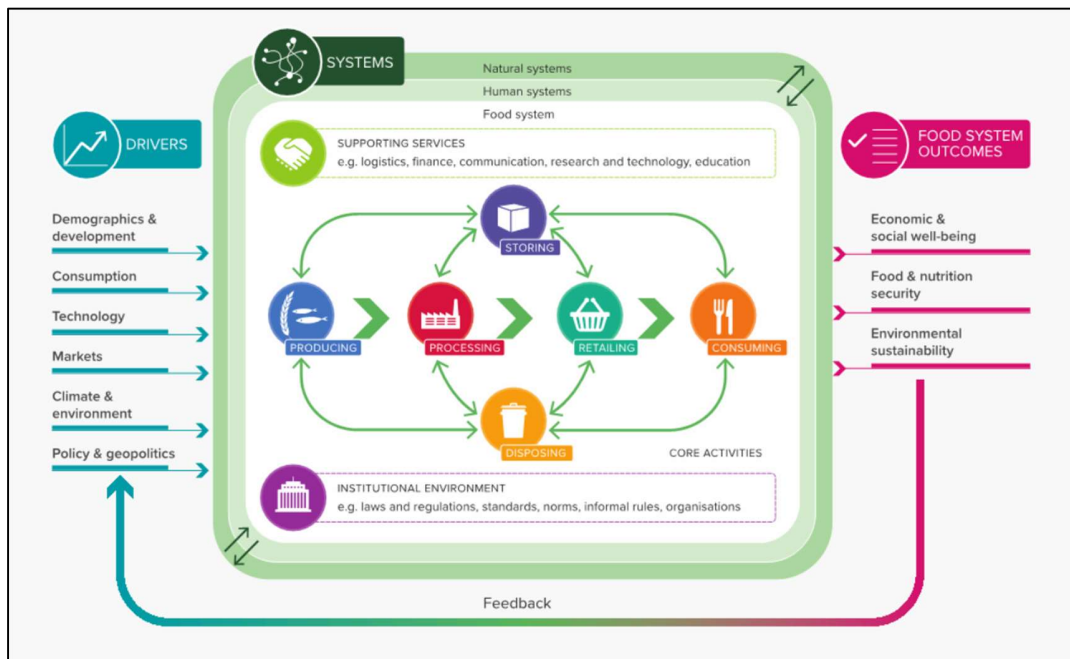


*Figure 2: Food systems model depicting food system activities, drivers, outcomes, and embedded systems (from Foresight4Food 2019)*

In the context of classic systems thinking, a system comprises interconnected components that convert inputs into outputs or outcomes. The system is bounded, setting it apart from the surrounding environment. Feedback loops within the internal components (sub-systems) and between the system and its broader environment play a fundamental role in shaping the behaviour and evolution of the system. Food systems encompass the intricate interactions between human and natural systems, rendering them complex adaptive systems. Consequently, food systems exhibit significant complexity, uncertainty, and adaptability, often evolving in unpredictable ways that cannot be entirely anticipated or controlled through human efforts.

### 2.3.2. *Frames, Boundaries, Drivers, Activities and Actors, Outcomes and Feedbacks*

**Frames**: In systems thinking, frames are the lenses through which we perceive and make sense of complex issues. They shape our understanding by defining the boundaries, relationships, and perspectives within a system. Choosing the right frame when dealing with complex problems is crucial as it influences the analysis, decisions, and potential solutions we consider for addressing systemic challenges. For example, do we see the situation through an agricultural or a nutrition lens, or more of a food system lens?

**Boundaries**: Boundaries in systems thinking refer to the limits or scope set around a system or its components. They define what is included or excluded from the analysis or intervention. Establishing clear boundaries helps in understanding system dynamics, interactions, and dependencies, enabling effective decision-making and problem-solving within the defined context. Boundaries can be physical (e.g. catchment areas), jurisdictional (county or nation-state), temporal (near-term or long-term), or conceptual (e.g., a productionist view).

**Drivers**: Drivers refer to the forces that influence and shape the behaviour and outcomes of the system. They can be categorised as either endogenous or exogenous. Endogenous drivers arise from within the food system itself and include factors such as production practices, supply chain dynamics, market mechanisms, and consumer behaviours. Exogenous drivers originate from external factors outside the immediate control of the food system, such as climate change, economic conditions, political decisions, technological advancements, and societal trends. Understanding and quantifying these is essential for analysing and responding to the challenges and opportunities within food systems, and for guiding transformative interventions towards more sustainable and resilient outcomes.

**Activities and Actors**: Activities in a food system encompass the various processes and actions involved in producing, processing, distributing, retailing, and consuming food ('doing' words). All these activities collectively shape the functioning, and hence the outcomes of, the food system. Activities are carried out by sets of 'actors', i.e., people.

**Outcomes**: The activities of a food system result in a set of outcomes in food and nutrition security (e.g., childhood stunting or diet-related disease), environment (e.g., biodiversity, or GHG emissions), society (e.g., equity or political stability), and economy (e.g., livelihoods, or profit). These outcomes can be desirable and otherwise and must be managed to achieve a better balance across them all.

**Feedbacks**: Feedback loops are fundamental to systems. They represent the cyclical flow of information, actions, and outcomes within a system. Feedback loops can have significant impacts on system dynamics, contributing to stability or change. Positive feedback loops amplify or reinforce a particular behaviour or trend, potentially leading to exponential growth or instability. Negative feedback loops dampen deviations and maintain stability and equilibrium within the system.

## 2.4. Transforming Food System outcomes

Concern about the way food systems function has promoted recognition of the need to 'transform the food system'. This is because current food system outcomes are suboptimal regarding health, environmental, equity, and animal welfare issues, for example.

While the urgency of food system transformation is now irrefutable, and several priority policy actions to transition food systems towards healthier diets from sustainable food systems have

been identified, the phase "food system transformation" does not clarify what specific elements of the 'system' actually need to be transformed as it is very context specific. As a result, clarity is often lacking as to the specific actions that should be taken, by whom, how and when. Food system 'thinking' can help address this by answering the question of what exactly needs to be transformed.

Although certain sectors of society may have a particular interest in specific activities (and which are normally related to livelihood activities, e.g., farmers in farming, caterers in catering), from a project-level viewpoint, the object should be to transform (i.e., improve) overall food system outcomes, rather than enhancing the efficiency or equitability of individual activities. The *objective* of food system transformation can therefore be defined as aiming to transform food system outcomes from sub-optimal (state A) to more optimal (state B). Examples include transforming poor diet outcomes to better diet outcomes, poor food safety to better food safety, poor working conditions to fairer conditions, unsustainable to more sustainable environmental outcomes, or poor animal welfare to better animal welfare. The specific goal(s) any project has will depend on its objectives and context, and hence trade-offs between conflicting goals will need to be addressed. However, food system outcomes will not spontaneously transform but only as the result of a food system actor changing behaviour, i.e., adapting an activity from method A to method B. This could mean substantially adapting an activity if it leads directly to a given outcome for which substantial transformation is sought, or by adapting a combination of activities where there is an interaction among them. This means (1) (re)considering the project's overall context, (2) (re)assessing the project's planning and delivery so as to propose interventions and signals that will (3) encourage the food system actors to adapt their activities to (4) deliver the desired balance across all food system outcomes (Figure 3). Scenario activities can be used to either explore plausible future contexts the project needs to address (exploratory) or identify pathways to achieve given desired outcomes (normative).
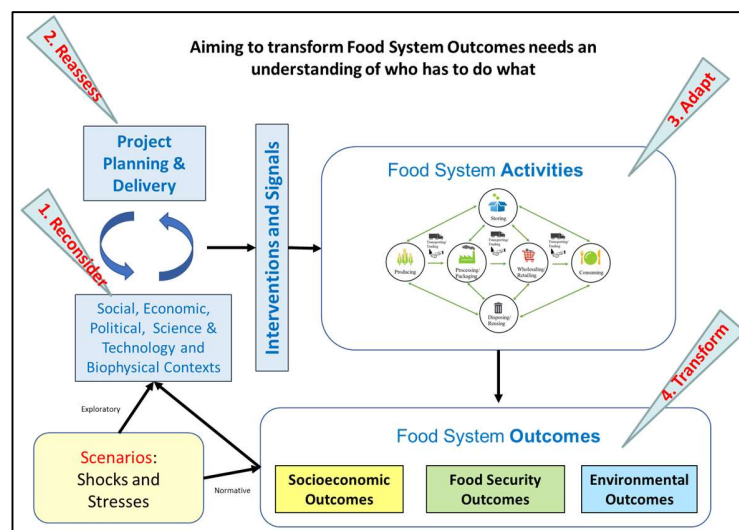


*Figure 3: Actions needed to transform food system outcomes (adapted from Ingram and Thornton, 2022)*

In order to transform the food system outcomes, it is important to develop an appropriate participatory process that brings all the relevant stakeholders together. Figure 4 describes different stages in the process that need to be considered:

**Step 1**: Stakeholders work to understand the current status of food system outcomes and activities. For this, mapping the existing system with its key activities, outcomes and drivers is the first step that can also be helpful in creating a common understanding among stakeholders of the shape of the current system. Then, using as much available data as possible to create a set of metrics, the status of key food system outcomes that stakeholders are interested in can be assessed. This activity provides the basis for then thinking about which food system outcomes are currently suboptimal and what new mix of outcomes stakeholders would like to strive for (i.e., foresight work to either build a vision on new food system outcomes or exploring plausible futures within which food systems need to evolve).

