



Food and Agriculture
Organization of the
United Nations

Actors' perception of the resilience of their city region food system: a comparative study



1 Introduction

External shocks and stresses can deeply disrupt the functioning of food systems, be they local, regional or global. The last few years have witnessed a series of hazardous events, such as climate-related shocks or stresses (droughts, floods, sea-level rise, etc.), the COVID-19 pandemic and the Ukraine war. These events have had a generic or specific, direct or indirect, immediate or delayed, temporary or permanent effect, compounding impacts that have varied in magnitude and intensity, and threatened the livelihoods, food security and nutrition of millions of people. The ability of individuals or households to cope with these disruptions has been studied widely, in an attempt to identify the most vulnerable populations and trigger projects and programmes that aim to improve their resilience. The role of collective actions and public policies to strengthen food system resilience – as opposed to individual or household resilience – has drawn much less attention, especially at the local level.

In recent years, with the increasing awareness of the unsustainability of food systems, the role of local governments has come to the fore in support of food security and nutrition. Calls from city representatives, city networks, academics, or international organizations for cities to play a greater role in supporting food system sustainability have multiplied (Cohen and Ilieva, 2015; the Food and Agricultural Organization of the United Nations [FAO], 2020; Milan Urban Food Policy Pact [MUFPP], FAO and Economia

e Sostenibilità [EStà], 2018; Sonnino, Tegoni and De Cunto, 2018; U20, 2020). Many international and local government networks have included food in their work programmes in an endeavour to support their members in actively transforming their food systems.¹ This includes launching projects and initiatives focussed on raising awareness, sharing experiences and supporting cities in originating concrete actions (Giordano, 2022). Consequently, while some local governments had already started to work on food systems, others have begun to develop resilience capacities and responses to shocks and stresses. However, the resilience of food systems has been long overlooked, before coming to the fore with the COVID-19 pandemic.

This study seeks to determine how food system actors have perceived recent shocks and stresses on their food systems; identify collective actions and public policies, including the role of local governments and actors; and provide insights on moving towards greater food system resilience. The following section presents the methodology used to collect the perceptions of food system actors as a primary source for the case study comparison. Thereafter, the results are presented, based on the three main blocks focused on in this study: shocks and their impacts; public policies and collective responses; and the recommended next steps. Finally, this report concludes by indicating the main questions and hypotheses revealed by this comparison as inputs for further work on the resilience of the city region food system.

1 Examples of networks include the Milan Urban Food Policy Pact, C40, *Amministrazioni locali per la sostenibilità* (ICLEI), United Cities and Local Governments (UCLG), etc.

2 Methodology

2.1 Background and context²

Systemic approaches receive overwhelming support to tackle challenges to the sustainability of the food system (El Bilali, Callenius, Strassner and Probst, 2018). Food systems are defined as:

The entire range of actors and their interlinked value-adding activities involved in the production, aggregation, processing, distribution, consumption and disposal of food products that originate from agriculture, forestry or fisheries, and parts of the broader economic, societal and natural environments in which they are embedded (Nguyen, 2018).

The city region food system (CRFS) framework emerged to tackle local challenges (Blay-Palmer et al., 2018). City region food systems add a territorial dimension to this definition and refer to:

“[T]he application of the food systems approach to a specific city region geographical setting. The CRFS encompasses the complex network of actors, processes and relationships that are involved in food production, processing and manufacturing, distribution, markets, consumption, and food loss and waste, in a given city region. It includes the economic, societal, and environmental components that configure actors, processes and relationships. FAO and RUAF, 2023, pp. 6-7.

Recent shocks and stresses on food systems have shed light on the importance of considering their resilience. Shocks can be defined as “external short-term deviations from long-term trends, deviations that have substantial negative effects on people’s current state of well-being, level of assets, livelihoods, or safety, or their ability to withstand future shocks” (Zselezky and Yosef, 2014, p. 1) Ethiopia International Food Policy Research Institute (IFPRI). Examples of shocks include flooding, earthquake, pandemics, coups or nuclear disaster. The definition of stress in Choularton, Frankenberger and Nelson (2015), was adapted to define stresses as external long-term trends or pressures that undermine the stability of a system and increase vulnerability within it. Examples of stresses in food systems include sea level rise, soil erosion, biodiversity losses, or protected economic crisis.

Combining the previous definition of shocks and stresses with the definition of resilience from the United Nations common guidance on helping build resilient societies (United Nations, 2020), it is possible to define system resilience as the ability of a food system to maintain its core functions of producing, processing, distributing, and consuming food in a

sustainable and equitable manner, despite shocks and stresses that may arise from various sources, such as environmental, economic, social, or political factors. A resilient food system is then characterized by its capacity to anticipate, prevent, absorb, adapt, and transform in the face of shocks and stresses.

Similarly, the definition of resilience capacities are based on the *United Nations common guidance on helping build resilient societies* (United Nations, 2020, p. 35) to which are added examples and specificities of applying them to food systems:

- “Preventive capacities: The ability to implement activities and take measures to reduce existing risks and avoid the creation of new risks”, e.g. diversifying crops to limit risks of harvest losses due to a specific disease.
- “Anticipative capacities: The ability to take early action in anticipation of a potential threat to reduce its potential negative impacts; including through early warning, early action and forecast-based financing”, e.g. the existence of and access to effective early warning systems, and being able to act upon them.
- “Absorptive capacities: The ability to take protective action and ‘bounce back’ after a shock using predetermined responses to preserve and restore essential basic structures and functions”, e.g. having risk insurance and social protection; having mutually supportive community/business networks.
- “Adaptive capacities: The ability to make incremental adjustments, modifications or changes to the characteristics of systems and actions to moderate potential changes, in order to continue functioning without major qualitative changes in function or structural identity”; these changes may inform longer-term transformation.
- “Transformative capacities: The ability to create a fundamentally new system when ecological, economic or social structures make the existing system untenable”, e.g. finding alternative activities or perspectives, diversifying livelihoods.

In this study, resilience is considered as a need for change as evidence of the unsustainability of current global and local food systems continue to pill up (Campbell et al., 2017; High Level Panel of Experts [HLPE], 2017; Line et al., 2017; Willett et al., 2019). They are subject to great shocks and stresses operating along thresholds and tipping points, which make any return to their original states unlikely. Any attempt at stability would then be the antithesis of resilience as it would simply reinforce the existing food system dynamics, which would then be stuck in a rigid trap (Hodbod and Eakin, 2015).

2 This section is based on a literature review conducted during the development of this study (Giordano, 2023).

Thus, evaluating the concept of resilience becomes critical. Most studies focus, with tremendous difficulty, on resilience at the individual or household level, whether objective approaches – based on indicators – or subjective approaches – based on the perception of actors – are considered (Jones and d’Errico, 2019). Changing scale and moving on to a food system level is a daunting task, because data on food systems are often scarce, objective approaches would require a huge effort of data collection overtime. This study opted for a subjective approach. A methodology was developed to capture the perception of local food system actors on recent shocks and stresses, their impacts, the collective responses and policies – existing or recently launched – that aimed to strengthen resilience, outcomes and the way forward.

The importance of perceptions in shaping people’s strategies means that perceptions represent an explanatory variable for different configurations of food systems. [...] adopting a perception-based approach to risks and resilience building in food systems acknowledges that local actors must be taken into account to co-develop proactive risk management strategies

(Jacobi et al., 2019, pp. 880-881).

Therefore, the perceptions of actors are critical to understanding the process of developing collective actions, public responses and their implementation. Figure 1 presents an overview of the eight-stage methodology used in each case study.

2.2 Selection of city regions

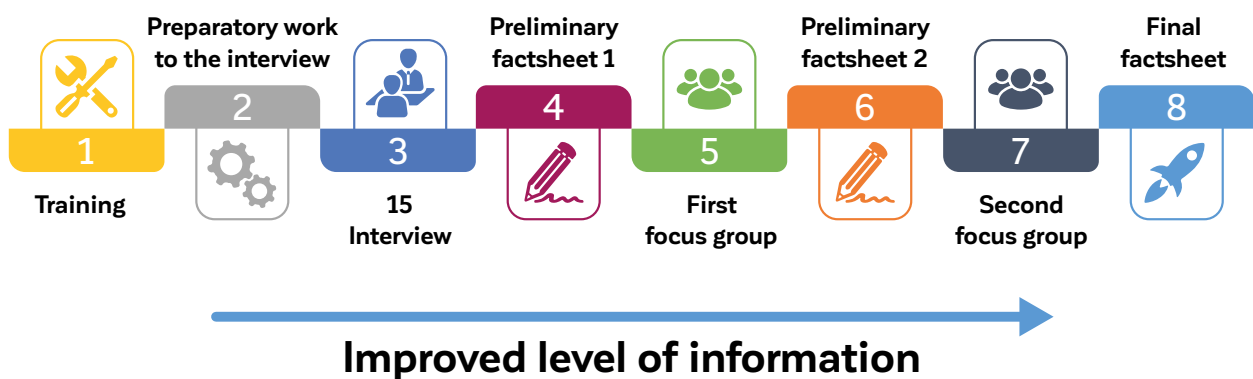
To unravel the complex dynamics between the impacts of shocks and stresses on food systems without diving into quantitative data collection, this study adopts a methodology that aims to analyse the perception of CRFS actors about the resilience of their respective food system. We selected eleven cities based on four main criteria to cover a wide array of situations:

- Geographical coverage: selected cities are on all five continents.
- Level of development in the country: selected cities are located in developing, emergent and developed countries to capture the diversity of food systems and means at their disposal (human, financial, technical, etc.).
- Size of the city.
- Level of familiarity with food system resilience and sustainability through engagement with urban food networks. Five cities are FAO City Region Food Systems pilot cities.

