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CENTER *for* A LIVABLE FUTURE

**Gov  
Ex**

# FOOD SYSTEM RESILIENCE

A PLANNING  
GUIDE FOR LOCAL  
GOVERNMENTS



Photo Credit: Seth Sawyers, Charles Street, mid-blizzard Flickr, CC BY 2.0



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**EXECUTIVE  
SUMMARY**

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Management

## EXECUTIVE SUMMARY

Natural and human-made disasters directly and indirectly affect people and the functioning of food systems. Those with the most vulnerabilities and who are the most marginalized are at the greatest risk. Local governments around the United States (US) have started to take action to help prepare for and prevent the consequences of these disruptions on their food systems, but there is limited information available to support local governments in this work.

This planning guide aims to provide local governments with resources to build local food system resilience and to do so in a way that promotes an equitable and just food system. The primary audience for this planning guide is local government staff (e.g., planners, sustainability directors, food systems managers, emergency management staff, resilience managers, etc.) and policymakers who can develop and implement policies at the sub-national level. While one entity, a government agency or office, may lead the food system resilience planning efforts outlined in this guide, many community partners will need to be involved. Effective food system resilience work requires meaningful collaboration with community partners and community members.

This planning guide is not a blueprint; it includes background information on important concepts and a set of tools, that if used together will help you develop a set of food system resilience strategies. The strategies can be used to create a stand-alone food system resilience plan or be embedded into other developing or existing local government plans. We recommend that you complete the modules in order, as they build on one another. If your jurisdiction has completed elements of the work already, you may skip to the next section.

### **This guide is structured into six key modules:**

- Get Started
- Equity in Resilience
- Define & Scope
- Assess
- Strategize
- Implement & Measure

This planning guide was developed collaboratively by researchers at the Johns Hopkins Center for a Livable Future and Bloomberg Center for Government Excellence (a part of [GovEx](#)) and representatives of five US cities: Austin, Texas; Baltimore, Maryland; Denver, Colorado; Moorhead, Minnesota; and Orlando, Florida. During a year-long process, the group worked together to develop and test the resources provided.

The field of food system resilience is relatively nascent. While we have combined practice and research knowledge to develop these resources, the practices may shift as new evidence emerges and more strategies are implemented. We hope that this planning guide is helpful for those interested in starting and those wanting to advance work in food system resilience.

**MODULE 1:  
GET STARTED**

Image credit: Karen Gardner, CLF Food Policy Networks Photo Contest, 2019



# INTRODUCTION

## **This section will help you to:**

- Understand how food system resilience planning can improve local governments' ability to respond to food system crises and create more equitable food systems
- Know how to use this guide and how it can be adapted to your unique context and needs
- Learn about how this guide was created and which cities were involved in the process

Food systems face acute and chronic threats caused by social, natural, and political crises. Natural and human-made disasters have already disrupted food systems across supply chains, on farms, and at the dinner table. The disruptions threaten food security and often magnify existing racial, geographic, and socioeconomic inequities.

The Coronavirus Disease 2019 (COVID-19) pandemic, for example, brought to light many vulnerabilities in food supply chains and social systems in the United States. The pandemic and consequent policies to contain its spread led to food shortages, unemployment, and escalating food insecurity, hitting many communities that already experienced the greatest inequities the hardest.<sup>1</sup> The crisis stretched thin the already limited resources of nonprofit food assistance programs, with governments from the federal to local level stepping in to help fill the gaps and coordinate responses. For local governments in the US, the COVID-19 pandemic experience underlined the need to prepare food systems for future disruptive events—and to plan in a way that advances food systems that are equitable and just.

Local governments can play a key role in preparing, responding to, and recovering from food system impacts of disruptive events. Municipalities that have developed food system resilience plans (for example, Baltimore,<sup>2,3</sup> Boston,<sup>4</sup> Toronto<sup>5</sup>) have demonstrated that there are many actions that local governments can take to build food system resilience.

Food system resilience planning can help a local government to:

- Prepare for disruptive events by improving their knowledge and understanding of potential threats (e.g., flood, civil unrest, pandemic, etc.) that might disrupt food systems.
- Respond to food system disruptions more efficiently and effectively by having plans in place and existing relationships with key actors in the jurisdiction and beyond.
- Create more equitable and just food systems by implementing food system resilience actions that uproot the systems and structures that create inequities in the food systems.