**Step 2:** Depending on the purpose of the foresight work, various foresight techniques can be used to 'plan for the future'. Figure 4 describes the development of participatory scenarios, which can help to understand key uncertainties the food system might be facing together with various drivers of change. This analysis allows for the construction of a set of plausible futures/scenarios that can describe various possibilities of how the current status of the food system could change and what this might mean for different actors in the system and for achieving a new mix of food system outcomes. The scenarios can then also be analysed specifically for the differing sets of trade-offs between food system outcomes that the different future configurations of the food system might entail. As any change to the system will be beneficial for some but might bring negative consequences for others, this analysis is particularly important as it allows us to then think about how to deal with/compensate actors losing out in the food system transformation process.



*Figure 4: A process for transforming food system outcomes.*

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**Step 3:** This step involves re-examining the current food system map and identifying appropriate innovation pathways for food system activities. Ideally, these need to include coo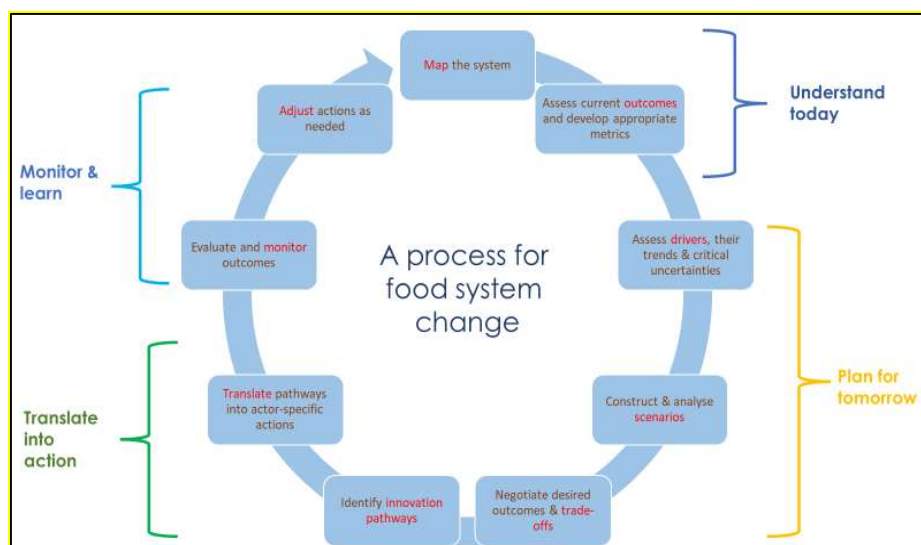rdinated, systemic innovations specific actions for each set of food system activities. The change in activities can be achieved by changing the signals these actors perceive (i.e., policies, drivers, see Figure 3).

**Step 4**: In the final step of the process a monitoring system needs to be developed that helps to assess if the change in food system activities leads to the envisioned change in food system outcomes. For this the set of outcome metrics developed in Step 1 can be used and adjusted. Monitoring the success of changed practices is crucial for making adjustments in time to not jeopardise earlier successes, or to evaluate the set of transformational activities.

## 2.5. The need to enhance food system resilience and links to DRR

As noted by the Disaster Risk Reduction (DRR) community, food systems are subjected to a range of shocks and stresses that can singly or collectively undermine a project's objectives (see fig 3). This means projects need to build in approaches to enhance resilience, and this means considering three fundamental concepts, the three 'Rs': *Robustness*, based on the capacity of the food system actors to adapt their activities to *resist* disruptions to desired food system outcomes; *Recovery*, based on the ability of food system actors to adapt their activities so as to be able to *return to pre-existing* food system outcomes following disruption; and *Reorientation*, based on the ability of food system actors to adapt their activities based on *accepting alternative* food system outcomes as a strategy before or after disruption. The 3Rs are not mutually exclusive or hierarchical. Each is dynamic, complex and subject to unpredictable uncertainties, requiring innovations in institutions, governance mechanisms and other systems of accountability, as well as changes in culture, individual behaviour and technology. An appropriate balance is needed across the 3Rs, rather than advocating for singular solutions. While resilience strategies based on robustness and recovery may be more appropriate in the short term but not sustainable, reorientation is arguably a longer-term approach, suggesting practitioners need to situate shorter-term '*status quo*' efforts within a longer-term, reorientated vision.

All three concepts need to be rooted in a clear understanding of food system shocks, stresses, and risks, which links to many concepts employed by the DRR community. All three involve food system actors adapting their food system activities (i.e., doing things differently, Figure 5).
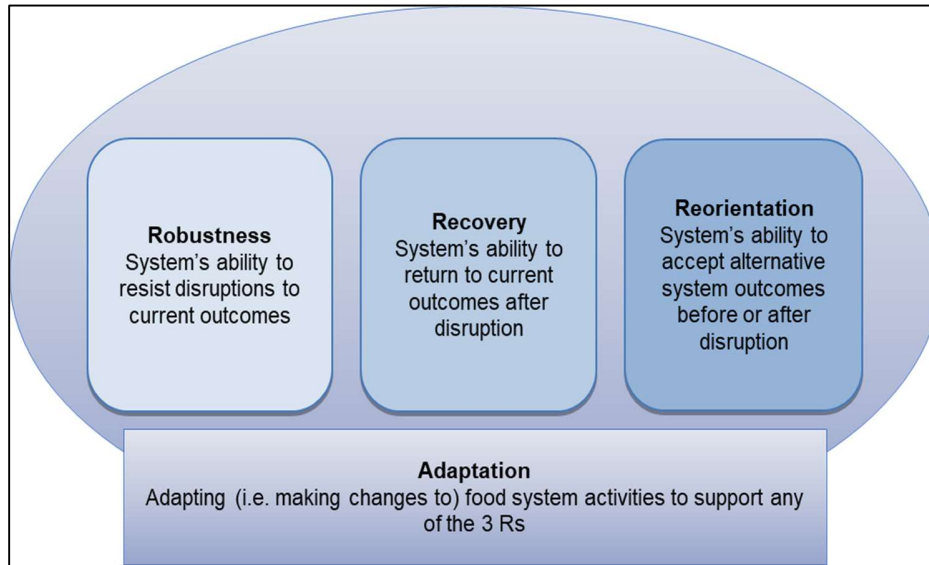
*Figure 5: The three "Rs" and the link to adapting food system activities.*

The approach taken will depend on the answers to a set of framing questions: *Resilience of what, to what*, *from whose perspective, over what time frame, and for what purpose?* In relation to stakeholder interests, the fifth question emphasises the normative nature of resilient food systems and makes explicit that different stakeholders have different objectives, motives and worldviews. This is particularly important for considering the preferred mix of food system outcomes coupled with acceptable trade-offs between outcomes that will align with reorientation[4].

These five questions need to be answered collaboratively and iteratively among food system stakeholders to arrive at a shared understanding and agreed framing. However, links between the 3R concepts and practice are not sufficiently well developed and strategies are needed to improve these links. Key components to consider in light of these resilience concepts include agency (of actors in responding to shocks), buffering (resources to fall back on in times of stress), connectivity (and communication between actors and market segments), and diversity (across scales and places in the interacting systems). Building resilience in practice has hence been associated with the capacity and agency of food system actors to develop connections across multiple levels on spatial, temporal and jurisdictional scales, and respond to disruptions. It is also necessary to acknowledge the wider context with which specific food systems operate, e.g., historical and cultural determinants, the integration of farming with other economic domains (e.g., tourism), local geographies and natural resources, as well as relevant policies and regulations at local, national, and international levels.

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[4] Ingram, J., Bellotti, W., Brklacich, M., Achterbosch, T., Balázs, B., Banse, M., Fielke, S., Gordon, L., Hasnain, S., Herman, L. and Kanter, R.,. Further concepts and approaches for enhancing food system resilience. 2023. *Nature Food*, **4**, 440-441.

Although elements of robustness and recovery will continue to be important components of increasing food system resilience, aiming for transformed food system outcomes in the reorientation strategy might ultimately prove to be the most important resilience-enhancing mechanism. This is because this may exhibit the highest potential for structural change toward a just and lasting reduction in vulnerability to shocks and stresses. Systemic challenges may demand systemic innovations; as such, there is a need to shift from a focus on mere adjustments such as harm reduction and mitigation to real structural change to achieve transformed outcomes.