2.3 Qualitative data collection

For each city region, a consultant was recruited and trained in the methodology. The consultant then collected qualitative data (see Figure 1, stages 3, 5 and 7) carried out between June and October 2022. In the first stage 15 semi-structured interviews were conducted to capture the perception of food system actors on the following elements:³

Figure 1 Summary of the methodology



3 The questionnaire is available from the author upon request.

Table 1 Main features of the eleven case studies

City	Country	Size (millions of inhabitants, last available census)	Income (country level)	Participate in the CRFS programme
Antananarivo	Madagascar	3.5 (est. 2022)	Low income economy	X
Chengdu	China	21.3 (est. 2022)	Upper-middle income economy	
Dhaka	Bangladesh	22 (est. 2022)	Lower-middle income economy	
Kigali	Rwanda	1.7 (c. 2022)	Low income economy	X
Lusaka	Zambia	3.2 (est. 2022)	Low income economy	X
Medellin	Colombia	2.5 (est. 2020)	Upper-middle income economy	X
Melbourne	Australia	5.1 (est. 2022)	High income economy	
Quito	Ecuador	1.9 (est. 2022)	Upper-middle income economy	X
Rome	Italy	2.7 (est. 2022)	High income economy	
Tamale	Ghana	0.67 (c. 2021)	Lower-middle income economy	
Tunis	Tunisia	1.1 (est. 2022)	Lower-middle income economy	

Sources: Size from *City Population* (as included in the factsheets, c.=last census, est. = estimate); level of income from World Bank (<https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>).

- recent shocks and stresses that affected the CRFS;
- impacts on the CRFS;
- pre-existing collective or public interventions that were perceived as important in responding to food system shocks and stresses;
- newly developed public and collective interventions in response to recent shocks and stresses(?);
- resilience capacities these interventions are based on;
- food system characteristics that allow resilience capacities to be mobilized;
- whether the identified policies and collective actions were transformative; and
- next steps required to strengthen CRFS resilience.

To identify respondents, consultants used purposeful sampling, selecting particularly knowledgeable individuals (Palinkas *et al.*, 2015). The following criteria was used to identify the initial respondents:

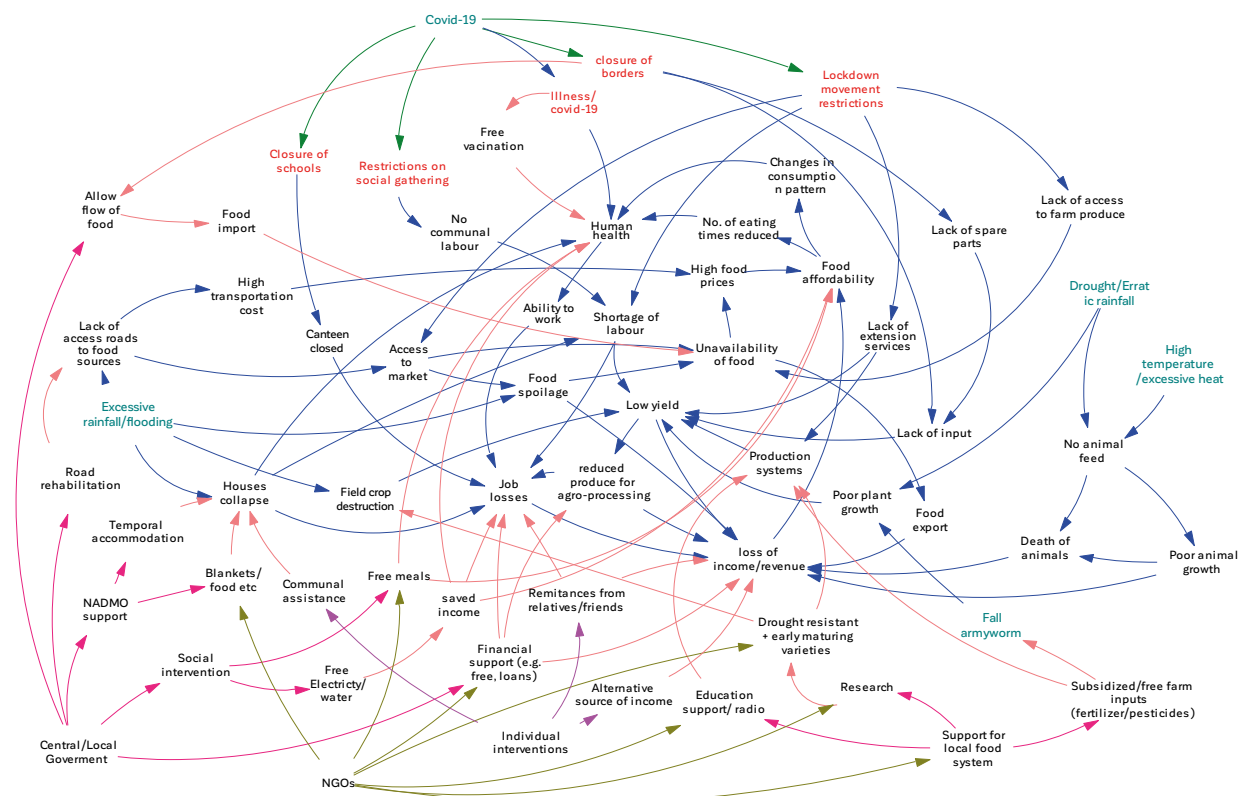
- Knowledgeable and experienced respondents based on their position in the CRFS and ability to provide reliable and rich information.
- A balanced representation of respondents that have been weakly/strongly affected by recent shocks and stresses.
- A balanced representation of CRFS actors to cover and reflect the proper structure of your food system.

- A balanced representation of respondents with a high or low level of agency or power in decision-making, to also include vulnerable populations.
- A balanced representation of respondents at different scales: local, provincial, national, and international actors weighing in on city region food systems.

Consultants also used a mix of snowball and sequential sampling. Initial respondents were asked to provide the names of other respondents or participants in the two focus groups. The objective here was to increase the level of information.

The information collected during the interview was compiled into a simple factsheet following a guided outline (see Figure 1, stage 4). This factsheet served as input for the discussion during the first focus group (stage 5). The selection of participants was based on the same criteria as the interviewees. The main purpose was to consolidate and clarify the information collected during the interview, through the co-building of a causal loop diagram (Figure 2). From each shock, participants co-built impact pathways showing how shocks and their impacts affected the food system and how collective and public responses attempted to provide resilience. This focus group was critical in helping participants adopt a systemic approach, which goes beyond their day-to-day priorities; expressing visually that while their CRFS is very complex, as is the propagation of shocks, this complexity can be unravelled and understood by anyone; creating a shared understanding of their CRFS. Following the workshop, the factsheet was updated and the causal loop diagram was added (stage 6).

Figure 2 Example of the causal loop diagram co-designed in Tamale (Ghana)



Source: FAO. 2023. COVID-19, climate change and other shocks impacting the Tamale city region food system: bane or boon? Rome..

Finally, a second working group discussion focused on the way forward and recommendations to improve CRFS resilience (stage 7). The factsheet comprised the background information for the discussion. The moderator encouraged participants to adopt food system thinking using the causal loop diagram, and resilience thinking through the various resilience capacities and food system attributes. The recommendations were then included in the final version of the factsheet.

3 Results and analysis

The eleven case study factsheets served as primary information for the comparison. The comparison below is therefore based on the perception of the CRFS actors that participated in the study (named CRFS actors in the rest of the document) as the consultants record them in the eleven factsheets. In each city, perceptions varied from one actor to another (intensity and magnitude of shocks, their impacts, the responses, the impacts of responses, etc.). The factsheets record perceptions, and are not intended to represent reality. However, they are to be acknowledged, understood and considered when moving forward with the food system transformation agenda.

3.1 So many different, but compounding shocks and stresses

Actors in the CRFS in each city perceive many external shocks and stresses that affect their food system and compound impacts. Actors see shocks and stresses as sometimes happening simultaneously, often overlapping, being responsible for a wide array of intertwined disruptions, making it difficult to attribute specific impacts to one single shock. All study participants agree that these shocks reveal the vulnerability and fragility of their CRFS. They questioned the resilience of the CRFS over time, as they foresee that the frequency and severity of shocks (and stresses?) will increase in the future; most believe their CRFS is not ready to face them. In Melbourne, CRFS actors even suggested the trend of a “new normal” where multiple events simultaneously affecting the CRFS become more regular and CRFS resilience should build on this “new normal”. CRFS actors classified external shocks under two broad categories according to their predictability: much-expected and unforeseen shocks.

3.1.1 Uncertain but expected shocks

The first category of shocks consists of well-known, recurrent shocks, offering a high level of likelihood, while uncertainties persists about their duration, intensity and magnitude of occurrence. Climate shocks

or flood-related cholera outbreaks, as seen in Lusaka, fall within this category of expected shocks. They are diverse in their magnitude (size of the population affected) and intensity (strength of the shock), and include floods, droughts, heat and cold waves, late or early rain, typhoons, landslides or wildfires.

These climate-related shocks affect different nodes in the food system. Agricultural production and food processing face greater impacts when: agriculture plays a big part in the economy and society (cities in low-income and lower-income economies); agriculture is mostly rainfed (Antananarivo, Lusaka, Quito, Tamale, Tunis); and processing is highly developed (Medellin, Melbourne, Tunis). While most actors mention the temporary impacts of shocks, CRFS actors in Medellin report the long-lasting impacts of severe climate shocks, which create cumulative vulnerabilities at the farm level. These impacts make farming systems more and more fragile as climate shocks keep reoccurring. The most vulnerable populations find it becomes difficult to afford food to eat and food insecurity increases (all case studies). Particularly precarious situations occur when on-farm consumption plays an important role (Antananarivo). In contrast, traders and retailers seem to generate some level of income as they preserve most of their margin, and are relatively spared. Lusaka is the only city where it was reported that retailers and traders were heavily affected, because of market closures following the cholera outbreak resulting from floods.