Local governments are also uniquely equipped to help lead food system resilience work because:

- Local policies (such as zoning laws) shape local food environments.
- Local government agencies (such as the school district) are key providers of meals.
- Local governments are often able to be more responsive than the federal government to their community's needs.
- Local governments can play a crucial role in coordinating emergency food response efforts.

Although this guide is focused on local government, governments are just one of many entities critical for supporting food security before, during, and after a disruption. Building a more resilient food system should be done as a partnership between local government, businesses, community organizations, players outside the local area, and community members who are responsible for as well as affected by the food system. Engaging the people, organizations, and systems that are most vulnerable can help to anticipate, prepare for, and reduce the burden of potential disruptions on communities and assure that solutions have positive impacts. Additionally, because food system resilience work helps develop a deeper understanding of food system vulnerabilities, strengths, and adaptive capacities, and helps foster collaboration, many solutions are “win-win.” This means that even if a crisis never occurs, implementing resilience solutions can help build more sustainable, healthy, and equitable food systems.

## PURPOSE OF THIS PLANNING GUIDE

Whether you’re new to food systems work, or you already have a food system resilience plan in your jurisdiction, this guide has information and tools to build the capacity of local governments to address food system resilience. The primary audience for this planning guide is local government staff (e.g., planners, sustainability directors, food systems managers, emergency management staff, public health officials, etc.) and policymakers who can develop and implement policies at the sub-national level.

## USING THIS PLANNING GUIDE

This guide will take you through a linear process that will result in a deeper understanding of your food system and a set of strategies for building food system resilience and considerations for implementing them. The strategies might be used to form a stand-alone food system resilience plan, or they may be embedded into a newly forming food, climate, or resilience plan. They may be added to an emergency management plan or inserted during a comprehensive plan review. They could also be used to guide programming or apply for a funding to support food system resilience work. While the examples and processes are largely based on information from the United States, the tools may be applicable and adaptable to other countries.

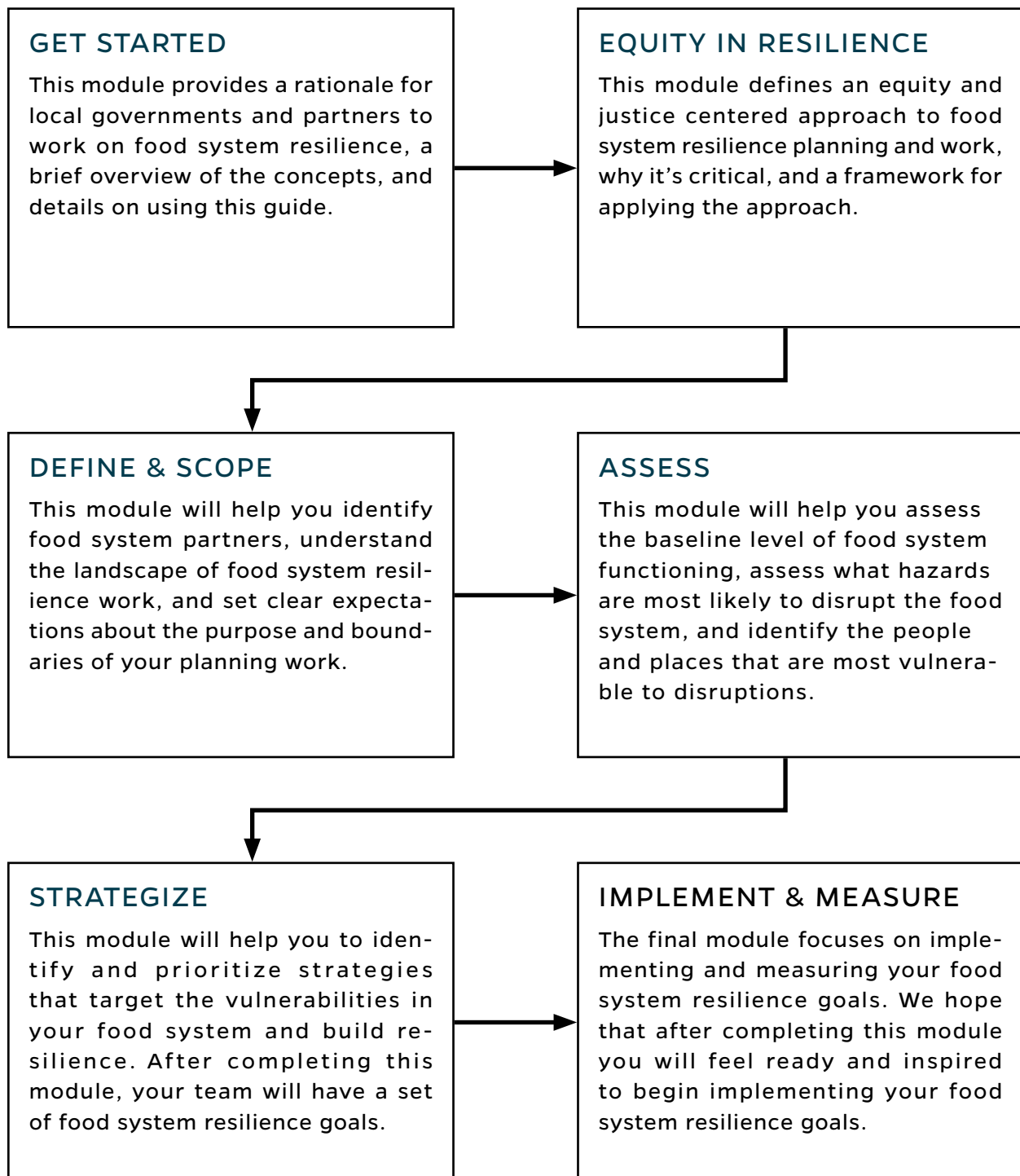
The guide has six modules, each focusing on unique elements of the food system resilience planning process. While you can complete the modules at your own pace, each module builds on the preceding module, so they should be completed sequentially.