## 3. FSLJ learnings and insights from regional perspectives

The FSLJ Workshops were designed to allow participants - both as individuals and as project groups - to learn and practise a structured approach to strengthening project planning and implementation from a food systems perspective. Building on the introductions to Food Systems concepts and 'Systems Thinking' delivered in the introductory global webinars and then tailored for each region, learning was based on a set of six processes and tools for navigating food system complexity: (i) how to identify focal issues; (ii) capturing stakeholder views (using Rich Pictures); (iii) drafting succinct goal statements (Transformation Statement); (iv) identifying 'winners' and possible 'losers' of the project (BATWOVE); (v) identifying key stakeholders and roles (Stakeholder Mapping); and (vi) planning policy and practice pathways to achieving goal (Backcasting). Each activity built on the previous, a technique called 'scaffolding'. These tools are further detailed in Annex C, while Annex D lists a range of other tools and resources that can be useful in considering food system issues in all regions.

### 3.1. Situation analysis and key learnings from each Regional Workshop

The FSLJ was designed to use each of the SDC Thematic Areas as an 'entry point' for each of the Regional Workshops, the most relevant for each given region being: West Africa: Climate Change; MENA: Water; East/Southern Africa: Nutrition; Central Asia: Water; South/South-East Asia: DRR; Latin America: Market Access. Main outcomes/learnings from each workshop are summarised below.

### 3.1.1. *West Africa, with a focus on Climate Change*
Bamako 5-6 December 2022, involving around 25 participants from Mali, Niger, Burkina Faso, Benin, and Tchad.

*Production-oriented food systems challenged by climate change impacts, and unbalanced and non-resilient health and economic outcomes. Food insecurity on the rise due to conflict.*

Climate change, mainly represented as drought and heat is clearly of major concern across this arid region. The participants noted the relevance of the food system diagram to identify other drivers and to consider their role more greatly in affecting the system in the future. Many were surprised by the existing similarities in difficulties and concerns between Sahelian countries. The Food System Framework showed them more clearly how an increase in agricultural production does not necessarily mean greater food security and also highlighted more clearly how the food system is constantly changing and in movement, which revealed that change was indeed possible but greater attention to the feedback loops was necessary. The need for stability in food security was highlighted, as was the role of cultural myths as a barrier to food security (or driver of the system) with the example of egg eating associated with thefts or goat milk and sickness. The role of imams in deconstructing such myths was highlighted.

Most projects addressed either production and/or consumption but the storing, transforming, processing activities were less included, and few were identified as engaging with the environmental outcomes. Waste was notably highlighted as a missing aspect in many projects and growing concern, as was issues around transport and energy. However, issues related to policy was most included within projects, as many participants included lobbying and informing policy-making activities.

Climate change impacts on food production is therefore a critical concern, exacerbated by an overexploitation of resources and a lack of localized capacity to respond to the changing environment and context. Poor biodiversity conservation is also a critical issue, exacerbating desertification. These drivers strain regional food production practices. Undernourishment in children in combination with increasing urban obesity need to be addressed by more connected policy making and addressing cultural barriers and a lack of awareness around dietary diversification and healthier eating habits. Food security and food safety are big concerns driven partly by market forces influencing inequitable production and access.

*Key recommendations:*

✓ Take a food system approach to also include the storing, transforming, processing activities to identify and address negative environmental outcomes.
✓ Enhance awareness around dietary diversification and healthier eating habits  to address with increasing urban obesity.
✓ Address cultural myths where they present a barrier to food security.

### 3.1.2. *Middle East and North Africa (MENA), with a focus on Water*
Cairo 12-14 December 2022, involving around 10 participants from Jordan and Egypt.

*Water-stress and climate change driven food systems influenced by poor governance and skills challenges for water and resource management.*

MENA is the most water scarce region in the world, and most of its water originates from, or is shared with, other countries. The region is highly vulnerable to climate change and will become drier, and drought frequency will increase by 20%-60%. Desertification and sandstorms will increase while vegetative cover and wildlife will diminish. A mean annual reduction in precipitation by 15% would require a 18% rise in irrigation water requirement to sustain the current extent of agriculture.

Challenges of water scarcity, climate change (particularly high temperatures) shape the food systems in the region. There is low regional consumption of fresh fruit and vegetables (with most of it being exported) and diets are generally unbalanced with a trend towards fast food consumption. Food loss and waste and energy shortages need management through education and targeted technical skills. Specific research and development and technological innovations

are needed to address water management and conservation. Better analyses of supply chains are needed with policies for attracting youth to the food sector.

Water availability and governance are therefore the major issues across MENA, especially in relation to climate change, and is of greater concern than even political instability or unemployment. The interactions between water scarcity, food insecurity and climate change are exacerbated by the conflicts in the region which result in more refugees and displaced persons, competition over services and price hikes. Water governance systems need enhanced policy coherence and harmonisation, but this is challenged by a weak regulatory framework, and weak institutions. High ratios of water are unaccounted for which is particularly important as agriculture constitutes a major (or additional) source of income for a sizable share of the population in the region (many of whom are small or subsistence farmers living in rural areas). Further, siloed institutions are an impediment to thinking about water resources and food systems being part of the same system and being treated as such. As a result, there are few circumspect action lines, and the aid community succumbs to the same problems in their sectoral approaches to the regions problems.

Many potential interventions were noted but mainly technical related to primary production. Examples include Improve water harvesting methods to increase groundwater storage and utilise surface water; Use renewable energy systems in irrigation water management; Reduce overuse of irrigation water by determining crops water requirements and irrigation scheduling; Increase the use of treated wastewater for restricted irrigation; Introduce drought-tolerant, low-water, high-yielding plant varieties with a high economic return. Other examples were related to institutional issues, for example expand the establishment of agricultural associations, and involve them in irrigation water management; Conduct climate change impact studies on agricultural production and formulate mitigation and adaptation plans; Discourage planting crops with high water requirements through the use of market pressures by imposing higher water tariffs on irrigated agriculture where highly water-intensive crops are being grown; and Introduce appropriate water tariffs and incentives in order to promote water efficiency in irrigation and higher economic returns for irrigated agricultural products.

Levers for change include increasing institutional awareness and using water resource management as an entry point to enhanced food system governance. These require more political discourse and a change of mindsets by all stakeholders, but these are challenged by the process of government and insufficient mechanisms for policy implementation. Meanwhile, international partners should initiate programmes which link comprehensive water resource management to food systems as 70-80% of the regions water resources are used for agriculture. By so doing, long-term policy choices on agricultural promotion can be better identified, especially important given the expected effects of climate change.

*Key recommendations:*

✓ Increase institutional awareness to use water resource management as an entry point to enhanced food system governance.

✓ Take a food system approach to analyse how supply chains can be better supported including policies for attracting youth to the food sector.
✓ Reduce food loss and waste through education and targeted technical skills to save water and other inputs to food production.

### 3.1.3. East and Southern Africa, with a focus on Nutrition
Harare, 16-18 January 2023, around 27 participants from Kenya, South Sudan, Tanzania, Uganda, Ethiopia, South Africa, Mozambique, Zambia and Zimbabwe.

*Diverse production contexts impacted by commodity market volatility with shared concerns on climate change and malnourishment.*

The region comprises 19 diverse countries, with different climates, languages, people, cultures; different diet, crops and agricultural systems; different histories, influences and experiences; and different governance styles. There are however many similarities between food system challenges in the countries across the region. Examples include the definition of a healthy diet from a national perspective, data availability (e.g., consumption patterns), national complexities of behaviour-change and addressing systemic barriers and the roles (positive and negative) of fast food and convenience food in the food system.

Using the food systems approach to improve nutrition in programming needs to be done at the design stage, and planned across all levels (household, community, region etc) and project portfolios. The approach is useful at national level but harder at regional level. The UNDP "portfolio sense-making tool"[5] could be useful for this as countries are being bombarded with many different approaches. The challenge is that different projects tend to have different targets and actors making it difficult to use a systems approach, so it is important to increase interactions and synergies between projects, however this needs to be incentivized (as an indicator and budget line in proposal calls) otherwise it is not likely to be done.

The food system framework helps organisations (i) realise the importance of integration of nutrition (awareness/ consciousness) across the food system framework especially in activities (production, processing, retailing, consuming, disposing); (ii) appreciate the need to enhance intra/cross-project collaboration and synergies towards better nutrition outcomes and advocate for budgets to support such collaboration and influencing; and (iii) promote nutrition-enhancing value chains (such as groundnuts, beans, horticulture produce).

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[5] The UNDP Portfolio Sensemaking and Acceleration (Sensemaking) workshop is a facilitated and structured conversation that unfolds over the course of two-three days and is designed to create space for teams to learn together and create meaning from their current work. Ultimately, the process provides a dynamic and active way of shaping (and managing) a team's portfolio of work and/or a set of policy interventions so it is continually coherent with the kinds of changes happening outside of the organization. https://sdgintegration.undp.org/portfolio-sensemaking.

The importance of unpacking complex contributors to malnutrition and using food systems framing to inform policy dialogues on nutrition was evident. To this end there is a need to set clear boundaries and framing of better focus on nutritional outcomes and thus help in getting entry points right.