As CRFS actors in Antananarivo noted, beyond severe climate shocks that hit the headlines, localized and insidious climate events (delay in the first rain, hail, water shortage, etc.) are responsible for lower production levels, and lower agricultural income at the household level, but without deeply disrupting the food system. Most farmers in Antananarivo are small-scale farmers, who withstand the worst of production or loss of income, to the point their livelihoods are challenged. However, these shocks simply pass unnoticed by policymakers, while contributing to the slow and progressive erosion of local production capacities. Are such situations similar in other case studies, so imperceptible that they become “normal”?

Climate shocks are not the only regular shocks affecting CRFSs. For instance, in Kigali, plant and animal pests and diseases, such as banana wilt, African swine fever or foot-and-mouth disease, periodically affect local production and disturb local food supply. In addition, recurrent conflicts in the region have led to regular closure of borders with neighbouring countries (Burundi, Democratic Republic of the Congo or Uganda), which heavily impacts local markets, since Rwanda is a landlocked

country that depends on external supply for some produce. In Dhaka, CRFS actors noticed how trade restriction, such as India’s ban on onion exports in September 2019, also temporarily affected local consumption. In Quito, volcanic eruptions regularly disrupt food supply.

3.1.2 Unexpected shocks

The second category of shocks deals with shocks deemed unforeseeable at the time of their occurrence, such as the COVID-19 pandemic,⁴ or the Ukraine war. This category also includes the Fall armyworm (FAW) outbreak in Kigali, Lusaka and Tamale in 2017, and African swine fever (ASF) in Chengdu in 2018. At the time, the outbreaks came as a surprise, but are now well engrained in the minds of CRFS actors. Thus, perceptions have changed, the occurrence of similar shocks, once deemed unforeseeable by CRFS actors, is now considered probable. These shocks are added on top of climate shocks.

Some of these shocks triggered rapid responses. In Tamale, the national government provided pesticides to farmers in the fight against FAW, and deployed trained agricultural extension officers to ensure farmers could easily identify the worms and report them for immediate action. Following the ASF outbreak in Chengdu, the Agricultural Law-Enforcement Agency, of the local government unit, took charge of strict animal health supervision across the entire pig value chain. Local governments also paid more attention to pig farms, providing a range of disease prevention services to pig farmers such as regular comprehensive disinfection and vaccine purchase. The county government in Chengdu endeavoured to propagate safe and modern pig-raising technologies and invested in infrastructure for treatment and recycling of livestock waste.

Other unexpected shocks were more difficult to face. The COVID-19 pandemic is by far the most significant unforeseen shock reported by CRFS actors. The pandemic forced governments to deploy a broad set of sanitary measures to contain the spread of the virus (lockdown, closure of markets, restricted movement, etc.) that affected the entire CRFS: impacts were diverse and far-reaching as noted by actors when co-designing their causal loop diagram (Figure 2). Witnessing the extent the food system was disrupted, governments rapidly considered food as essential in all case studies. Mitigating measures were urgently developed and implemented to enable the supply of food to cities and guarantee consumers’ access to food. In all case studies, CRFS actors mentioned poor households as the most affected. The CRFS actors in Dhaka highlighted that not only poor but also lower-middle-class households suffered from the crisis.

4 As an example of the disjunction of perceptions and reality, the COVID-19 pandemic was in fact predictable, contrary to the perception of actors, but not prevented (Bernstein et al., 2022).

Despite these measures, CRFS actors perceived that some nodes in the food systems were particularly affected, such as processing industries, be they small, medium or large enterprises (Antananarivo, Chengdu), transportation (Chengdu) included export or import logistics (Medellin), as well as bars, restaurants and catering (Chengdu, Lusaka). In Tunis, the artisanal processing sector was strongly affected, leading to many job losses. In addition, informal marketing channels grew, spawning speculation, causing a hike in food prices and food shortages. Farmers faced difficulties in accessing markets and in stocking their production, to the point of partial food loss (Rome, Tunis). Consequently, some impacts led to the expansion or development of innovations such as online sales (all case studies) and changes in food handling, manufacturing, and distribution practices (Rome, Melbourne). It still remains unclear, however, whether these innovations are short-lived, temporary adaptations, or genuine evolutions. A follow-up study would be needed in a few years.

Finally, only a few case studies mentioned the Ukraine war as affecting their CRFS, probably because, at the time of the study from June to October 2022, its impacts were just starting to unfold. Medellin and Tunis suffered from import disruptions, leading to shortages or price hikes for cereals and agricultural inputs. The Colombian government decided to provide import subsidies to balance the increase of cereal import prices. In Tunis, CRFS actors mentioned the macroeconomic impacts of such a situation: increased pressure on the current account balance, coupled with increased expenses of food relief and tighter global financial conditions, challenged domestic fiscal conditions and constrained room to manoeuvre. Moreover, actors in CRFS see the Ukraine war as having indirect impacts, stemming from the surge in energy prices, which affect the CRFSs as follows:

- **Production:** The impacts of the Ukraine war led to an increase in agricultural input prices, either pushing production costs up (Lusaka, Quito, Rome, Tunis), or causing inputs to become unaffordable for small farmers (Antananarivo). Producers in Medellin benefitted from the national government's import subsidies for inputs.
- **Transport:** When the CRFS relies heavily on remote food supply from other regions, such as in Antananarivo, Dhaka, Kigali, Quito, Tunis or transport costs (i.e. fuel price) influence food prices.
- **Consumption:** the rise in production and transport costs were passed on to consumers, fuelling the increased price of food (Medellin, Tunis).

In Medellin, CRFS actors added the fall in value of the local currency (Columbian peso [COP]) to the United States Dollar (USD) as a result of the Ukraine war but also the long-term economic situation: the economic instability provoked the energy price hike and, more broadly, inflation.

3.1.3 Long-term stresses: fairly overlooked

Surprisingly, very few stresses were reported. The impacts of these stresses are critical, probably in greater proportion than shocks because of their protracted consequences. As Conostas, d'Errico and Pietrelli (2022, p. 4) recall, "the accumulated effect of a stressor, or the effect of a combination of stressors, may reach a threshold that results in negative effects on well-being that are worse than those created by shocks." So why were few stresses reported? There seems to be a difference in perception of the shocks, easily identified, and stresses that are part of a CRFS actors' everyday life.

Political instability in Tunis, since the 2011 Arab Spring, is one of these stresses, with dire consequences on fiscal policy and more broadly the economy (e.g. hike in employment rate), the decision-making process (e.g. political instability and changes in government) and the consistency of public interventions. In Quito, a protracted political and economic crisis started in 2015 when the oil price plummeted and worsened in 2017 and 2018. It has profoundly affected the CRFS with changes in consumption and supply sources (substitution of local fresh food with cheaper imported processed food) and marketing channels (traders from markets or private businesses abandon stalls to sell in public spaces, on foot or in vehicles loaded with products). This crisis feeds regular social unrest that punctually further destabilizes the CRFS, as in October 2019 and June 2022.

Medellin CRFS actors stress the macroeconomic conditions that have prevailed over the past 20 years: low or negative economic growth, high inflation, devaluation of the COP, etc. which have destabilized national and local food systems. In Melbourne and Tamale CRFS actors pointed to urban sprawl as a stress on their food system, as it affects peri-urban food production. Urban sprawl is a challenge noted in other case studies: CRFS actors in Dhaka, Lusaka and Tunis acknowledge the fierce competition for land between urban sprawl and food production because of population growth, but do not consider it a long-term stress. Finally, and surprisingly, CRFS actors in Tunis were the only ones to highlight that climate shocks exacerbate long-term stresses on agricultural production, such as soil fertility and biodiversity loss, or overexploitation of water resources.

3.2 The nature of interventions: A wider-range of public policies rather than collective action

One focus of the study was on the role of collective initiatives and public policies in strengthening the resilience of food systems – as opposed to individual or household resilience. In most case studies, CRFS actors highlighted public policies as being the main responses to shocks. Some mentioned specific collective actions, but to a lesser extent.

3.2.1 A predominance of top-down, national public policies

National governments play a key role in framing the current functioning of food systems through policies, rules and regulations. In times of disruption, policies become instrumental in responding to shocks and stresses affecting their food systems. Most of the time, governments are also responsible for policy implementation, either directly through the Presidency (Madagascar), national departments (most other case studies), or specialized agencies such as the National Disaster Management Organization (NADMO in Ghana, or the Disaster Management and Mitigation Unit (DMMU) in Zambia. Less frequently, regional or local governments implement national directives (Chengdu, Dhaka, Melbourne).

The CRFS actors perceived that the emergence, development and implementation of most policy responses to shocks suffer from drawbacks that undermine the effectiveness of governmental interventions:

- A rush to rapidly respond: In Antananarivo, Lusaka and Tunis, actors in the CRFS clearly mention that the urgency of reacting to shocks led to responses that mainly aimed to absorb the shocks. Consequently, the same shock may occur a few years later.
- A lack of resources (institutional, financial, human, etc.) for prevention: CRFS actors mentioned the lack of resources allocated to preventive policies despite high risks of a similar shock occurring again. In Lusaka, the Keep Markets Clean Campaign (KLC), which was initially designed as a preventive initiative after the 2007 cholera outbreaks, did not deliver afterwards because of poor interagency and institutional support and low annual budgetary allocations. The initiative had to be relaunched in 2017 and 2018. In Antananarivo, policies exist to prevent floods through cleaning of irrigation canals or rehabilitation of irrigation structures or banks, with shared and clear roles and responsibilities for national and local governments. However, policies are poorly implemented (lack of resources and leadership).
- A lack of transparency in the policy process: Most CRFS actors are not informed, or at best they can make assumptions (Tamale), about the emergence, the development and the decision-making process that govern interventions. Others condemned the political nature of some initiatives, imbued with opacity and poor performance (Lusaka). A noticeable difference comes from Kigali, where CRFS actors reported that consultations were duly conducted: they started at the village level (Umudugudu) up to the national level, which ensured the policymaking process was inclusive.
- A lack of flexibility as a result of the top-down nature of these interventions: CRFS actors

outlined the difficulty of accommodating local specificities and contingencies, which undermine effectiveness (Tunis).

