



Building resilience in city region food systems (CRFS) – the CRFS Assessment and Planning Handbook and Toolkit

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1. Introduction

As the world experiences rapid urbanization, the global urban population is estimated to reach 70 percent by 2050 (UNDESA, 2019). By that time, an additional 2.5 billion people are expected to call urban areas home, with the majority of this growth unfolding in Africa and Asia (UNDESA, 2019). This demographic shift presents significant sustainability challenges, while cities are already facing multiple shocks and stresses such as climate change, health crises and political conflict. The vulnerabilities of both local and global food systems became especially evident in recent years with significant food supply chain disruptions, food shortages, increased food loss and waste and restricted food access during the COVID-19 pandemic and the Ukraine conflict. The impacts of food system shocks and stresses can affect every aspect of a city's food systems, from production and distribution to consumption and waste management, impacting both urban and rural areas. The most vulnerable communities

often bear the brunt of these challenges, facing hunger, food insecurity and malnutrition. With the continuous emergence of new and existing shocks and stresses, preparedness, adaptation, and transformation of food systems become an urgent need.

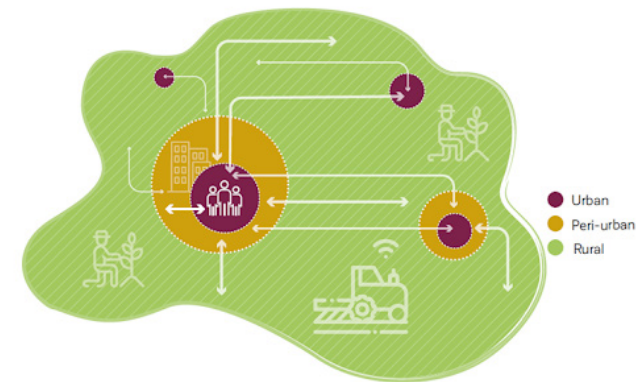
While cities serve as hubs for innovation, progress and economic development, they are also substantial contributors to climate change, accounting for 70 percent of global greenhouse gas emissions (C40 Cities, 2019). Indeed, the global food system ranks as the third-largest emitter of global greenhouse gases and significantly contributes to the depletion of natural resources and loss of biodiversity (C40 Cities, 2019; Benton et al., 2021). Cities become especially relevant in this context, as 70% of all food is destined for consumption in urban areas (FAO, 2019). In addition, changing dietary patterns in urban areas accompany the urbanization wave and cast a shadow over public health through the rise in obesity and non-communicable diseases.

In response to the multifaceted challenges posed by urbanization, climate change, and food system vulnerabilities, the Food and Agriculture Organization (FAO), in collaboration with the RUAF Global Partnership on Sustainable Urban Agriculture and Food Systems, launched the City Region Food Systems (CRFS) Programme in 2014. Implemented in 11 cities across 10 countries, the programme aims to enhance the resilience and sustainability of city region food systems. Its approach includes understanding the intricate dynamics of cities, their rural hinterlands and food systems, evaluating risks and vulnerabilities posed by various shocks and stresses, engaging residents in local food policy planning, fostering multi-stakeholder cooperation for more effective governance, and facilitating the exchange of best practices among cities, with the ultimate goal of transforming the way cities manage their food systems across urban and rural areas.

The programme empowers local governments and food system stakeholders to enhance resilience and promote economic, social, and environmental improvements in urban and rural areas. It adopts a territorial perspective, encompassing urban centres and their surrounding rural areas, and fostering rural-urban linkages for integrated development. It also acknowledges the role of food as a common thread across people, goods, and ecosystem services and across sectors and spatial dimensions. The programme's collaborative nature brings together a diverse range of stakeholders, spanning from food producers and traders to input suppliers and consumers, transcending sectoral and geographical boundaries. Moreover, the programme methodology integrates a comprehensive risk assessment approach to identify various shocks and stresses threatening the food system and evaluate exposure, vulnerabilities, and resilience capacities.

In geographical terms, a city region can be described as a “a larger urban centre – or conglomeration of smaller urban centres – and the surround-

ing and interspersed peri-urban and rural hinterland” (Rodríguez-Pose, 2008). This term not only encompasses megacities and the immediate agricultural and rural zones adjacent to them, but it also includes small to medium-sized towns that act as connectors between remote small-scale producers and the urban centres and markets they serve. City regions can also be defined as a network of towns collaborating within a specific geographic area, focusing on economic, social, or environmental assets, interests, and challenges. Functionally, a city region represents an area where people, goods, and ecosystem services move along the rural-urban spectrum. City regions may extend beyond administrative boundaries, requiring urban-rural partnerships and inter-municipal cooperation (Figure 1)



The dotted lines around the urban and peri-urban areas indicate that the borders are not fixed within the urban-rural continuum, and are porous. The white arrows indicate functional relations or ties between the areas, such as food, goods, workforce, ecosystem services. The different weights of the arrows show different intensities or importance of these relations or ties.