The lack of environmental governance has knock-on effects on food security and health programming for the region. The diversity of countries within the region was recognized with a concern about the impact of commodity market volatility when yields and prices are dependent on seasons and climate variability. Diets are progressing towards increasing fast-food and processed item consumption, and while small and heritage grains had initially fallen out of favour, the middle and higher socio-economic classes are increasingly favouring them. SMEs in the value chain between production and consumption require greater support and development. Smallholder farmers need to be more resilient and will benefit from training on seed and fertilizer production. It was recommended that the region's food system practices on the whole could be oriented more towards a circular system perspective and with a goal towards managing environmental, health, and economic outcomes in a better way.

*Key recommendations:*

- ✓ Take a food systems approach to improve nutrition in programming at the design stage and planned across all levels.
- ✓ Unpack the complex contributors to malnutrition and using food systems framing to inform policy dialogues on nutrition.
- ✓ Support SMEs in the value chain between production and consumption.

### 3.1.4. Central Asia, with a focus on Water
Tashkent 15-17 March 2023, around 25 participants from Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan.

*Food systems characterised by water governance concerns exacerbated by climate change and demographic pressures.*

The main food system issue in the region concerns water. The region is characterised as 'up-stream' and 'down-stream' countries based on topography of four major river basins. Climate change and variability is a key challenge and will increasingly affect people's livelihoods, food systems and environment. There is already a notable reduction in river run-off in summer due to temperature increase and increase in run-off in winter due to precipitation increase, and between 14% and 30% of the Tian Shan and Pamir glaciers have melted since about 1950. Experts estimate that the flow of the Amu Darya might be reduced by 7% to 15% by 2050, and the Syr Darya by 5%, and between 1970 and 2000, the discharge of the Amu Darya was reduced ten-fold. The loss of glaciers and permafrost, higher temperatures, increased evaporation, and reduced surface runoff, is exacerbating the already existing water deficit. One particular issue is salt-laden dust from the dried-up Aryl Sea carried through winds.

While precipitation in total quantities is not definitively expected to decrease, more would fall as rain, and rather than being stored as snow and ice to be released in spring and early summer. This means that run-off is expected to take place increasingly throughout the winter and outside the cropping season when irrigation water is most needed. So, while one of the main challenges across Central Asia is water governance, the situation will be exacerbated by climate change. Despite this, innovative climate risks mitigation solutions are rarely scaled and digital agriculture lags in the region.

Other regional food system challenges include growing populations; soil degradation (especially salinisation and waterlogging); outdated irrigation and drainage infrastructure leading to water losses and poor water use efficiencies; poor water governance and weak transboundary cooperation; poor diets; and biodiversity loss. All these issues are further complicated by poor data availability and data quality. Producers, especially smallholder farmers often lack access to adequate climate risks information management tools and services, and they are rarely scaled due to the lack of a conducive environment and lack of private sector participation.

While climate change and population growth are increasing the pressure on water resources in the region, related issues of loss of agricultural biodiversity and soil degradation has an impact on production regimes. The governance structure requires better incentives for water management and promotion of climate change related technologies and more nature-based solutions for environmental issues. The malnutrition and nutrient deficiency burden is high, with a propensity towards diets high in fat, sugar and salt. Access to innovative technologies is unequal and policies in the food system require greater intersectoral cooperation and equity. Some of these concerns may be ameliorated because of greater geopolitical cooperation in the region recently if legislation is updated accordingly coupled with coherent transboundary cooperation.

On the 'plus side', the current geopolitical climate in Central Asia is becoming more supportive of regional cooperation on issues of transboundary water resources management with IWRM being the main approach to undertake reform in regional countries and the WEF nexus concept driving reform at national levels. This will require updating the legislation frameworks and strengthening institutions; the organisation of River Basin Management planning at Regional and National levels, and the introduction of water-energy saving technologies.

*Key recommendations:*

✓ Enhance governance structures to deliver better incentives for water management and promotion of climate change related technologies.
✓ Take a food system approach to develop food system policies to support innovative technologies and greater intersectoral cooperation and equity.
✓ Further support regional cooperation on transboundary water resources management and on nature-based solutions to benefit environmental.

### 3.1.5. South and South-East Asia, with a focus on DRR

Bangkok 20-22 March 2023, around 30 people from Bangladesh, Cambodia, Laos PDR, Myanmar, the Philippines, Sri Lanka and Thailand.

*Food systems influenced by climate change, overuse of environmental resources, and malnourishment of the population.*

There is a clear link between the food system, climate change and DRR. Food system stresses relate more to gradual changes in e.g., climate, demography, while shocks to the food system relate more to sudden event, e.g., weather extremes, and other natural disasters or hazards. However, hazards with no human exposure are not considered a disaster. 'Risk' to food systems is defined as a potential negative impact on the system, and DRR considers "risk" as a function of hazard, vulnerability, exposure, and coping capabilities.

Opportunities lie in increasing public-private partnerships in climate and DRR projects. However, the challenges are land-use change from forestry to agricultural land and residential areas, and the lack of a land tenure database. It was clear that food systems, resilience and DRR concepts can complement each other, as building resilience into food systems will assist in the DRR planning and delivery.

The social and ethical concepts of equity, inclusiveness and land access have a strong bearing on how food systems are governed and on the resilience of their actors, i.e., risk and impact consideration go far beyond the immediate concepts of DRR.

The unpredictability of precipitation resulting from climate change (including longer periods of dryness not necessarily construed as drought, but nevertheless a stress) is coupled with resource degradation through deforestation, overfishing and expansion of agricultural land. Concerns on overuse of chemicals in food production and contamination lead to issues of food safety. Dietary diversity is decreasing with a high dependence on imported infant milks and increasing consumption of processed foods. Local producers struggle in competing against lower cost Chinese products and the lack of government support for local products. A lack of market accessibility, high risk and lack of insurance products, and an accessible and affordable logistics sector means that small scale farmers are not as supported as large-scale contract farmers.

Further investment is needed for responding to high costs of energy, good quality products, a workforce with diverse skill sets, and appropriate standards and labels. While individual institutions have clear strength in their respective agendas, they are siloed nature prevents systems thinking and joint action and hinders good foresight management.

*Key recommendations:*

✓ Use a food systems approach to work across siloed government departments to increase public-private partnerships in climate and DRR projects.

- ✓ Increase government support for local products to support local producers and improve accessible and affordable logistics to help small scale farmers reach markets.
- ✓ Enhance dietary diversity to reduce dependence on imported infant milks and increasing consumption of processed foods.

### 3.1.6. Latin America, with a focus on Market Systems Development

Santa Cruz, Bolivia, 19 to 21 April 2023; around 27 people from Bolivia, Colombia, Peru and Honduras

*Export-oriented food system with high consumption of processed foods and a turn away from traditional crops and diets.*

Many food systems in Latin America tend to move towards a trend that is directed towards a more simplistic way of feeding the population with more homogenised dietary patterns based on more mono-cropping and large-scale farming systems, neglecting diversity both at the level of production and consumption. It was emphasised that demographically the region is now more urban than rural and that this implies that many public policies must be changed, as well as the approach to projects. Loss of agrobiodiversity and the increasing expansion of agricultural land with monoculture are major issues. These relate with the concerns in health and nutrition sphere with concerns on the triple burden of malnutrition and diets high in processed foods and animal proteins.

The food system approach was recognised as a more far-reaching view than for example the Inclusive Market Approach but is more complex. It nevertheless allowed participants to have a more holistic look at the issues within a food system. Some food systems tools were familiar but used in a new way, and the food systems methodology offered a new view of the breadth of actors in a food system as well as their relationships.

Recommendations focused on a return to, or integration of, traditional and local foods into dietary patterns and improving access to resources for smaller family farms. The export focus of the government in combination with a general lack of investment in the food sector suggested that a more coordinated policy approach that builds on the local traditions and supports smaller farms might lead to a better balance across the food system outcomes. More emphasis should be placed on consumers, and how these urban consumers have more health problems due to poor diets and consumption habits, and the role urban horticulture can have in helping to satisfy demand.

*Key recommendations:*

- ✓ Take a food systems approach to address health and nutrition concerns on the triple burden of malnutrition and diets high in processed foods and animal proteins.
- ✓ Enhance the integration of traditional and local foods into dietary patterns by improving access to resources for smaller family farms.

✓ Minimise loss of agrobiodiversity and reduce the expansion of agricultural land under monoculture.

## 3.2.    Common learnings stemming from the Regional Workshops

1. Food systems should not only be thought of in spatial terms, but also temporal terms. Project programmes and portfolios should not only seek to address the context as it is today, but how this might look 20-25 years from now (see section 2.4). It is therefore important to discuss the contextual assumptions across time, and the impact of the project on that context must also be considered (see figure 3). For instance, a project dealing with agriculture in Central Asia should anticipate changing flow-off precipitation patterns over time, while the specific interventions also need to be considered in terms of exacerbating climate change.