- A lack of inclusivity and prior consultation: In many cases, CRFS actors criticized being excluded from policymaking processes. In Lusaka, CRFS actors underscore the risk of maladaptation, which has already materialized, mentioning the losses incurred by food dealers when Soweto market was closed in 2018 at the peak of the cholera pandemic.
- A too large scale: National initiatives do not necessarily heed local specificities, and thereby can either foster or limit local resilience capacities.

3.2.2 Local government interventions: limited but often effective

The CRFS actors reported the role of municipalities or regional governments as being limited, but critical. Most measures deal with various types of social safety nets that complement or supplement national schemes, as shocks further increase already existing poverty and inequalities. For instance, the Municipality of Tunis provided food stamps and distributed food to poor households during the COVID-19 pandemic, in addition to monetary transfers to the poorest granted at the central level (Ministry of Social Affairs). In Medellin, the Antioquia regional government's Food and Nutrition Improvement Programme delivered food aid to the most vulnerable thereby complementing national programmes. In Melbourne, the Victoria regional governments played a critical role, especially through the *Victorian Health Promotion Foundation* (VicHealth), a statutory authority that facilitated coordination of CRFS actors and provided funds and grants to alleviate food insecurity.

Beyond safety nets, other initiatives were developed. The Lusaka City Council launched the Lusaka Water Security Initiative (LuWSI) in collaboration with the Lusaka Water Supply and Sanitation Company and support from the German Society for International Cooperation (GIZ). The CRFS actors acknowledged its key role in responding to COVID-19, preventing waterborne diseases (cholera outbreaks) and improving hygiene. In Medellin, while the pandemic has stimulated direct sales from producers to consumers, existing initiatives from local governments such as the *Mercados Campesinos* programme run by the Medellin City Council and the school feeding programme (*Programa de Alimentación Escolar*), contributed to the expansion of direct sales. Similarly, in Rome, the Lazio Regional Government began several initiatives to support local food producers and short value chains. A tender was launched for non-repayable grants targeting farmers in support of the marketing of fresh or processed agricultural products, favouring direct sales (e-commerce) and home delivery. In 2020, the Lazio Regional Government implemented a new initiative (*Bando Bonus Lazio Km0*) targeting the

hospitality industry and providing a refund of up to 30 percent to businesses for buying quality local food produce. The objective is to sustain this mechanism for territorial development with the help of European funds. Finally, the regional government developed a programme to support municipalities in creating and upgrading (compliance with hygiene-sanitary and safety regulations, technological innovation for new users and consumer services) local food markets – *Concessione di contributi per la riqualificazione delle attività commerciali su aree pubbliche*.

As shown below, in our case studies Chengdu is the most active municipality when responding to shocks, under the guidance and strategic direction of national and provincial government policies. However, Chengdu has a high degree of autonomy in efficiently designing and implementing solutions that demonstrates good-governance, where there is also the capacity to integrate local contingencies. To a much lesser extent, Dhaka and Melbourne were also active in supporting the implementation of national programmes.

3.2.3 The scarcity of collective actions beyond food aid

Collective action is often mentioned as essential for the transition towards sustainability: “[C]ollective action, or individuals working together toward a common good, is essential for achieving the scope and scale of solutions to current sustainability challenges” (Ardoin, Bowers and Wheaton, 2023). These actions can be developed formally or informally, by any kind of non-state actor: non-governmental organizations (NGOs), civil society organizations (CSOs), faith-based organizations, private sector associations, farmer cooperatives, citizens, consumer associations, etc. These collective actions can be critical in responding to shocks affecting food systems. However, compared to the number and coverage of public policies identified by CRFS actors, collective actions appear rather limited from the viewpoint of the CRFS actors.

Very few transformative collective initiatives were reported beyond assistance to vulnerable populations. This is surprising as it is hard to believe that transformational changes are not happening at a lower scale, from the bottom, in food systems. Several reasons could explain this situation: Interviewees were not aware of small-scale transformational initiatives or experiences; interviewees consider them too small and deny themselves any transformational potential; lessons from these initiatives have yet to be drawn or have not pervaded the CRFS; interviewees did not perceive the initiative as contributing directly to building resilience.

In most case studies, collective actions stem either from communities and self-organized actors in high-income economies or from NGOs through donor funding in other economies. The CRFS actors in Tunis mentioned a citizen association (*Association des*

habitants de Mourouj) that helps vulnerable households access fresh produce through direct sales from producers to consumers as part of the development of solidarity “souks”. In Lusaka, faith-based organizations play an important role complementing national food relief programmes managed by the DMMU. In Dhaka, NGOs and CSOs are critical in reaching out to the poor in slums who are not eligible for governmental social protection programmes. In Quito, the *Banco de alimentos de Quito*, the local food bank, together with other NGOs and church groups, provide food relief to the most vulnerable and poorest households. The food bank works with people, markets and companies that produce, transform and market perishable and processed foods. The CRFS actors perceived that the food bank acted promptly, at the early stage of the lockdown, in a highly efficient manner.

In Melbourne CRFS actors acknowledged how CSOs emerged, grew, and became crucial in addressing food insecurity during the pandemic in response to community needs. The strong pre-existing formal and informal networks of food-relief actors spawned rapid and coordinated actions. Among the first was the lobby the *Victorian Farmer's Market Association* applied on behalf of all members, markets, and customers to Agriculture Victoria and the Department of Health Services (DHS) to overturn the ban on farmer's markets during a state of emergency, allowing farmers to continue selling produce. Beyond, many place-based initiatives, neighbourhood, grassroots, and mutual aid networks provided healthy and culturally appropriate food relief to low-income households by delivering produce boxes, emergency meals and backyard gardening kits. The Victoria State Government went along with the growth of local initiatives, providing grants through its *Community Food Relief Fund* to strengthen their capacities. Most importantly, CRFS actors underscored how collective actions are paving the way towards greater transformation by developing local food economies, diversifying livelihoods, and creating new and alternative systems that could operate independently of the dominant food system model.

In Rome, *Bio appetito Spinaceto – L'Alveare che dice sì!* covers direct producer-to-consumer sale of organic produce, which expanded dramatically during the COVID-19 pandemic in response to the closure of traditional marketing networks. The initiative thereby contributed to supporting local food production. In the same way, the Roman Network of Social Solidarity Economy (*Rete Romana di Economia Sociale e Solidale*) expanded an initiative launched a few years earlier: the Condominium Purchasing Groups (*Gruppi di acquisto condominiali*), which proved to be relevant during the COVID-19 pandemic in supporting small organic farmers by grouping sales at the neighbourhood level.

In Tamale, among a wide-range of collective actions, CRFS actors single out the *Resiliency in Northern Ghana* (RING) initiative. This donor-funded programme,

implemented by an NGO, seeks to help farmers adapt to climate change, through locally adapted measures. The programme involves local authorities, academia, regional agricultural departments as well as local consultants in the design and implementation of its activities. The CRFS actors are enthusiastic about the second edition of the initiative, RING II. Its implementation was slowed because of delays in the approval of Metropolitan, Municipal and District Assemblies (MMDA) and regional annual workplans.

Finally, not only national, but also international collective initiatives can play an important role in responding to shocks. In Rome, the wholesale market, *Centro Agroalimentare Roma* (CAR) is a private company, with public capital coming from the city and regional government, which distributes fresh fish, fruits and vegetables in the region and beyond. The CAR is a member of the World Union of Wholesale Markets (WUWM), an international network of fresh food and products organizations. At the onset of the pandemic, Chinese wholesale markets disseminated information through the WUWM network about the challenges they were facing and the responses they were providing, as they were the first wholesale markets in the world hit by the pandemic. The CAR analysed this information, learned from the Chinese experience, and rapidly developed a set of sanitary measures that limited the disruption of its activities (temperature control, entry only if coming from safe areas, facemask obligation, etc.).

3.3 A long history of responding to climate shocks

In cities where agriculture plays a major role in the economy and society, the ultimate impacts of a shock are decreasing revenues and purchasing power that immediately threaten the livelihoods of poor farmers and food security of poor households. This clear sign of vulnerability stems from the structural weaknesses of their food system.

Because climate-related shocks are frequent, have a long history of occurrence, because they first affect food production before moving along the food system, many interventions target food production and fall under agricultural policies. However, such situations may impede the adoption of a food system approach in resilience thinking.

3.3.1 Structural weaknesses drive support to local producers

Local agriculture production often suffers from structural weaknesses. Case studies in developing countries mostly cover small-scale farmers, who are struggling to make a living from their rainfed, poorly

diversified production systems, and therefore are highly vulnerable to climate shocks. In other case studies, even if the situation of farmers is more favourable, they face some level of vulnerability. Therefore, in all case studies, supporting local producers, through input provision (seeds, fertilizers, etc.), irrigation schemes, and extension services, served a two-fold win by providing a better living, and hence reducing the vulnerability of local producers to shocks, while increasing local food supply; and expanding support at a time of crisis.

As governments seek to address structural weaknesses, the outlined public projects, programmes or policies create a feeling of preparedness: theoretically, the more and the better farmers produce, the less vulnerable they are. This does not mean the system itself is more resilient, let alone more sustainable. In some cases, farmers received support from the government in the form of technical assistance to adapt the use of inputs in response to shortages (changes in date and time of application), as in Tunis, but without any intent to make significant changes to agricultural practices; or agricultural input at a subsidized price, as in Dhaka, or animal feed as in Tunis. In Antananarivo, the vulnerability of production systems to floods can normally be mitigated through the regular maintenance of irrigation infrastructure, a public policy well identified and planned, but rarely implemented because of lack of funds.