Figure 1 - Graphical representation of the city region concept adapted from Han Wiskerke and Paul Hebinck, Wageningen University (unpublished in FAO, 2023)

A city region food system involves applying the principles of the food systems approach to a particular geographic area centred around a city,

encompassing the people, processes and relationships engaged in food production, processing and manufacturing, distribution, markets, consumption, and food loss and waste (FAO, 2023).

2. The City Region Food Systems Assessment and Planning Handbook and Online Toolkit

Based on the experiences of pilot city regions around the world throughout two programme phases, FAO and RUAF developed the City Region Food Systems Assessment and Planning Handbook and Online Toolkit to support stakeholders in their journey towards building resilient, sustainable, and inclusive city region food systems in an increasingly urbanized world (FAO, 2023). The Handbook and Toolkit offer a comprehensive and adaptable framework for understanding, assessing, and enhancing the resilience and sustainability of city region food systems. The handbook is designed for project teams and food systems stakeholders within city regions. It guides users through the core concepts and terminology underpinning the CRFS approach and offers a breakdown of activities and expected outcomes within its five project modules: Inception, Define the city region food system, Rapid scan, In-depth assessment, and Action planning (**Figure 2**).

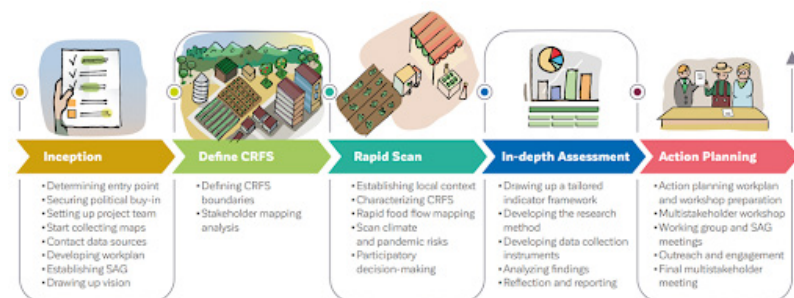


Figure 2 - Linear representation of the CRFS assessment and planning process (FAO, 2023)

Complementing the handbook, the online toolkit available on the [FAO website](#) presents a digital repository containing training units, supplementary explanations, practical tools, technical examples and workshop resources that align with each module.

The Inception module serves as a starting point through determining entry points, securing political buy-in, setting up a project team, collecting data, developing a workplan, establishing a stakeholder advisory group and drawing up a shared vision. In the module Define the CRFS, the CRFS boundaries are defined, and a stakeholder mapping analysis is conducted. The Rapid Scan marks the initial stage of the assessment and relies entirely on secondary data and insights from stakeholders. The primary objective of this module is to build a broad and overall understanding of the CRFS, facilitating the identification of priority areas that require more detailed information for the development of action plans. The In-depth Assessment then entails primary data collection and analysis related to challenges, constraints, vulnerabilities, and capacity gaps within the priority areas. This detailed information validates the Rapid Scan findings and uncovers the root causes of these issues. The assessments inform the Action Planning module, which engages a diverse group of CRFS stakeholders, organized into thematic groups, that jointly develop an action plan to tackle the CRFS priorities (FAO, 2023).

The modular process allows flexibility in its application. The individual modules do not necessarily need to be completed in a linear sequence but can be strategically tailored to the local context or informed by previous food system work. Certain modules can be omitted or adjusted according to the available capacity and resources. The introduction to each module provides implementation options and suggests potential follow-up steps.

The CRFS Handbook encompasses two thematic tracks. The “main track” follows the overall functionality and performance of city region food sys-

tems. The “multi-risk track” allows for an in-depth assessment of multiple risks and impacts in the local food system, in order to gain an understanding of the main shocks and stresses such as climate shocks and pandemics, as well as underlying vulnerabilities and existing resilience capacities. These tracks can be pursued either in parallel or as separate projects. An indicator framework serves as a tool for prioritization, monitoring progress and evaluating impacts throughout the assessment and planning journey.