2. System analysis entails defining appropriate systems boundaries and a structured appraisal of the local context and communities before a project concept is finalised. Identifying the system boundaries of partners is important in that these are often set for them based on their jurisdiction, available expertise and defined responsibilities.

3. The discussion of systems boundaries can be linked to an analysis of risks and should be chosen to be wide enough to consider all critical risks, and measures must be taken to cover them, either by the project itself, or by other projects and partners. The systems analysis can assist a CEDRIG exercise[6].

4. Transforming food system outcomes can be achieved through more than just project activities as stakeholder dialogues and networks can also be a powerful way to catalyse change.

5. Some marketing / economic goals can have negative impacts on, or can be at the detriment of, nutrition and environmental outcomes, and a 'trade-off' analysis needs to be done as part of project design and planning; providing maximum benefits to all stakeholders is not possible, so expectations must be managed.

6. Understanding the food system helps to undertake efficient cost-benefit analyses and identify the most pivotal partnerships and actors, for which stakeholder mapping is important.

7. The food system approach is useful for identifying gaps in a specific project or country strategy – which in turn can be used for developing new projects or seeking new complementary partnerships. NGOs tend to gravitate towards production-themed projects, but the food system approach shows how projects can be made more holistic especially

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[6] 'Climate, Environment and Disaster Risk Reduction Integration Guidance' (CEDRIG), is a practical and user friendly tool developed by SDC to systematically integrate climate, environment and DRR into development cooperation and humanitarian aid in order to enhance the overall resilience of systems and communities. https://www.cedrig.org/

when developing the theory of change, vision and logframes. Mapping project activities onto the food system conceptual framework can help identify such gaps in approaches or portfolios (figure 6).

8. The inclusion of thematic linkages is also central to food systems thinking as these relate to the interaction between either 'drivers' or 'outcomes' or both.

Annex A lists sets of 'Contestable Statements' and 'Regional Propositions' as drafted at some of the workshops to help focus thinking across regional issues and inspire discussion, while Annex B lists a set of insights from the Bangkok workshop but which apply generically to all regions.

## 4. Thematic interlinkages and how they interact with Food System outcomes

This section synthesises the discussion from the final summative webinar on 14 June 2023. The breakout sessions covered the major food system outcomes related to environmental, health and nutrition, and economic issues for each region, interventions necessary for addressing these, and the operational potential for the SDC thematic areas[7].

### 4.1. Environmental issues and enhancing outcomes by region

Key themes emerging from the regional environmental discussions revolved around the impacts of climate change, resource degradation, and the fragmented or ineffective governance mechanisms. Climate change is a major environmental concern because of the relationship with crop production through degrading soils and compromised water resources. While the priority areas of concern differ by region, there is broad recognition of the impact of environmental changes on food system activities, most particularly on crop production. Regions differ in the emphasis on things like the necessity of localised and context specific capacities to respond to the challenges in the West African context, the lack of effective environmental governance systems in South and South-East Asia, and the impact of desert locusts in Southern and Eastern Africa. Larger, cross-cutting issues of conflict as related to climate crises were also discussed.

In terms of enhancing environmental outcomes, the suggested interventions spanned land use management, appropriate technologies for adaptation and mitigation, and translating methods to suit local contexts. The importance of integrating local and indigenous knowledge was acknowledged in multiple regions and methods of including women and youth better in food systems was explored.

Webinar output is tabled in Annex E.1.

### 4.2. Health and nutrition issues and enhancing outcomes by region

The triple burden of malnutrition is a significant cross-cutting issue with urban obesity, high consumption of foods with HFSS and undernourishment in children. The impact of trade is noted particularly in terms of dependence on infant formula. Decreasing dietary diversity is a concern with low consumption of fresh fruit and vegetables in MENA region and the use of street foods given time constraints. The connection between humanitarian crises, health, and the need for longer-term resilience was also brought up in the South and Eastern Africa contexts. The impact of chemical overuse and food additives and chemicals is big issue that connects with the safety concerns posed by agricultural practices discussed above in environmental issues and outcomes.

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[7] The thematic clusters were developed after the webinar, and the wording used in the sticky notes has been summarised and synthesised in Annexes D.1, D.2 and D.3 for clarity of reporting.

Discussions on enhancing the health and nutrition outcomes considered the cultural barriers for healthier consumption, valuing and upscaling the use of traditional foods, reducing consumption of processed foods, and improving coordination between sectors. Overarching topics such as food safety, food security, and youth were mentioned in terms of appropriately including them in policy making.

Webinar output is tabled in Annex E.2.


## 4.3. Economic issues and outcomes by region

Economic issues included a wider variety of categories as compared to environmental and health outcomes but demonstrated the interrelationships between issues and outcomes. Themes like conflict and refugee crises were discussed again in light of economic and food insecurities emerging from climate insecurities and the various impacts of refugee crises on the countries of origin and destination (in the West African and MENA regions, for example). The issues emerging from market forces, volatility, and incentive structures were common across the board, connected often with financial services and functioning of value chains. The lack of support for youth and the gendered nature of economic challenges was acknowledged and governance mechanisms for response were discussed.

Improved access to technology, management of water and resources, and financial services for small farmers were explored for enhancing outcomes. In combination with education across the value chain and food sector and promoting local foods, there was a sense of focusing interventions on local and national contexts that considered barriers like land tenure.

Webinar output is tabled in Annex E.3.


## 4.4. Summary points

As the Webinar covered all regions it was possible to 'distil' some generic yet cross-cutting, summary points:

1. Enhancing natural resource management and water governance are critical issues across all regions but vary in urgency and challenge. The water-energy-food nexus still needs to be considered, and where nature-based solutions can play an important role.

   The food system is underpinned by the natural resources on which primary production depends. These include soil, water and agrobiodiversity (and fisheries for

non-terrestrial -based food supply), and hence effective management of these resources is paramount for current and future demand.

2. There is an increasing focus on cash crops which can have a positive impact on livelihoods if developed equitably. But this can both compromise the environmental health and local nutritious food production while also increasing the ability to buy fast food.

   Many government policies highlight cash crops, and especially if these are major export commodities thereby generating foreign exchange. Such policies not only undermine the production of traditional food crops for local consumption, but the cash returns can increase consumption of more convenient, yet less healthy, fast food which fuels the obesity epidemic and concomitant diet-related diseases.

3. There is opportunity for value chain and livelihood support, but this needs to be aimed at developing healthier food products.

   Value addition can be enhanced by undertaking primary processing on-farm. This can be especially so for high-nutrient density horticultural products to derive foods that have longer shelf life and/or are better suited for transport (e.g., by drying), thereby reaching urban markets.

4. The availability of fast food is on the rise in the global South so there is a need to understand how to affect consumption behaviour without undermining culture; culture and social values can be a barrier regarding consumption.

   Fast food becomes more affordable as incomes rise (e.g., from switching to cash crops, or value-addition activities on farm), is convenient, and increasingly 'trendy'. But with this comes the risk of overconsumption leading to obesity and an increase in diet-related diseases for which many national health systems are ill-equipped to deal with.

5. Public health resources are being increasingly challenged by the increase in diet-related disease, while under-nutrition remains a problem for many, especially children.

   Food security programmes need to recognise the change in narrative around the triple burden of malnutrition. 'Malnutrition' means 'bad' nutrition, not just undernutrition. Diets should provide sufficient calorie, not too little but also not too much for energy need.

6. A sectorial approach is insufficient, and a food systems approach is needed that is participatory, links communities, and which accommodate the crosscutting topics of gender and youth.

   The food system approach and tools promoted and developed during the FSLJ provides the means to deliver better food system outcomes for health, environment and economy.

## 5. Gender dimensions

The gender dimension is an integral part of any project of SDC. It was of particular interest in the Latin American workshop where participants discussed with the SDC gender specialist how to better incorporate the gender dimension into the food system approach. The need to integrate the gender and inequalities dimension across all parts of a food system was highlighted. This includes questions on the division of labour across genders, access and control of resources, participation and decision-making power, different needs and preferences across genders, and the attention to potential risks of gender-based violence in a food system. It was seen that the way in which these gender-related questions are addressed by a society will act as drivers of food system activities in the associated food system and will thus also influence the status of the relevant food system outcomes. It also has to be acknowledged, that gender has a strong socio-economic dimension that can vary between and even within countries.

## 6. Youth dimensions

Youth plays a critical role within food systems. Challenges and possible interventions to sustainably integrate youth in food systems as well as the according operationalization include imbalance of resources, lack of access to training, food/health literacy, and work-migration as well as a lack of young people working in food systems. Interventions to address these challenges include ensuring equitable access to education/training to improve health, food and financial literacy; improving attractiveness and long-term perspectives of working in agriculture and other food system activities; supporting community-based approaches and youth-led organizations; investing in capacity-building; and improving youth-representation in policy discussions. Messaging and communication-outputs (social media etc.) is an underlying need. Operationalising these interventions needs them to be targeted from a food system perspective, and to follow a multi-sectorial and multi-dimensional approach from the analysis to the intervention.