In other cases, CRFS actors underscored public projects, programmes or policies that intend to address structural weaknesses through changes in practices. In Tamale, the national government has developed many initiatives targeting producers' resilience to climate shocks over the past decade, but not only. In 2014, the NGO-led RING initiative targeted the livelihoods and nutritional status of the most vulnerable households in the rural communities, mostly women and children, with a strong focus on adapting production systems to climate change. The initiative focused on diversification of crops (e.g. soybean cultivation instead of maize),⁵ village savings and loans, small ruminant rearing as an alternative source of income when crop production fails, leafy green cultivation, etc.

In Kigali, since 2007 with the Crop Intensification Programme, the government provides input and seed subsidies to farmers together with training and recommendations for best practice. In 2017, the government launched a public-private partnership to roll out the *Smart Nkuganire Programme*, a platform for end-to-end digitization of management of the agri-input supply chain. The Programme facilitates small-scale farmers' access to: subsidized inputs; experts on best practices; warnings or general notifications

5 Offering a critical view of the choices made is beyond the scope of this document. However, lessons would need to be drawn as one could question the substitution of soybeans for maize, a monocrop replacing a monocrop, while more climate resilient crops and changes in practices would be more relevant.

that help them face climate shocks, and pests and animal diseases. In addition, in 2018, the government established a subsidized agriculture insurance scheme that targets specific crops to protect farmers against losses from droughts and floods. In Lusaka, the DMMU introduced a seed-replanting programme following the floods of 2018 and 2019 through the already existing *Farm Input Support Programme* (FISP): CRFS actors stressed the coordinating role played by the DMMU, which allows transporters, agrodealers, and cooperatives to work together and deliver inputs to drought- and flood-affected farmers.

In Chengdu, the *High standard farmland construction initiative* of 2013 has been implemented at the city scale for years, and has considerably improved the productivity, sustainability and resilience of farmland against natural disasters. The initiative includes land organization, soil improvement, irrigation facility construction, farm road construction, forest protection, electricity infrastructure improvement, technology support, and management system optimization. It played an important role in ensuring rice production despite the drought in 2022.

In response to recent shocks, many governments developed additional measures for existing programmes. In Tunis, the provision of inputs and animal feed to farmers was the focus, as shortages were recorded following the pandemic and the Ukraine war. The Ghanaian Government developed additional programmes to support the agricultural sector. The CRFS actors in Tamale saw government programmes as being complementary to the RING initiative. In 2016, the government introduced the *Ghana Agricultural Sector Investment Programme* (GASIP), which aims to build the capacity of farmer-based organizations (FBOs) in climate smart agriculture; use of drought resistant varieties and early maturing crops; provision of impact-based weather forecasts to farmers in collaboration with the Ghana Meteorological Service. Farmers receive daily impact-based weather forecasts on their mobile phones or on radio in their local language, and anticipate and adapt their practices (drought resistant varieties, early maturing crops, crop diversification to secure livelihoods, etc.). The CRFS actors take part in this programme as it focuses on changes in practices.

In Tamale, CRFS actors mentioned another government response to increasing drought, erratic rainfall and floods: the *One Village, One Dam Initiative*. This initiative aims to provide water for irrigation, and support for water for animals and for fishing through the construction of a number of small earth dams in selected villages, and supports agricultural production during the unfavourable farming season. Small-scale farmers were not the only beneficiaries of government programmes. The Sustainable Agriculture Productivity Improvement Project (SAPIP), launched in 2018, seeks to transform agrifood value chains through support to large-scale farmers and agrodealers.

In Medellin, the 2008 climate crisis resulting from La Niña and El Niño has pushed the regional government and the municipality to support food producers through provision of inputs and infrastructure (e.g. irrigation systems, greenhouses). These programmes are still ongoing, as climate shocks are recurring, requiring adaptation. The same local authorities were led to launching a new programme (*Sistema de Abastecimiento de Antioquia*) in 2021. The programme aims to support new marketing channels; improve the marketing capabilities of peasant producers, marketers and transformers in the region; and promote direct commercial relations and short value chains. Such programmes seek to complement other measures undertaken by the Colombian Government to optimize purchase of inputs, cover international logistics and export costs, and activate aid for imports.

In Quito, the municipality began to promote the development of urban agriculture through the Participatory Urban Agriculture Programme (*Agrupar*) in 2002. This long-term effort played an important role during the pandemic as local urban production served as an effective response to guarantee access to healthy, quality food despite mobility restrictions.

3.3.2 Food stocks to ensure food availability

In some cities, national governments have promoted food stocks, as a way to ensure food availability when supply is disrupted for whatever reason (lower production, import disruption, etc.). This previously widely-established instrument disappeared in the 1980s in many developing countries. Structural adjustment programmes dismantled many excessively costly, badly managed initiatives, which were fraught with corruption and embezzlement practices (Alpha *et al.*, 2001). However, food reserves returned to the fore in response to the 2008 food crisis (IATP, 2012), as confirmed in our case studies.

Some food reserves are a temporary response to shocks. In Tunis, following the COVID-19 crisis the national government provided financial incentives to support private actors, be they producers or processors, in storing excess produce on the market, such as potatoes, poultry products or milk. In other case studies, food reserves have been a priority for a long time and their origin and modality vary. In Tamale, the objective of the *Ghana national buffer stocks*, initiated in 2010, was three-fold to: limit post-harvest losses; guarantee a selling price to farmers; and improve food availability in the market while stabilizing food prices. The *One District, One Warehouse* programme followed in 2017, which further enhanced the strategies of the national buffer stock. Actors in the CRFS perceived the programme as being critical to helping farmers and consumers during the recent shocks. In Kigali, the *National Strategic Grain Reserve*, which is managed by the Ministry of Agriculture and Animal Resources,

dates back to 2010. It has since played a critical role in stabilizing prices during shocks, and was instrumental in supplying the food relief programme launched in 2021 in response to the COVID-19 pandemic.

Food storage in Chengdu is the most comprehensive among all case studies. In 2007, policies and by-laws were enacted to facilitate storage of grain, oil and meat for use during high-demand seasons and unexpected shocks. Since then, the diversity of produce stored for emergencies has been increasing, together with policies and by-laws. While most initiatives focus on staple foods, the city pushed food storage for emergencies the furthest following the COVID-19 pandemic by introducing storage of vegetables and agricultural inputs.

3.4 From specific to generic resilience: a revolution?

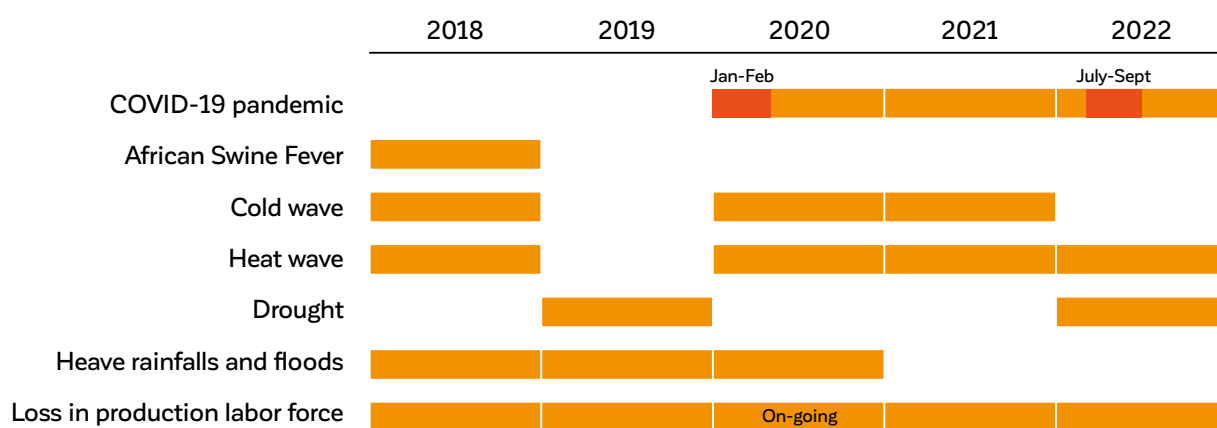
Most collective initiatives or public policies aim to strengthen resilience to climate shocks. Are these mechanisms created to provide a specific resilience to climate shocks? Are they also effective when other shocks occur? The case studies suggest that many vulnerabilities remained when the COVID-19 pandemic, and more generally, when multiple, simultaneous shocks and stresses, occurred (Figure 3). As actors in the Melbourne CRFS emphasize, the pandemic highlighted the fragility and vulnerability of the primary food system model, which is characterized by highly concentrated, centralized, long and “just in time” supply chains. This seems to be true for all the case studies. Additional initiatives were developed in a rush in response to the far-reaching impacts of these shocks on the entire food system in all case studies. It is therefore necessary that generic resilience is built for any kind of shock.

3.4.1 Scaled-up and new social protection programmes for consumers

Poverty has compelled many governments and local authorities to develop social protection programmes in support of food security and nutrition. These programmes appear to be critical for responding to shocks when a larger share of the population has fallen into food insecurity. Governments or local authorities managed to reactivate, or easily but temporarily, scale up such programmes, until the impacts of the shocks weaken. This was the case in Antananarivo, where a programme *Tsena Mora* was launched in 2011 following the sociopolitical crisis. The programme provided food produce at a low and affordable price to poor households, and was reactivated for a second time after the 2018 political crisis. This programme was also activated in February 2022 when the tropical cyclone Batsirai struck Madagascar. It seems, therefore, to have become part of the array of interventions that support the absorption of different shocks.