When you see this icon in a section, it indicates that this is a place to stop and use a tool.



**Figure 1.** Overview and Brief Description of the Six Modules in this Guide



## PEER PERSPECTIVE

*“[The best part of participating] was hearing from the other Community of Practice cities. Especially learning about some of the challenges that they were having and recognizing that in a lot of ways they were similar to the challenges that we were having, even though there were some pretty big differences too.”*

*(Food System Resilience Community of Practice participant, statement edited for clarity)*

In each module, you will find the following:

- **Background Information** and context to use the tools.
- **Equity Checks** with tips for how to ensure equity principles are reflected in each stage of the planning process.
- **Peer Perspectives** about the experiences of the city representatives who helped to create this guide..
- **Additional Resources** to learn more about the topic.
- **Tools** with worksheets and/or activities that can be completed either individually or with partners.

This guide is intentionally designed to be adapted according to your local government’s capacity and your community’s unique context and needs. It provides resources to help local government staff understand where food systems issues fit within resilience and disaster planning and vice versa. Throughout, we provide case studies and hypothetical examples to demonstrate how this work is (or could be) done and suggest resources for learning more about specific topics and enhancing your capacity to do this work.

For simplicity, we use “you” to refer to the user of this planning guide. “You” may refer to your agency, organization, or local government.