## 7.  Recommendations

### 7.1. Preamble

The FSLJ was based on the notion of an interdisciplinary food systems approach. While disciplinary approaches are appropriate for addressing specific issues (e.g., feeding programme objectives) they can lead to unforeseen consequences by not taking into account other issues and viewpoints. But disciplinary approaches alone will be insufficient to navigate the complexity of the food system and hence the interdisciplinary approaches advocated, based on a food system conceptual framework.

Embedding the planning and implementation of disciplinary projects within food systems thinking therefore (i) enables a broader set of issues to be factored in, (ii) identifies potential barriers and adds value to individual disciplines, and (iii) enhances the main outcome. For instance, projects focusing on agricultural issues are making significant advances in increasing primary production for smallholder farmers. However, embedding project planning and implementation within food systems thinking would enhance their overall impact by positioning them in a more general policy and practice framework, e.g., market access for enhancing livelihoods. But 'systems thinking' can be time- and resource-intensive.

### 7.2. Recommendations for SDC Projects

1.  Adopt a food systems approach when planning and implementing activities.

2.  Undertake a set series of exercises which will:

    i.   analyse the current state of the given food context using the food system approach.
    ii.  succinctly state the time-bound objectives (i.e., the desired future state of the food system outcomes) and methods to achieve them.
    iii. capture varied stakeholder views on the issue.
    iv.  identify both intended 'beneficiaries' and unintended 'victims' (i.e., the 'unintended consequences).
    v.   identify stakeholders who can affect, or are affected by, the project.
    vi.  undertake a 'backcasting' exercise to map the necessary policy and practice interventions that will most likely lead to successful project results.
    vii. continually reassess if the project plan is still 'fit for evolving conditions'.

3.  Include foresight and scenario analysis to identify best development pathways to 'future proof' the project and reassess plans during implementation.

**7.3. Recommendations for SDC as a development agency**

1. Develop a conceptual framework for addressing development challenges related to food systems.

2. Develop a guidance document on how to encompass and implement food system thinking in project design and implementation.

3. Include food systems training as a core component in project commissioning.

4. Promote gender and youth aspects more proactively.


**7.4.    Recommendations for SDC Cooperation Offices**

1. Map existing projects to the conceptual framework to identify portfolio strengths and gaps.

2. Encourage cross-Thematic thinking based on interdisciplinary workshops.

3. Develop region-level 'Communities of Practice' to share tools and experience of designing and implementing food system projects.

4. Create and support a network of regional 'Food Systems Champions' to offer training and act as conveners for the Community of Practice.

5. Run a series of Food System Implementation Clinics with food system specialists to help people wanting to use the concepts in different settings/processes and running into problems.

6. Identify Food System Champions within SDC to maintain activity internally by organising meetings and acting as the conduit between SDC, Regional Champions and food system specialists as needed.

7. Consider gender and youth aspects in all analyses

## Annex A. Contestable Statements and Regional 'Propositions'

Sets of 'Contestable Statements' were drafted at some of the workshops to help focus thinking across regional issues and inspire discussion. Some statements saw wide agreement while others were keenly disputed. Examples from the Tashkent Workshop include:

❖ Agricultural production will have to be adapted to be more drought resistant (Agreed)
❖ All of Central Asia must go vegan to survive (Not agreed)
❖ Uzbek food is good but unhealthy (Partially agreed)
❖ There is no demand for organic diets, but that has to change (Not agreed)
❖ It would be more ecological for Central Asian countries to import certain foods rather than produce it themselves (Partially agreed)
❖ We must join up the concepts of sustainable food systems and sustainable water resource management (Agreed)

The Bangkok Workshop further refined this idea into regional 'Propositions':

1. While reasonably well adapted to climate variability, agricultural production in South Asia must undergo further context-specific adaptation to remain resilient to prospective changes in climate patterns.

2. The answer to protecting agricultural land from rising sea levels is to seek nature-based solutions to sea water incursion, e.g. through restoring mangrove belts and marshlands, and by employing agroecological approaches in affected areas.

3. Feeding a growing population will entail a transition to less meat-based diets, addressing loss and waste and ensuring that food is more equitably distributed. This must be achieved without increasing the arable land surface.

4. Action must be based on knowledge from independent and trusted sources, that is propagated through training for food systems actors (consumers, farmers, distributors) which is inclusive and underpinned by dialogue and independent facilitation.

5. Balanced and nutritious diets in which meat is consumed in moderation must be advocated for across South-East Asia (and for that matter across the rest of the world).

6. The South Asian diet should be based on a wide range of rice sorts and a variety of climate-appropriate cereals which are cultivated through crop rotation and other appropriate agriculture techniques.

7. There is a demand for environmentally and socially sensitively produced food, and change must be incentivised by government programmes for local production coupled with conservation. Affordability and accessibility must be anchored as guiding considerations.

8. South and South-East Asia may have to intensify agriculture and apply more mechanised farming methods; but it must be balanced with conservation to protect biodiversity as a primary, non-negotiable concern.

9. We must include the concepts of sustainable water management systems in the regional concept of food systems, and one must be considered an integrated part of the other.

## Annex B. Generic insights from the Bangkok workshop

Insights from the Bangkok workshop apply generically to all regions:

1. "Work from the middle level", i.e., by shaping transformation through the ground-level projects we are working on, but also by feeding into academic discussions and influencing policy dialogue.

2. Share the information on food systems soft systems methods with government partners.

3. Seek to understand the system we are working as best we can in order to perform efficient cost-benefit analyses and identify the most pivotal partnerships and actors. It is also important to link different levels between policy and operations more consciously through a systems analysis.

4. A proper analysis of the system would also entail a system-referenced appraisal of communities before a project concept is finalised. Ideally, representatives of communities should be included in rich pictures and BATWOVE exercises.

5. Defining appropriate systems boundaries is important and not always easy. Also identifying the system boundaries of partners is important in that these are often set for them [e.g., RID] on the basis of their jurisdiction, available expertise and defined responsibilities. This means that the systems thinking must be carried out with entities beyond these partners.

6. The discussion of systems boundaries can be linked to an analysis of risks and project impacts. The system boundary should be chosen wide enough to consider all critical risks, and measures must be taken to cover them, either by the project itself, or by other projects and partners. The systems analysis can assist a CEDRIG exercise.

## Annex C. Step-wise Food System Tools used in the FSLJ

### Step 1. Undertake a current food system analysis.

Use a multistakeholder approach to reach a common understanding as to the challenges to be addressed and map the degree to which a given project does (or is planned to) incorporate the food system approach.
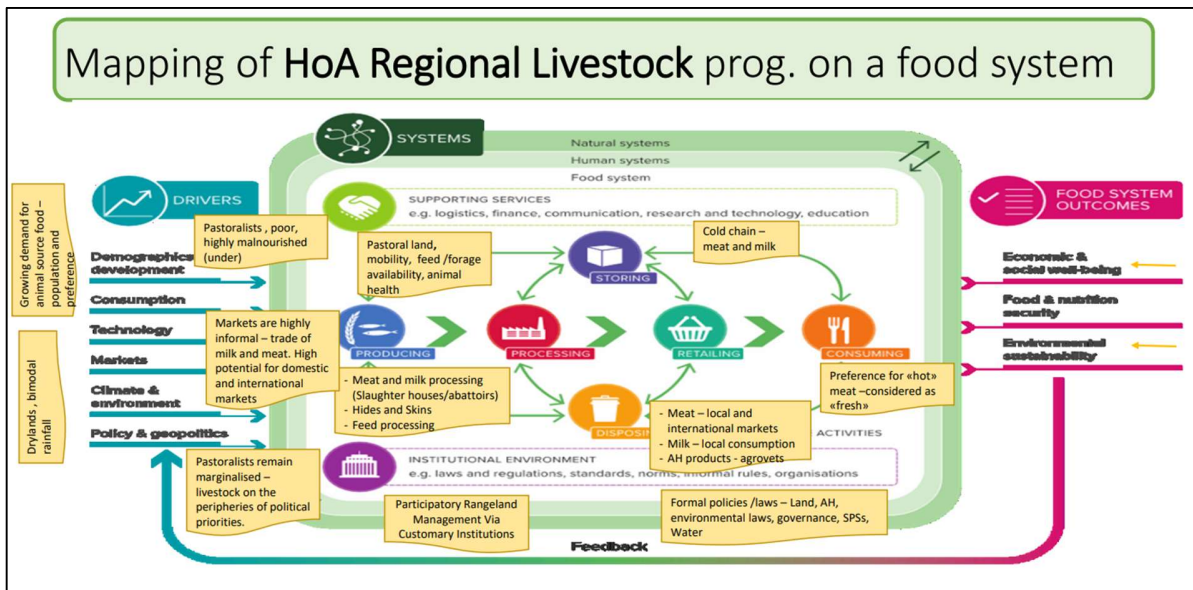