In Medellin, the government of Antioquia, and the office of the Mayor, scaled up a food programme *Programa de Mejoramiento Alimentario y Nutricional de Antioquia*, which was initiated in the early 2000s in response to the COVID-19 pandemic. There was the technical expertise to expand the distribution of food and the national government provided information on potential beneficiaries. In Melbourne, CRFS actors noted a proliferation of social protection programmes following the COVID-19 crisis, mostly at the state level. Some of the already existing programmes focused on food relief, such as the *Victorian Government State Emergency Management Plan*. Others were new and mostly temporary, such as the *State Food Relief Taskforce*, which is made up of food relief organizations, local, state, and federal government, community leaders and industries that provide strategic advice to the government to strengthen and enhance food relief activities.

Figure 3 Example of a timeline of recent shocks as perceived by the actors in Chengdu, China



Source: FAO. 2023. *Achieving a resilient food system in mega-cities: a look at Chengdu responses to COVID-19, climate change and other shocks and stresses*, Rome.

Modalities vary from one case study to another, and from one initiative to another. Some are focused on food relief *Vatsy tsinjo* programme in Antananarivo as a response to the COVID-19; food basket distribution in Medellin and Tunis; rice, maize and beans distribution in Kigali; the *Victorian Government State Emergency Management Plan* in Melbourne; or money transfer in Lusaka and Tunis, with the support of the United Nations Children's Fund (UNICEF), sometimes through mobile banking, for example *Tosika fameno* in Antananarivo.

In Dhaka, the *Gratuitous Relief* programme was designed to respond to cyclones and floods and provides a mix of food, money, and other items (cloths, blankets, construction materials, etc.) to the most severely affected households. In addition, the government implemented *Open Market Sales* through which rice, lentils, oil and other necessary food items are sold to the urban poor at prices lower than market prices. The government also introduced a one-time cash transfer of Bangladesh taka (BDT) 2 500 (around USD 230).

The major challenge faced by social protection programmes is the transparent targeting of households that are most in need, so as to avoid corruption and misappropriation and to increase effectiveness. In Tunis, following the onset of the COVID-19 pandemic, a dedicated digital platform was created to identify vulnerable households in need of assistance. In Kigali, local village leaders compiled lists of the most vulnerable to facilitate the targeting of food relief programmes. In Dhaka, local government administration created a new database – not without difficulties because of its urgency – to feed into the national database for a one-time cash transfer programme. As targeting is difficult, the government also introduced a hotline, where anyone suffering from food shortage could call and request food assistance. However, a condition for a cash transfer was the presentation of a National Identity Card, which is impossible for the poor to obtain who live in informal settlements with no formal permanent address, or the floating population with an address outside the Dhaka city boundaries.

Finally, new programmes went beyond food, with the aim of sustaining livelihoods, such as *Working for Victoria* in Melbourne. The objective of the initiative is to employ jobseekers in Victoria, including those who had lost their job as a result of the COVID-19 pandemic, in roles that support the community and contribute to Victoria's ability to respond to the pandemic. Strong pre-existing, formal and informal networks allowed for rapid and coordinated action in response to shocks and stresses. In Dhaka, while most public work programmes are rural, such as the *Gratuitous Relief* and the *Test Relief* programmes, which date back to the 1970s, the *National Social Security Strategy* of 2015 introduced social safety nets for all, including urban dwellers.

In Kigali, the community work programme, created in the 1990s, *Umuganda*, is based on the traditional practice of mutual assistance. The programme is now employed

to mitigate the impacts of climate shocks through cleaning water drainage, planting trees, and protecting the environment. In Tamale, the government also provided subsidized electricity and water to cushion all households in Ghana (especially poor households), which freed money to buy food. Businesses (including agribusinesses) also benefitted from these subsidies. In Kigali, the government launched the *Economic Recovery Fund* in 2021 to support businesses and protect employment. The CRFS actors reported that food-related large and small businesses benefitted, but informal actors, such as street vendors, were not eligible and therefore left behind.

3.4.2 Monitoring and control of food or food-related prices

When impacts from shocks are strong, and affect not only the most vulnerable but also higher-income groups, additional measures are needed to ensure food remains affordable. It may be sufficient to monitor prices when price hikes are related to local opportunistic practices. In Medellin, during the COVID-19 pandemic, the regional government of Antioquia set up an online platform for producers so they can monitor the price of fresh fruits and vegetables on the local wholesale market. The platform was an attempt to limit speculation resulting from the disruption of traditional marketing channels, especially the hospitality sector. The platform proved to be widely used and useful during the pandemic, but CRFS actors abandoned it when disruptions disappeared. In Chengdu, wholesale markets also play a critical role in supplying the city and in regional food distribution. Wholesale markets benefit from minimal investment from the municipal government. Price stability is included in the mandate for the markets. Data monitoring of food production areas and upstream suppliers is comprehensive, along with a listing of priority food varieties. In times of crisis, collaboration with priority food merchants allows for responsible supply and guaranteed prices.

Sometimes governments go beyond price monitoring to price control. Tunisia has a long history of controlling the prices of strategic products such as cereals. The main objective has long been to lower the producer price to ensure consumers can afford to buy. However, the Ukraine war has led the government to increase the price paid to producers for cereals in various ways so as to foster local production. This was because of the rise in the price of inputs, which affected production costs. Meanwhile, the government decided to freeze the price of animal feed to limit increased cost of animal products (milk, eggs and meat). The government also fixed prices for some produce to limit speculation (onions, tomatoes, potatoes). The CRFS actors in Tunis saw these measures as being temporary, which did not permit them to develop any long-term strategies. Similarly, in Madagascar, the government introduced price control in 2021, following the cumulative consequences of recent shocks that led to food price hikes. The government targeted a set of strategic food

products to prevent local speculation and escalating inflation. Sometimes price control targets inputs, as mentioned for Tunisia. In Kigali, the government introduced tax incentives on fuel to limit the cost of transport following the COVID-19 pandemic and the Ukraine war.

3.4.3 Towards more systemic approaches to shocks

In Melbourne, CRFS actors described the COVID-19 pandemic as hitting a “reset button” and creating an opportunity to foster collaboration and achieve things differently. In Tunis, financial incentives, including increased prices, targeted the processing of specific perishable products to allow them to be stored and to prevent losses, for example the conversion of fresh milk to powdered. Other measures, in Tunis, include support to small and medium enterprises (SMEs) to sustain economic activities and employment through financial support; in Rwanda, in response to border closures, the *Made in Rwanda Policy* aimed to substitute imports and promote exports; public work programmes were set up in Antananarivo with the *Asa avotra* programme, which is a money-for-work programme targeting urban dwellers. Traders, processors, retailers or street vendors often find a way to make do and navigate a very ineffective marketing system. Some even manage to store and speculate on their produce to generate additional profits from price fluctuations (Antananarivo, Tunis).

Chengdu is the most striking example of a series of critical policies and plans that were developed in response to shocks, which covered additional parts of the food system. The objective is to move beyond climate resilience, which focuses mainly on production shortages and the affordability of food for consumers, to a more comprehensive approach to food system resilience. Chengdu seems to have turned around the question of urban food supply: local authorities decided to build on the long-term strength of the food systems, with a genuine emphasis on a cross-sector approach.

City officials first made sure marketing channels and infrastructure were properly developed to allow the food supply to enter the city. This was ensured with the development and implementation of the *Chengdu Food Product Market Plan (2006-2020)*. Officials then supported local food production through the *High standard farmland construction initiative (2013)*, which together with market access, secured urban food supply. More recently, Chengdu has developed a new programme, in response to the pandemic, which aims to reinforce self-sufficiency with staple food, an already high-priority that needed additional attention.

The *Green Channel provincial policy* allows for a continuous flow of food and agricultural inputs across Sichuan province through several levels of coordination, thus ensuring the flexibility and

adaptability of supply sources; between cities in the province and between cities in metropolitan area. Finally, *Chengdu Action plan for ensuring daily supplies in response to large-scale epidemics*, issued in 2022, focuses on coordination, market supply, production factor guarantee, transportation, market monitoring, food relief, and public guidance. However, this action plan is still very much “pandemic-specific”. Implementation still needs to be improved and CRFS actors have acknowledged there is a delay in sharing information about the multiple dimensions of the plan.

3.4.4 Transformation as a resilience capacity: a challenge.

While shocks are often mentioned as opportunities to foster the transformation of food systems, a step beyond anticipation, prevention, absorption and adaptation, shocks seem to have led to limited transformation. In Lusaka CRFS actors perceive actions as being mostly reactive, with an overemphasis on absorbing shocks (food relief, FISP focused on input distribution) and less on prevention or transformation such as food diversification, reforming the FISP, irrigation infrastructure, food market expansion, food processing and better storage and better coordination during disaster management. In Tamale, CRFS actors found that most initiatives are preventive and anticipative; few are adaptive or transformative. They recommended that programme initiators support actors’ ability to create a fundamentally new system. This includes finding alternative activities or perspectives, diversifying livelihoods, even changing the characteristics of the system, without major qualitative changes in function or structural identity.

In Melbourne, CRFS actors noticed that many pre-existing issues that contribute to the vulnerability of the CRFS remain unchanged, despite recent shocks and stresses, and the many initiatives they have triggered. Participants in both industry and civil society described the environment following the onset of the pandemic as reactive to the symptoms of the problem. They mentioned the reliance on long and complex supply chains, the inadequate social welfare payments, fragmentation of food system governance, or an inadequate emergency food relief model and insufficient support for CSOs as examples. While these diagnostics question the capacities of public interventions to be transformative, we must recall that the challenge is to determine *ex ante* whether a change is going to be transformative or not, thereby affecting the perception of stakeholders as well as ours.