Mapping and spatial analysis are intrinsic to the CRFS assessment process, given its specific territorial focus on city regions. These activities offer a visualization of the city region food system, including critical stakeholders, assets, infrastructures, and multiple layers of spatial data. This visual analysis can uncover obstacles, identify challenges, and reveal vulnerabilities within the food system.

The CRFS assessment process allows stakeholders to engage in evidence-based action planning, and develop concrete interventions, policies and practices to address identified issues and enhance resilience capacities. These interventions may encompass new policies, programme adaptations, or enhancements to existing initiatives. The multistakeholder process enhances a deeper understanding and awareness of the city region food system among food system actors, fostering collaborative governance. Ideally, this multistakeholder collaboration can be established as a longer-term governance mechanism or food policy council, ensuring the continuous improvement of the food system and responsive action to emerging challenges.

The food systems approach of the CRFS methodology integrates environmental, economic, and social sustainability, capturing the complexity of compounding challenges.

3. Showcasing the Assessment and Planning Process in Action: Experiences from Antananarivo, Kigali and Colombo

3.1. Antananarivo, Madagascar

The CRFS of Antananarivo encompasses a set of urban and rural municipalities located within 100 km of the city centre, producing a diverse range of agricultural products sufficient to meet urban demand. The region faces climate-related challenges, including erratic rainfall and heat stress, as well as food price inflation. To tackle those challenges, FAO and the Ministry of Agriculture and Livestock initiated the CRFS assessment and planning process, building on several existing urban food-related initiatives within the city and the broader region, after Antananarivo had signed the Milan Urban Food Policy Pact in 2017. Key stakeholders from the city, regional, and national government institutions collaborated to establish initial priority areas. They jointly adopted a multistakeholder approach, creating a Stakeholder Advisory Group (SAG), to align efforts and integrate new and existing initiatives into the project.

After a rapid scan, the City of Antananarivo, the Regional Direction of Agriculture from the Ministry of Agriculture, and the Region of Analamanga, decided to proceed with an in-depth assessment of the CRFS to gain a deeper understanding of the food system’s main vulnerabilities in the face of climate shocks and stresses. Through multistakeholder dialogues, the SAG formulated a shared vision for a resilient and equitable food system by 2035, to feed the growing population, ensuring access to nutritious food for all, while promoting local supply chains that protect the environment, enhance social equity and enable job creation. This vision has been translated into a set of concrete measures to enhance resilience, engaging all stakeholders in the food system, including individuals, businesses, associations, communities, and government bodies.

The SAG then developed a comprehensive strategy and action plan, aimed at strengthening the resilience capacities of food system actors while providing robust support for food production. Facing the impacts of the COVID-19 pandemic on the population's purchasing power, the focus on resilience was welcomed by the national authorities, and aligned with the Mayor's commitment towards a healthier and more sustainable food system through the initiative "Greening Antananarivo". The integrated CRFS approach facilitated productive dialogues with the regional technical committee responsible for developing the 2023 Regional Land-use Plan for Analamanga, focused on building resilience by enhancing economic opportunities in the region. In addition, the CRFS strategy for Antananarivo was presented to technical actors with the aim of mainstreaming specific actions to support food system resilience in the upcoming Regional Development Plan.

The concerted effort from the institutions and stakeholders to create an integrated roadmap of actions holds the potential to contribute to reducing malnutrition and hunger in one of Madagascar's regions facing the highest rates of chronic malnutrition. The inclusive and participatory nature of the CRFS approach facilitated the establishment of a robust multistakeholder dialogue, bringing together diverse stakeholders within a governance framework beyond sectoral boundaries.

3.2. Kigali, Rwanda

As the capital of Rwanda, Kigali hosts more than 50 percent of the country's urban population. In view of climate extreme events, such as droughts and floods, threatening the local food system, FAO initiated the implementation of the CRFS programme in Kigali by contacting the city authorities and securing the Mayor's interest. A designated focal person from the city of Kigali was identified that played an active and instrumental role in mobilizing other stakeholders and local institutions to take ownership

of the project and in identifying common priorities. The primary thematic entry point centred around food supply systems, particularly concerning the value chains that supply the Kigali city region. Additional priority areas included marshlands susceptible to flooding, water harvesting for food production, irrigation, addressing food losses and post-harvest facilities, as well as engaging youth in agriculture.