*Example from the Harare Workshop*

### Step 2. Jointly develop a Rich Picture.

This allows team members to draw issues that they think relevant to the project. It consists of pictures, text, symbols and icons, which are all used to illustrate the situation graphically. It is called a 'rich picture' because it illustrates the richness and complexity of a situation.
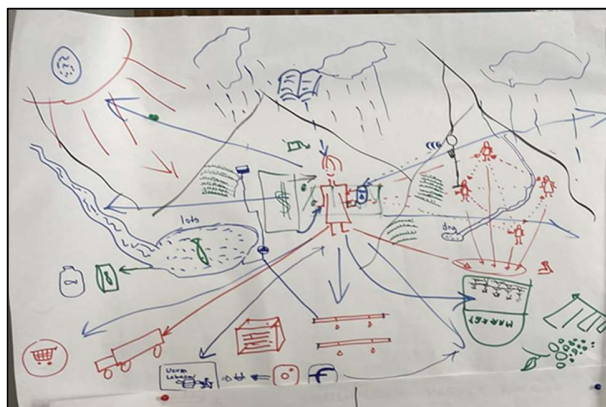


*Example from Bangkok Workshop (Increase incomes of vulnerable farmers in marginal sites)*

## Step 3. Draft a Transformation Statement

The Transformation Statement succinctly captures the planned intervention to transform the food system outcomes. It helps when building an activity model (action plan) for your intervention later. The order of the four elements does not matter but it is important to included them all. Try to use no more than 20 words and adopt SMART principles i.e., Specific, Measurable, Achievable, Realistic and Time-bound.

**Do what:** *intervention*

**By when:** *date*

**How:** *method*

**Why**: *to achieve project goal*

"To *intervention* by *date* by *method* so as to *goal*"
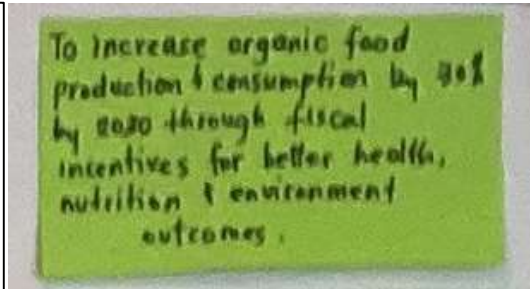
*Example from Bangkok Workshop*

## Step 4. Undertake a Trade-off Analysis (BATWOVE)

This allows team members to consider the tradoffs between people or entities benefiting from the transformation (Beneficiaries) and people or entities adversely affected by the transformation (Victims), as mediated by Food System Actors, Owners and Constraints.

### BATWOVE

**B** eneficiaries → People or entities benefiting from the transformation

**A** ctors → People doing the transformation

\* **T** ransformation → The planned intervention to transform the outcome

\* **W** orldview → Worldview that underpins the transformation

**O** wners → People who "own" the process; who could stop or change the transformation

**V** ictims → People or entities adversely affected by the transformation

**E** nvironmental constraints → Limitations applied to the transformation (e.g. budget, time, laws, etc.)

\* **Start with these first**

*Example from Tashkent Workshop.*

**Step 5: identify and Map Stakeholders**

This allows team members to identify and map their stakeholder community in terms of *power over the intervention*, and *impact of the intervention on them*, and then consider how to manage them.
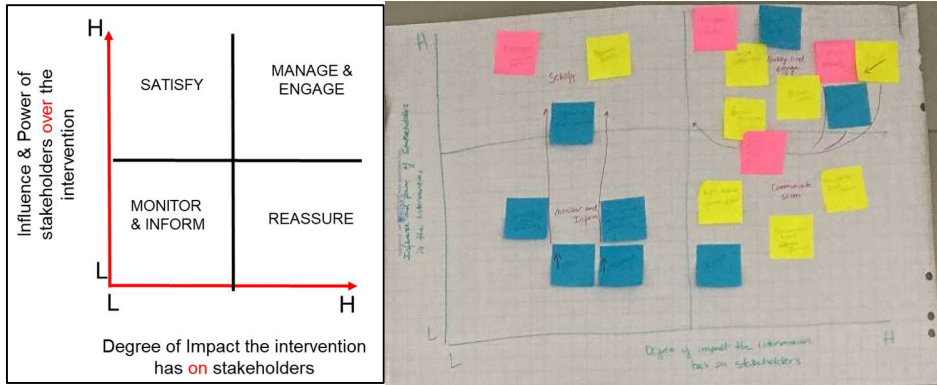


*Example from Harare Workshop*

**Step 6. Backcasting**

This allows team members to 'think backwards' from the project's end point to 'map out' what must have been achieved by when to maximise likelihood of success of attaining that next milestone. Starting from the end point, this means for each time slice/milestone, agreeing what will have to have happened in policy and practice prior to be sure of successfully moving on, and what pre-conditions it will have needed.



**Backcasting example**
**To reduce sugar in food by 25% by 2030 by reformulating products so as to reduce childhood obesity**

| What | By when | Pre-conditions | Policy | Practice |
|---|---|---|---|---|
| 25% reduction in sugar in food | 2030 | Children happy to have less sweet foods.<br><br>Parents/schools keen to improve childrens' health. | Introduce a sugar tax.<br><br>Vegetable-based snacks subsidised. | Food processors reduce sugar in formulation<br><br>Schools ban sugary snacks. |
| 25% increase in vegetable-based snacking | 2028 | Children keen to try vegetable-based snacks.<br><br>Retail have appropriate systems in place to provide new lines. | Subsidy for vegetable growers.<br><br>School programme of education on diet.<br><br>Sugary snacks adverts banned from public transport | More farmers are growing vegetables.<br><br>Food processors developing high production lines for vegetable-based snacks. |
| 70% increased public awareness | 2024 | Underlying concerns about dental and other health impacts. | Public info campaign. | Advertisers develop campaign. |

# Annex D: Resources useful across all Regions

Food Systems Dashboard https://www.foodsystemsdashboard.org/.
Example for East and Southern Africa:

| Country | Food Environments | Supply Chain | Environmental Outcomes | Nutritional Outcomes |
|---|---|---|---|---|
| **East Africa** | | | | |
| Burundi | | | | |
| Comoros | | | | |
| Congo | | | | |
| Djibouti | | | | |
| Eritrea | | | | |
| Ethiopia | | | | |
| Kenya | | | | |
| Madagascar | | | | |
| Malawi | | | | |
| Mauritius | | | | |
| Mozambique | | | | |
| Rwanda | | | | |
| Seychelles | | | | |
| Somalia | | | | |
| South Sudan | | | | |
| Uganda | | | | |
| United Republic of Tanzania | | | | |
| Zambia | | | | |
| Zimbabwe | | | | |
| **Southern Africa** | | | | |
| Botswana | | | | |
| Eswatini | | | | |
| Lesotho | | | | |
| Namibia | | | | |
| South Africa | | | | |
| Switzerland | | | | |
| United Kingdom | | | | |

| Unlikely to be a challenge | 1 | Green |
|---|---|---|
| Potential to be a challenge | 2 | Yellow |
| Likely to be a challenge | 3 | Red |
| Missing | 0 | Grey |

Some other resources:

IPCC Reports, e.g., AR6 Synthesis Report https://www.ipcc.ch/report/ar6/syr/

FAO SOFI Reports, e.g., The State of Food and Agriculture https://www.fao.org/publications/home/fao-flagship-publications/the-state-of-food-and-agriculture/en

UNEP IRP Reports, e.g., Urban Agriculture's Potential to Advance Multiple Sustainability Goals https://www.resourcepanel.org/reports/urban-agricultures-potential-advance-multiple-sustainability-goals; and Food Systems and Natural Resources https://www.resourcepanel.org/reports/food-systems-and-natural-resources

National pathways, https://www.unfoodsystemshub.org/member-state-dialogue/en
e.g., for Uganda: https://www.unfoodsystemshub.org/docs/unfoodsystemslibraries/national-pathways/uganda/2021-09-15-en-pathway-to-the-food-systems-updated-150921.docx?sfvrsn=6a368960_1

## Annex E.1. Environmental issues and enhancing outcomes by region

| | West Africa | MENA | S/E Africa | Central Asia | S/SE Asia | Latin America |
|---|---|---|---|---|---|---|
| **Environmental Issues**<br><br>*Climate change* | Precipitation irregularities and extreme climate events<br><br>Crop failures | Temperature variability<br><br>Desertification and flash flooding | | Climate change and population increase driven pressure on regional resources | Unpredictable rainfall because of climate change<br><br>Changes in crop species and patterns | GHG emissions from cattle production |
| *Water* | | Water scarcity, groundwater depletion, and wastage<br><br>Water pollution<br><br>Saline incursion | Flooding, typhoons<br><br>Irrigation | Water scarcity<br><br>Drought | Flooding<br><br>Regional water management | Water pollution<br><br>Poor use of water resources |
| *Resource use* | Neglected biodiversity<br><br>Resource overexploitation<br><br>Lack of mechanism for localized capacities | Biodiversity degradation<br><br>Land degradation<br><br>Soil quality degradation (brackish water for irrigation) | Deforestation | Loss of ag biodiversity<br><br>Soil degradation<br><br>Salinity | Soil degradation and sea intrusion leading to salinisation<br><br>Deforestation<br><br>Biodiversity loss (endangered species)<br><br>Monocultures<br><br>Reduced fish | Agrobiodiversity loss<br><br>Overuse of fish resource<br><br>Monocultures<br><br>Deforestation<br><br>Soil degradation<br><br>Land use change and agricultural |

| | West Africa | MENA | S/E Africa | Central Asia | S/SE Asia | Latin America |
|---|---|---|---|---|---|---|
| | | | | | stocks from water reduction and overfishing