This does not necessarily mean that areas of experimentation do not exist; it may be that the present study was not able to capture many of them. Further, a study at a later date would be able to assess whether small-scale transformation has occurred and whether it could actually lead, over time, to larger-scale transformation. Actors in Kigali and Tamale CRFS have called for mobilization of transformative capacities to

move beyond prevention, anticipation and absorption at the local level.

3.5 Actors' recommendations for greater resilience: The challenges of thinking outside the box

Based on the research methodology, this study expected a few changes in the way CRFS actors think about their food system. The study endeavoured to build a framework to help people think outside the box by simultaneously introducing:

- Systems-thinking through the causality charts to clarify linkages, escape silos and foster a holistic approach.
- Resilience thinking through shocks and stresses to shift perspectives.
- An emphasis on a limited number of concrete, actionable recommendations to avoid non-operational shopping lists.

Ultimately, while CRFS actors used this framework to analyse public policies and collective actions, they had difficulties in identifying concrete and actionable recommendations, where roles and responsibilities are individuated, successive steps distinguished, means identified and timeframes set. These difficulties point to the need to strengthen our methodology to assist CRFS actors envision new and transformative solutions. The following proposals are grouped under four broad categories.

3.5.1 Overhauling social protection to prevent and absorb shocks

In all case studies, CRFS actors acknowledge how critical social protection programmes are at a time of crises to support both food accessibility and affordability. However, many issues remain:

- The reactive nature of social protection programmes: In Melbourne, CSOs criticized the Victorian Government's emergency food relief response for its inherent weaknesses, such as the reliance on a volunteer workforce and food donations from a large enterprise. Furthermore, they struggled to find the capacity to cope with regular administration work needed for funding applications, where they repeatedly competed for smaller project-based grants.
- Targeting, a genuine challenge when vulnerable populations are not well identified (Antananarivo, Dhaka, Tamale): Widespread measures in Tunisia, for example price control, are short-term, costly, and do not allow a clear targeting of vulnerable populations.
- Maladaptation: the eleven case studies show that a wide variety of safety net programmes were implemented. At times these programmes led to maladaptation. In Tunisia, CRFS actors deemed that

food subsidies, and more broadly price control of strategic produce, opened the door to informal trading and speculation that was detrimental to other CRFS actors.

Unanswered, these issues leave room for dysfunction, such as misappropriation, corruption, etc. Often, there is no monitoring, evaluation and learning process that allows for flexibility or the restructuring of social protection schemes to increase their effectiveness.

3.5.2 Boosting local food production and diversification through adaptation

Already there is a long history of addressing shocks that affect local food production, with recurrent climate events and outbreaks of crop and animal pests and diseases. In all the case studies, actors expect climate shocks to follow the recent trend and increase in number and intensity. Most of the time, small-scale producers bear the brunt of the cost.

The CRFS actors emphasized the need to strengthen local food production and, as in Lusaka and Tunisia, acknowledge the role of peri-urban agriculture and the protection of farmland. In these case studies, CRFS actors proposed an entire set of measures to support local food production; from investing in extension services to building public-private partnership; from input provision to diversification of production; and from collective action to devolved governance. However, a piecemeal approach is doomed to fail.

Lusaka CRFS actors called for a more comprehensive approach: opening up of the food production system to include horticultural products, use of irrigation and promotion of conservation farming. Actors called for the *Food Input Support Programme* to look beyond sole support to maize, which clearly hinders diversification of production, and to deploy more livestock and horticultural experts in food-producing areas.

In Antananarivo, CRFS actors insisted on the development of a comprehensive, systemic, flexible policy or strategy that can be adapted to local specificities. In Tunisia, changes in production practices were suggested: diversifying production, supporting organic and adopting agroecological practices, improving water use and management, etc., based on local know-how. The CRFS actors pointed to two complementary measures: regrouping of producers to trigger collective actions to improve the supply of inputs and marketing of their products; and supporting innovation, especially entrepreneurship of the youth; to aim for adding value and creating jobs.

In Chengdu and Medellín, CRFS actors stated that collective efforts in research and development are needed, together with technology transfer to the field. In the same way, Tamale CRFS actors insisted on scaling-up extension services to help small-scale farmers adopt new practices and technologies in order to both increase productivity and make their

production system more resilient. In Kigali, actors called for enhancing the quality and frequency of weather-related information (early warning) together with the broadening of the agricultural insurance scheme to livestock and a wider-range of crops. In Tunis, CRFS actors emphasized the reduction of food loss and waste by strengthening the role of CSOs in raising awareness.

In both Tamale and Antananarivo, CRFS actors also acknowledged the cost of such measures as a real hurdle, especially at a time of heavy public budget constraints, which make recommendations much harder to realize. A few CRFS actors came up with ideas to get around this hurdle, such as mobilizing private finance through corporate social responsibility schemes, which already happens in emergency situations (Tamale).

3.5.3 Investing in hard and soft food infrastructure

Actors in the CRFS are aware that investing in hard infrastructure (roads, irrigation, storage facilities, etc.) is costly. Nevertheless, many suggest it is essential these investments are made by local and national governments. Both basic and modern infrastructures are needed. Tamale CRFS actors emphasized the need to climate-proof roads to ensure effective transportation of food and agro-inputs during and after floods, but acknowledged interventions would be capital intensive. To some extent, the Ghana Agricultural Sector Investment Programme (GASIP) aims to respond to these challenges, since an infrastructure component is included. In Chengdu, CRFS actors stress that modern agricultural infrastructure and protected agriculture facilities as critical, together with the need for more research and development. They suggested the establishment of a research-industry cooperation platform (based on the development of Chengdu National Science and Technology Innovation Centre for Modern Agricultural Industry) to support connection of different actors involved in innovation activities and to promote science and technology transfer.

In Medellin and Melbourne, CRFS actors stated the need to fund shared and decentralized food system infrastructure, such as food hubs and processing and distribution facilities. The VicHealth's recent *Future Healthy Food Hubs* initiative, which invested Australian dollars (AUD) 4 million across seven local organizations to develop food hubs in regional and urban fringe communities is a demonstration that such investments are possible. Scaling-up will require the involvement of the state government. Similarly, in Kigali, CRFS actors insisted on the need to invest in different segments of the food system: roads, post-harvest facilities such as processing plants, or storage. Lusaka CRFS actors emphasized the absolute necessity of decongesting large urban food markets, and upgrading and constructing several neighbourhood-based markets

(in Chisamba, Chongwe and Kafue). In Rome, CRFS actors emphasized the role of green infrastructure in responding to climate change and underscored urban and peri-urban agriculture as a specific component of green infrastructure.

Beyond hard infrastructure, some CRFS actors also stated there was a lack of "soft" infrastructure including rules, regulations and institutions. For instance, recent shocks, especially the COVID-19 pandemic, and more recently the energy price hikes, have boosted the development of new market channels that shorten value chains and bring producers and local consumers closer (through direct sales, farmers' market, online sales, etc.). The CRFS actors in Antananarivo noted the need to legislate on online sale of food produce, for instance to ensure food safety. In Kigali, actors mentioned improving the enabling environment for further investments in the CRFS. Lusaka CRFS actors insisted on the need to revise the functioning of urban markets, and to clarify how producers, intermediaries and retailers operate. They emphasized the importance of developing clear and enforceable guidelines to regulate the operations of food and market agents.

3.5.4 Making a real difference through governance for strategic planning: inclusivity, coordination, and monitoring

According to many CRFS actors, none of the previous recommendations will be effective if changes are not made in the ways new policies and collective actions are developed, formulated and implemented, and by whom. In other words, the governance of CRFS has to change, even if CRFS actors do not actually use these words. They often emphasize different elements of governance taken separately such as transparency, coordination, or inclusiveness. These concerns are in line with the progressive evolution of food security in six dimensions – availability, accessibility, affordability and stability – adding agency and sustainability to the four dimensions of the classical FAO definition (Clapp *et al.*, 2022; HLPE, 2020).

CRFS actors have identified many policies developed in response to shocks and stresses, with differentiated impacts. They often underscore effectiveness as a major issue. The main recommendations deal with the development and implementation of policies and collective initiatives.

The CRFS actors criticize the lack of inclusive participation in the process of policy-making. In Medellin and Quito, actors highlighted the greater need for consultation so their needs could be understood and the need for greater participation in decision-making as being essential to the transformation of their CRFS. Actors in Quito suggested that the Quito Food Pact (*Pacto alimentario de Quito*), an informal consultative multiactor platform that stimulates innovative collective actions, could play an important

role once institutionalized. In Tamale, actors indicated that none of the policy initiators sees consultation as being their responsibility, including local authorities. They emphasized the need for constant engagement (e.g. meetings, workshops, etc.) from the planning stage through to the implementation phase of new projects, programmes or policies. This engagement could be made mandatory through by-laws. Actors also considered that it would cost little to implement this engagement in comparison to the potential benefits.

Regarding implementation, CRFS actors stress the crucial importance of improved coordination or governance, especially at the local level. Tamale CRFS actors see a need for deeper coordination between department, agencies, local governments, and the many NGOs involved in programme initiation and implementation. This would avoid duplication of effort, and ensure subsequent initiatives actually build on each other. The CRFS actors suggested the creation of a secretariat that would be chaired by the District Chief Executive – the appointed public servant who heads a district in Ghana could play this coordination role. The main condition would be for the Assembly to pass a by-law to create the secretariat and provide a clear mandate for coordination and monitoring.

In Melbourne, Rome and Tunis, CRFS actors moved a step further and called for a formal, inclusive metropolitan food system governance mechanism that brings all actors responsible for governing the CRFS together. However, such a governing body needs to be properly implemented with for instance, as suggested by CRFS actors in Tunis, a local food security strategy. The actors stressed that this strategy needs to create multisectoral networks to foster synergy between local actors, strengthen multistakeholder collaboration and ensure the exchange of information in the face of future crises and to develop appropriate solutions.