## CREATION OF THIS PLANNING GUIDE

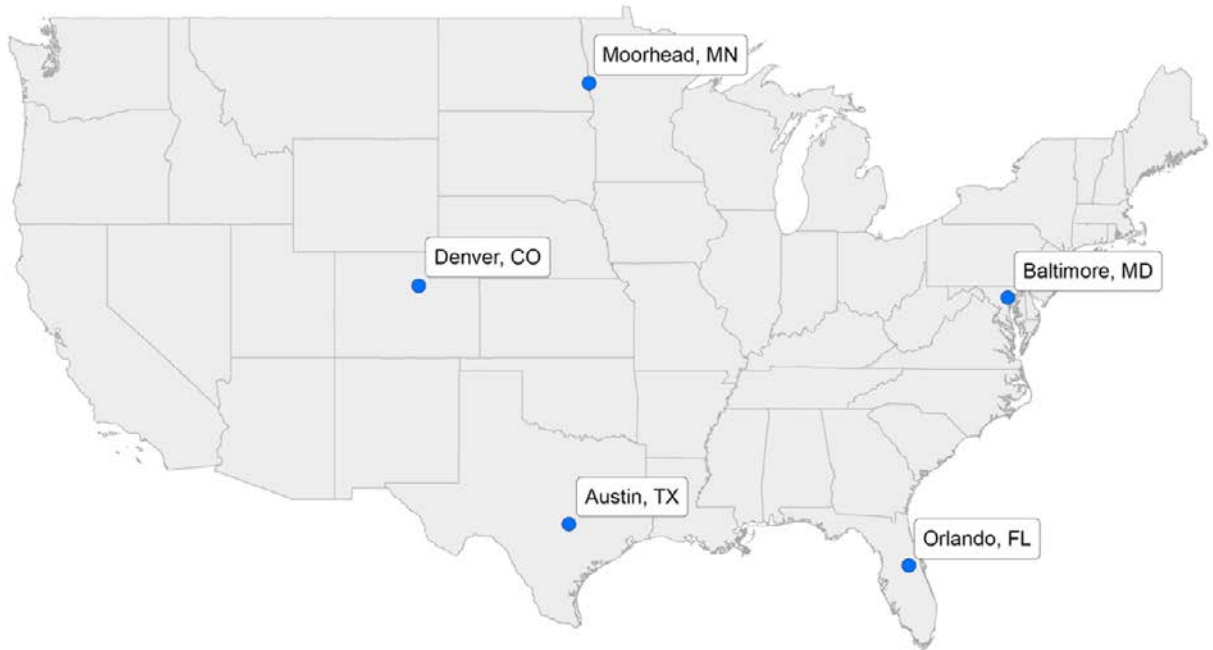
Recognizing the limited capacity and resources available for most local governments to address food system resilience, in 2019, the Johns Hopkins [Center for a Livable Future](#) and [Bloomberg Center for Government Excellence](#) at Johns Hopkins University (JHU) partnered to launch a Community of Practice with representatives of five US cities: Austin, Texas; Baltimore, Maryland; Denver, Colorado; Moorhead, Minnesota; and Orlando, Florida. Funded by the National Science Foundation (grant number 1745375), the Community of Practice aimed to combine evidence and on-the-ground experiences from practitioners to develop this guide.

The five member cities were selected based on mutual interest in food system resilience planning, and to achieve diversity in geography, population size and density, demographics, climate change risks, form of government, level of existing food systems planning, and regional connections.

At least two representatives from each location participated in the year-long guide development process. Community of Practice members worked for local government agencies or institutions that work closely with city government. **Table 1** lists the types of organizations and roles of people who were

involved in the Food System Resilience Community of Practice, as one illustration of the range of people involved in food system resilience planning work.

**Figure 2.** *Cities Participating in the Food System Resilience Community of Practice*  
Created by Jamie Harding.



**Table 1.** Food System Resilience Community of Practice Organizations and Individual Roles

Lead Organization Examples	Individual Roles/Titles
Office of Sustainability Office of Climate Action, Resilience, and Sustainability City Council Department of Planning Department of Public Health Department of the Environment Downtown Development Board/Economic Development Agency University Extension Regional Food Policy Council	City Council Member Planner Administrator Project/Program Manager Educator Student

## HUMAN-CENTERED DESIGN

During the initial design phases of the Community of Practice, the Johns Hopkins University team worked with a student completing a fellowship through the [Maryland Institute College of Art \(MICA\) Center for Social Design](#) to integrate principles of Human-Centered Design into the Community of Practice. This process focuses on designing solutions for and with the people for whom they are intended to reach.

Community of Practice members participated in monthly group sessions, one-on-one calls, and completed assignments to help develop this guide. Throughout the guide there are quotes by Community of Practice members that capture their experiences.

Prior to the development of this guide, the Johns Hopkins Center for a Livable Future collaborated with the Baltimore Office of Sustainability on the Baltimore Food System Resilience Advisory Report<sup>2</sup> and the Baltimore City Food Resilience Strategy.<sup>3</sup> The guide presented here used these resources as a starting point to explore how other cities in the United States can develop their own unique food system resilience plans, programs, and policies.