This initiative began by defining the boundaries of the Kigali City Region Food System (KCRFS) and establishing a multidisciplinary and intersectoral SAG. Together, they crafted a shared vision for the KCRFS, identified key indicators, and prioritized areas for attention. Subsequently, FAO conducted a thorough assessment of climate and COVID-19 pandemic risks and their impacts on the city region food system. These insights informed the participatory planning phase, during which the SAG collaborated to develop a KCRFS Strategy and Action Plan aimed at creating a resilient and sustainable food system within the Kigali city region. A series of workshops held during this phase encouraged and facilitated multistakeholder and multilevel cooperation among the city region food system stakeholders, thus advancing the implementation of the strategy and action plan.

The CRFS approach has played a pivotal role in enabling participants within the city region food system to strategically design actions that encompass all resilience capacities, contributing to food and nutrition security, as well as to climate change adaptation and mitigation. The participatory approach at the heart of the CRFS programme has cultivated a robust and collaborative dialogue among diverse stakeholders, transcending traditional sectoral boundaries and placing stakeholder involvement as its central focus. Within this transformative governance framework facilitated by FAO, stakeholders have united to collectively address the intricate challenges confronting the city region food system. By dismantling barriers and embracing a stakeholder-driven approach, the strategy aims

to establish a resilient and sustainable food system capable of meeting the needs of both present and future generations effectively.

3.3. Colombo, Sri Lanka

Colombo, Sri Lanka's largest city and financial hub, faces climate-related hazards such as extreme rainfall, floods, droughts, rising sea levels and extreme temperatures. The CRFS project in Colombo commenced by securing political support from key government institutions, which also proved instrumental in integrating urban food systems into the National Agriculture Policy. Entranceways for the CRFS project were the imperative for more sustainable urban-rural linkages and the necessity to establish a more efficient supply chain network serving the Colombo region, a pressing need amplified by ongoing climate change impacts and the COVID-19 pandemic.

After conducting a rapid scan of climate risks, the project team decided to proceed with a food flow mapping of the key food commodities in the city region, which included identifying how food moves through the value chain, from its origin on the farm to its final destination on consumers' plates. This comprehensive mapping involved identifying food production areas, storage facilities, distribution pathways, transportation modes and markets and retail outlets.

While political and economic turmoil in Sri Lanka, compounded by climate events, the COVID-19 pandemic and the Ukraine conflict, delayed the food flow mapping as well as the action planning process, the Sri Lankan Ministry of Agriculture already took several critical actions to enhance food system resilience in response to these challenges. These measures included supplying seeds to vulnerable dry zone areas, launching agricultural input programmes, ensuring uninterrupted agricultural extension services, and initiating staple food growing campaigns.

Going forward, Colombo's priority areas of action include establishing a robust database and information sharing mechanism, reducing food losses and waste throughout the food supply chain, improving packaging and storage, and strengthening the supply chain. Emphasizing climate-resilient crop varieties and animal breeds, especially in rural areas, is deemed crucial to mitigating climate-related shocks. Urban and peri-urban agriculture production is seen as a way to utilise limited available land more efficiently. Urban gardening and community gardening are being promoted within the limited spaces available in the Colombo City region food system, whereas techniques like vertical farming and green agriculture practices are being explored. These actions are set to be reinforced by national-level policy changes aimed at improving production, productivity, self-sufficiency in main food crops, resource management, risk reduction, and engagement in agriculture.

4. Conclusion

In the CRFS pilot cities Antananarivo, Kigali and Colombo, the CRFS approach provided a structured framework to understand the intricacies of their local food systems, assess risks and vulnerabilities, and develop actionable strategies for enhancing resilience and sustainability. In addition to the insights gained from implementing the CRFS programme in eight other cities (Lusaka, Kitwe, Medellin, Utrecht, Quito, Tamale, Toronto and Melbourne), these collective experiences underline the importance of building resilient food systems in response to diverse challenges and the value of the CRFS Programme in supporting cities on their journey towards resilience, food security and sustainability.

The CRFS Assessment and Planning Handbook and Online Toolkit represent valuable assets in addressing the pressing challenges of food security, nutrition, and resilience in a world marked by compounding crises that disproportionately affect the most vulnerable populations. With var-

ious shocks and stresses threatening global food systems, cities stand at the forefront of addressing these challenges. The CRFS Programme's integrated approach provides a comprehensive roadmap with its handbook and toolkit, equipping cities and stakeholders with the knowledge and tools needed to navigate the complexities of building resilient and sustainable food systems capable of withstanding multiple shocks and stresses. The guidance, insights, practical examples, and a wealth of resources provided empower cities and stakeholders to facilitate meaningful dialogue, collect essential data, conduct analyses, make informed decisions and take action.

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