The Lusaka City Council established the Lusaka Food Policy Council in 2020, which is a governance body that was barely mentioned by CRFS actors during interviews and focus group discussions, which demonstrates the gaps between its creation and ensuring it will function. In Melbourne, power imbalances favouring powerful and privileged stakeholders, for example large retailers and industrial food organizations continue to dominate, while minority voices and diverse representation are too often limited. The CRFS actors acknowledged that the prerequisites for improved governance and transformation of the CRFS are already present:

- A long history and strong networks of food system stakeholders.
- The VicHealth Security and Food Systems Working Group, created during the COVID-19 pandemic in April 2021, and Melbourne Food Alliance played a critical leadership role in assuming coordinating roles for multi-stakeholder initiatives.
- The Consensus Statement produced by the VicHealth Working group in May 2022, which

identifies leverage points and a policy agenda to address shortcomings and vulnerabilities of its CRFS, and provides.

In Chengdu, CRFS actors also requested a better systemic strategy and special planning, with corresponding policy sets to be more transformative. This call comes in spite of the fact that Chengdu has by far the most comprehensive multilevel, horizontal and vertical coordination system, making the case for continuous endeavours. The multilevel coordination process in responding to the COVID-19 pandemic at national, provincial, metropolitan, municipal, and district levels – was established, with clear roles and responsibilities that allowed the alignment of many sectors (transport, education, agriculture, labour, etc.) with defined objectives. This cross-sectoral coordination is critical for developing and implementing systemic approaches.

The availability of precise information at the subdistrict level on production sites, transport companies, processors, manufacturers, retailers, vulnerable populations, etc. plays a key role in coordinating efforts. The involvement of the private sector through public-private partnership with the municipal government offers flexibility in diversifying supply sources and ensuring that food is accessible to households. However, barriers between sectors or actors are still in place when it comes to the long-term view. Furthermore, it is unclear whether this coordination effort in responding to the pandemic is well-enough established to be effective in responding to future shocks. Therefore, room there is still room for improvement. The CRFS actors suggested:

- Establishing a CRFS database, on which specific emergency actions and tools could rely for implementation to circumvent information sharing gaps.
- Strengthening collaboration between provinces and establish cross-provincial emergency assistance mechanisms.

4 Conclusion and hypotheses for further research

The comparison of these eleven case studies draws on the perception of CRFS actors about the resilience of their CRFS to recent shocks and long-term stresses. It provides several findings worth noting despite the following limitations of the case studies. The factsheets used in this comparison study contain the information provided by the selected CRFS actors during interviews or group discussions according to their knowledge and perceptions. The short format of the factsheet also force CRFS actors and the consultants to select information deemed the most important for each case study. Therefore, the eleven cities certainly benefitted from public policies and collective actions that CRFS actors may not have perceived as a priority for inclusion in the factsheet.

The information gathered is certainly partial, while reflecting the perception of the actors. This limitation is confirmed, for instance, when comparing the list of social protection programmes (2022) compiled in response to the COVID-19 pandemics to those mentioned by CRFS actors in our case studies. Several reasons could explain this discrepancy. First, the selection of participants (interviews and focus groups) may not have been optimal because of factors beyond our control: lack of time and availability; fatigue in responding to surveys; absence of compensation; fear of being associated with this work, etc. Second, the CRFS and resilience approaches may be too complex and may require more time to allow for greater ownership. This last could have misled CRFS actors in responding to the interview questions. Third, a few policies or collective actions may have been perceived as non-essential, and were not mentioned in the interviews or focus groups, and further work would be needed to understand why.

Because on these limitations, the following conclusive remarks should be considered cautiously, and treated as hypotheses to be verified and stimulate discussion rather than definite answers.

- **Shocks: windows of opportunity for CRFS transformation?** The COVID-19 pandemic has triggered many measures by public and private actors. However, the initial thought that the COVID-19 pandemic was a window of opportunity for CRFS transformation has yet to be confirmed: whether lessons have been learned and resilience improved remains to be seen. These measures came at a cost, and the window of opportunity is shrinking fast as other shocks are occurring that may be seen as competing in urgency – even though, these new shocks can have compounding impacts on food systems. One of these is the macroeconomic consequence of the Ukraine war, as reported in a few of the case studies. The macroeconomic consequences will significantly affect national budgets and limit fiscal spending and a debt crisis looms in many countries. This situation questions the sustainability of current initiatives and policies, and the feasibility of many recommendations. Additional work is needed to move from shocks, as a window of opportunity for change, to shocks as effective sources of transformation.
- **Shocks dominate: stresses highly overlooked?** It seems that the attention given to stresses is overshadowed by shocks, but the reasons why are not clear. Understanding this difference of perception between shocks and stresses requires additional work. This study suggests a few hypotheses. First, the importance of recent shocks such as the COVID-19 pandemic may have overvalued shocks and their impacts, pushing stresses into the background. Second, stresses have progressive and non-linear impacts, growing mostly unnoticed until a threshold is crossed

and there are disastrous impacts. Then shocks become the result of the tipping point of stresses or thresholds being crossed. Third, this last hypothesis may also have affected consultants, and unconsciously influenced interviews and focus group discussions to point out shocks rather than stresses. Finally, the distinction between inner structural weaknesses of CRFS, and external stresses is unclear to many CRFS actors. Building CRFS resilience would, therefore, require drawing greater attention to external stresses and thereby preventing stress-related shocks.

- **All shocks are different: specific or generic resilience?** The case studies also highlight the distinction between specific and generic resilience. In most case studies, climate shocks were considered as frequent, and actions were developed to deal with them. Some level of specific resilience is provided as many policies or programmes were expanded or reactivated in response to recent non-climatic shocks. Whether they will remain effective in the future, with the predicted increase in frequency and intensity, is yet to be determined. What the COVID-19 crisis and the Ukraine war have shown, is that specified resilience is not sufficient to ensure generic resilience. Unexpected events that are sometimes referred to as “Black swans”, remind us that general resilience may be an illusion, impossible to achieve. The question remains as to whether aiming for general resilience would substantially improve the level of preparedness, or not.
- **Structural weaknesses and vulnerabilities: back to business as usual?** Responding to the structural weaknesses of the food system is critical because these weaknesses are a major source of households’ vulnerabilities. However, policies addressing structural weaknesses run the risk of reinforcing the current system by integrating those left behind into the same system, without questioning the system’s inner suitability and sustainability.
- **Social protection and resilience: not necessarily synonymous?** Because of the previously mentioned focus on vulnerability, social protection programmes appear to be critical. Most of these programmes operate through the transfer of food or money, and display opportunities for increased effectiveness if targeting and transparency are improved. However, in many cases social protection programmes are long-term initiatives, expanded or reduced with the ebbs and flows of shocks and their impacts. This indicates that while they act as a critical buffer, they are designed to absorb shocks and not to protect people from becoming vulnerable. The way programmes are designed is critical, so as not to lock people into recurrent vulnerability. Innovative social protection programmes could lift people out of poverty and strengthen their resilience

beyond absorptive capacities (e.g. universal basic income, universal basic services, job guarantees, and community ownership models). None were identified in our case studies. One possible idea is to explore if it would be better to move away from considering the vulnerability of the population, to consideration of the vulnerability of the system itself when designing social protection programmes.

➤ **Snippets of transformation: an issue?** Among the many public policies and collective initiatives CRFS actors identified, very few were deemed adaptive or transformative. This raises several questions. The first is, while transformation of food systems is critical to increasing resilience and sustainability, CRFS actors struggled to define exactly what transformation means in the context of resilience. Furthermore, the frontier between adaptation and transformation is often slim. Then, transformation happens either when the system is deemed undesirable (desired transformations) or when the system becomes untenable (forced transformations). Are we heading towards desired or forced transformation? This question is critical, as a forced transformation may not lead to more resilient or sustainable food systems. Finally, it is challenging to determine *ex ante* whether a change is transformative or not, thereby affecting the perception of both stakeholders and researchers. There is a need to build capacity around food system transformability: the work undertaken by FAO through the CRFS programme comprises working on a shared understanding and diagnostic of the food system, and developing a common vision for the future of the CRFS,⁶ are important cornerstones in this respect (Leeuwis, Boogaard and Atta-Krah, 2021).

➤ **Identifying actionable recommendations: struggling for role and responsibilities?** Despite the efforts of this research methodology, developing concrete, palatable, actionable

recommendations is still a challenge for CRFS actors. Most recommendations are conservative and numerous, and lean towards the shopping list syndrome, because all CRFS face multiple challenges. However, a thorough methodology is required to help CRFS actors prioritize, and come up with actionable recommendations where roles and responsibilities, capacities and remits, are recognized, successive steps enumerated, means and resources identified or timeframes set.

➤ **Systemic approaches: is it that challenging?** This research methodology intended to help CRFS actors think in a systemic way. The ability of the CRFS actors to come up with causal loop diagrams during the focus group discussion, and the positive feedback they provided, shows how such a tool can help actors think systemically. However, attention should be drawn to two important issues. First, the resilience framework seems to introduce a specific focus on vulnerable actors in each node of the system taken separately. This may come at the expense of a systemic approach to the food system, and the context in which it operates. Second, more work with CRFS actors is needed to help them integrate systemic approaches when working on recommendations so they can come up with innovative solutions that are adapted to their local context.

The challenges to sustainability and resilience in food systems at all scales are real and require urgent attention. The CRFS and resilience frameworks are promising as they provide new ways to analyse food systems. Applying resilience frameworks in the eleven cities helped raise broad questions that will require further work. These frameworks are complex and further capacity-building of CRFS actors is required so they can take proper ownership and effectively understand value addition; so they can learn to change the lens through which CRFS challenges are seen, and help them to create required and innovative responses. The eleven case studies seek to build on this effort.

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