Expansion of agriculture land | frontier expansion

Energy use from biofuels

Fuel use in agriculture /transport |
| *Governance* | | | Lack of env governance | Lack of water governance and incentives | | |
| *Pollution* | | Agricultural residues burnt

Overuse of often toxic pesticides | | | Overuse of chemicals | Plastic waste

Fish food and contamination |
| **Enhancing Environmental Outcomes**

*Environment* | Climate services (foresight and planning - across food systems) | | | Promote climate change technologies

NBS

WEF trade-off analysis

Attract youth start-ups for climate change tech

Monitor progress of indicators | Maintain biodiversity | Fuel use in agriculture/ transport Agroecology policies

Plastic waste reduction & responsible consumption

Adaptation and mitigation technologies

Regional solutions |

| | West Africa | MENA | S/E Africa | Central Asia | S/SE Asia | Latin America |
|---|---|---|---|---|---|---|
| | | | | | | and local/indigenous knowledge |
| *Water* | Management - need for storage as ppt drops<br><br>More innovation by farmers | Use efficiency + policies<br><br>Identify water services | | Rational regional water use | Regional water management | |
| *Land* | Need for sust land management approaches<br><br>Combine farming methods<br><br>Working on seeds<br><br>Resilient crops | Better land management will enhance FS, not just water<br><br>Crop management can reduce system losses from drought - need EWS<br><br>Targeted financing | Training farmers in water efficiency and saving<br><br>Translating methods to local situations<br><br>Train farmers to produce own seeds and fertilizers | Longer-term investments in land tenure and ownership | | |
| *Gender* | | Education and focus of women | | | | |
| *Markets* | | | | CSR of private sector | | |

# Annex E.2. Health and nutrition issues and enhancing outcomes by region

|  | West Africa | MENA | S/E Africa | Central Asia | S/SE Asia | Latin America |
|---|---|---|---|---|---|---|
| **Health & Nutrition Issues**<br><br>*Malnourishment* | Undernourishment in children<br><br>Increasing urban obesity | Undernourishment<br><br>Obesity | State as a consumer (will they pay more for better outcomes)<br><br>Valuation of health and affordability of good food | Malnutrition burden<br><br>Vitamin and mineral deficiency<br><br>Rise in HFSS diets | Malnutrition, esp in children<br><br>Dependence on imported infant formula<br><br>Processed food as staple food, High sugar, More NCDs | Triple burden<br><br>High HFSS diets<br><br>High animal protein consumption<br><br>High processed food offer |
| *Diet Diversity* | Lack of awareness and cultural barriers to dietary diversification and eating habits | Unbalanced diets<br><br>Low F&V, specially for children<br><br>Increasing fast food consumption | Time and convenience - people buying street food (quality and safety)<br><br>Small grains not appreciated (colonial heritage), but middle/high income increasingly consuming |  | Decreased dietary diversity | Loss of traditional nutritious foods<br><br>Street food and fast food<br><br>Loss of knowledge of traditional cuisine |
| *Governance* | Market driven issues in unbalanced production and access | F&V exported |  |  |  | Lack of public policies for small businesses in food sector and lack of public procurement for healthy food |

| | West Africa | MENA | S/E Africa | Central Asia | S/SE Asia | Latin America |
|---|---|---|---|---|---|---|
| **_Safety_** | | Safer products for production (pesticides?)<br><br>Potential of contamination from food waste | | Waste from food processing | Overuse of chemicals<br><br>Contaminated drinking water<br><br>Food additives and preservatives | |
| **Enhancing Health & Nutrition Outcomes** | Addressing cultural barriers for consumption<br><br>Food safety<br><br>Food security | | Youth<br><br>Processing<br><br>Communication/messaging | Processed food<br><br>Reduce consumption of HFSS<br><br>Meat: context dependent | | Public policies for local products<br><br>Increase recognition of traditional food values<br><br>Transdisciplinary focus for diet and ag research<br><br>Upscaling and promoting use of trad food<br><br>Better multi-sectoral coordination across policy<br><br>Health, nutrition, and ag education in schools<br><br>Agricultural education and extension |

## Annex E.3. Economic issues and enhancing outcomes by region

|  | West Africa | MENA | S/E Africa | Central Asia | S/SE Asia | Latin America |
|---|---|---|---|---|---|---|
| **Economic Issues** <br><br> *Food waste* | Regional security issues | Need HH education to reduce <br><br> Loss and waste of food |  |  |  |  |
| *Markets* | Market as a driver for food production <br><br> Risk insurance and related tools <br><br> Financial services/credit access | Lack of specific R&D for water conservation <br><br> Energy shortage | Volatility in commodity markets <br><br> Low prod, high price in dry season, high prod, low price in rainy season <br><br> Incentives encouraging cash crop focus <br><br> Logistics for processing overproduction <br><br> SHF missing negotiation powers <br><br> Lack of knowledge on value chains <br><br> Mismatch in health, env, and econ sust of value chains <br><br> Missing middle, | Lack of proper incentives for rational use of energy+water saving technologies <br><br> Unequal access to new technologies and innovation | Inability to compete against low-cost Chinese products <br><br> Large scale contract farming <br><br> Lack of market accessibility <br><br> Middle man reliance <br><br> High risk, lack of crop insurance <br><br> Lack of quality seedings/saplings <br><br> High energy costs <br><br> Limited logistic support for food production <br> Lack of food storing and processing <br> Lack of gov support for local products subsidies and | High risk in farming <br><br> Need for low food prices <br><br> Low market access for family farms <br><br> Family farming w low outcomes/not competitive <br><br> Lack of formal markets for family farmers <br><br> Loss of labour in family farms <br><br> Lack of technical assist, part for family farms <br><br> Junk food too cheap, easy to access, high in FSS |

| | West Africa | MENA | S/E Africa | Central Asia | S/SE Asia | Latin America |
|---|---|---|---|---|---|---|
| | | | SMEs<br><br>Lack of water risk to tourism<br><br>Trade disruption | | incentives<br><br>Lack of skilled/well-trained workforce<br><br>Lack of technology<br><br>standardization, and labelling<br><br>Low productivity<br><br>Limited logistics support for production<br><br>SSF not enough income | |
| *Governance* | | Lack of technical skills for FS issues<br><br>SWM needs improvements<br><br>Manage organic waste<br><br>Education misaligned from economic needs<br><br>90% of wheat is imported<br><br>Livelihood challenges for | | Intersectoral Cooperation and equity<br><br>Absence and weak institutions<br><br>Non-evidence-based policies | | Lack of rural dev<br><br>Faming farming does not bring income for country<br><br>Lack of access to inputs and finance<br><br>Export focus of many gov<br><br>Informality of food sector<br><br>Privatization of support services for food sector |

|  | West Africa | MENA | S/E Africa | Central Asia | S/SE Asia | Latin America |
|---|---|---|---|---|---|---|
|  |  | farmers<br><br>Water purification |  |  |  | Lack of public investment in food sector |
| *Gender* |  |  | Lack of access to markets, knowledge, and services for women |  | Gender imbalance |  |
| *Youth* | Youth in agriculture<br><br>Attractiveness of profession |  |  |  | Young people move to urban area | Food sec not appealing for youth |
| **Enhancing Economic Outcomes** | Access to financial services for small farmers<br><br>Access to markets<br><br>VSD and youth - attract for retention | VSD: Attract youth<br><br>Water management and governance, technology and water markets<br><br>Supply chain and value chain analysis, MSD approach | Circular economy<br><br>Look at whole value chain<br><br>Strengthen local value chains<br><br>Water management | Governance: fragmented policies, role of private sector, norm setting<br><br>Education - skills<br><br>Role of private and public sectors<br><br>Water and technology management | Farmer cooperative for small farmers<br><br>Skills development<br><br>Local food consumption to reduce logistics costs<br><br>Enhance supporting functions (MSD approach)<br><br>Look at land tenure and governance<br><br>Water governance and management | Shorter value chains for trad foods<br><br>More public attention to health outcomes (cheaper than public health spending on NCDs)<br><br>Finance for ag sector value chain actors<br><br>Local public procurement policies<br><br>Education for a successful domestic food sector<br><br>Insurance for farmers |