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# UNDERSTANDING FOOD SYSTEM RESILIENCE

## DISASTER JUSTICE

Some disruptions are referred to as **disasters**. The United Nations Office of Disaster Risk Reduction defines a disaster as “a serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts.”<sup>4</sup> Many also argue that disasters are rooted in social problems, that disasters disproportionately affect disadvantaged communities because of structural inequities, and that disaster preparedness and response efforts perpetuate these oppressive systems. **Disaster justice** has emerged as a concept that “blends the ongoing struggles for environmental, climate, ecological, language and social justice with demands for improvement of disaster preparedness and response mechanisms.”<sup>5</sup> To learn more about how to support community-led disaster justice efforts, see the Praxis Project’s [Moving from Disaster Preparedness to Disaster Justice: Centering Community & Racial Justice for a Transformed Future](#).

### This section will help you to:

- Describe food system resilience and how it differs from sustainability and stability
- Frame food system resilience as a determinant of a well-functioning food system
- Understand the difference between shocks and stressors and how they can both affect food system functioning
- Explain and recognize characteristics of more resilient food systems

This section provides the fundamentals of food system resilience. Even if you are well-versed in food system resilience concepts, we recommend that you read this section so you are familiar with how we define food system resilience for this guide.

We define food system resilience as “the capacity over time of a food system and its units at multiple levels, to provide sufficient, appropriate, and accessible food to all, in the face of various and even unforeseen disturbances.”<sup>1</sup> To help better understand this definition, we break it apart—exploring first what we mean by food system and resilience and then how the two concepts merge for food system resilience.

## FOOD SYSTEM

A **food system** is “all the activities and resources that go into producing, distributing, and consuming food, the drivers and outcomes of those processes, and all the relationships and feedback loops between system components.”<sup>2</sup> A food system can be very complicated; within a jurisdiction, it may be overseen by multiple government departments, and both depend on and impact the functioning of other systems—such as transportation, energy, or health.

The food system framework (**Figure 3**) highlights the multiple external influences on a food system and the interconnections between different elements.<sup>3</sup> You will notice that the arrows go in multiple directions. For example, consumer behavior is influenced by food environments, but it also influences food environments. The external drivers at the top of the figure, to varying degrees, are impacting the food system and can cause disruptions to the food system.

Food systems serve multiple purposes and different groups may prioritize different goals for food system functioning. In

this guide, a key goal is having a food system that supports **food security**, with a particular focus on ensuring food security for communities that experience the greatest inequities. According to the Food and Agriculture Organization of the United Nations (defined during the 1996 World Food Summit), “**Food security** exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.”<sup>6</sup>

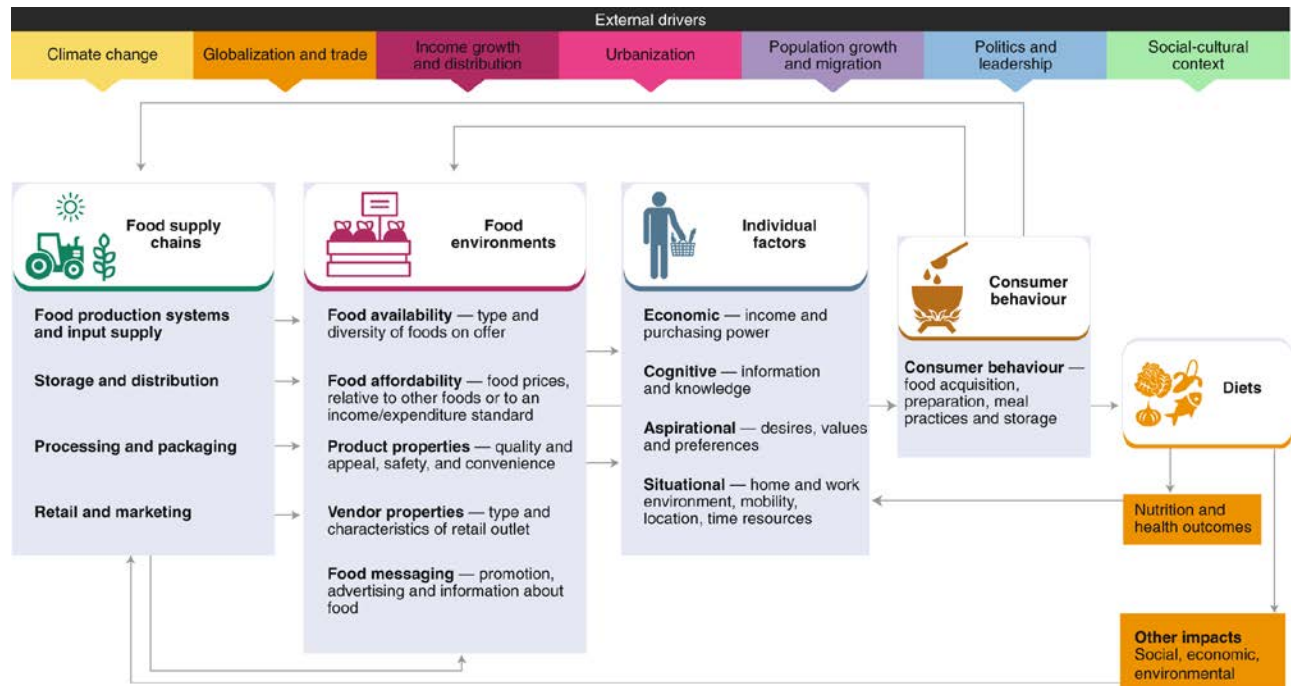
Food security is multifaceted and has several dimensions. In this guide, food security includes:

- **Food Accessibility:** Food is accessible if it is both economically and physically accessible to all parts of the population.<sup>7</sup>
- **Food Availability:** Food is available if it is physically present and available to consume in a given location.<sup>7</sup>
- **Food Acceptability:** Food is considered acceptable if it is religiously and culturally appropriate for the person eating it, nutritionally adequate, and safe to eat.<sup>7</sup>

These components of food security can be used to frame a food system’s ability to continue functioning and support food security during and after a disruption. Later modules provide examples and suggestions for how to understand the components of food security in food system resilience planning.

While this guide focuses on food accessibility, availability, and acceptability, other considerations like food agency—the ability of actors to make their own food choices<sup>8</sup> —may also be important to consider when thinking about food security and food system functioning.

**Figure 3.** Food System Framework. Source: Fanzo, Haddad, McLaren et al. 2020. [The Food Systems Dashboard is a new tool to inform better policy](#). Nature Food. Used with permission.



## A NOTE ON THE TERM, “RESILIENCE”

When this guide uses the term, resilience or suggests actions to build resilience, it often has an implied positive value. This does not mean that resilience is about strengthening and preserving systems that are broken, oppressive, or unjust. It also does not mean that communities and individuals should constantly be asked or forced to be resilient, often from disruptions to which they contributed little. The positive connotation of resilience is used in this guide because we believe that by investing in collaborative and forward-thinking planning, food system resilience work can help build more equitable, just, and prepared food systems rather than preserving what is harmful.

## RESILIENCE

The Stockholm Resilience Centre defines **resilience** as “the capacity of a system, be it an individual, a forest, a city or an economy, to deal with change and continue to develop.”<sup>9</sup> Building resilience is not about preventing a disruption to a system or making something “fail-safe,” but making sure that it is “safe to fail”<sup>10</sup> —meaning that although a failure or disruption in the system occurs, it is contained and minimized and presents opportunities for learning.

Resilience assumes disruptions will occur. Disruptions can be natural or human-made, and they are commonly described as either shocks or stressors.

- **A shock** is a sudden disturbance to a system.<sup>11</sup> In an urban food system, for example, this might be a flood or civil demonstration that prohibits trucks from distributing food to grocery stores.
- **A stressor** is a gradual eroding of a system.<sup>11</sup> In the food system, examples of this are increasing average temperatures from climate change altering the growing seasons in a region, or high levels of food insecurity.

Resilience is sometimes used interchangeably with other terms such as sustainability and stability. They are distinct but not mutually exclusive. These three concepts can all be considered goals of a food system. For example, while often it is desired to have a resilient and sustainable system, a minor amount of instability can sometimes increase resilience if it promotes adaptation or transformation that ultimately makes the system stronger.<sup>12</sup>

**Figure 4** provides side-by-side definitions for each concept along with descriptions of the goals or outcomes of each and an example of what it looks like within a food system.

**Figure 4.** Definitions and Goals of Sustainability, Stability and Resilience within Systems

	SUSTAINABILITY	STABILITY	RESILIENCE
DEFINITION	<p>“The ability to meet the needs of the present without compromising the ability of future generations to meet their own needs”<sup>13</sup></p>	<p>“The ability to return to an equilibrium state after a temporary disturbance”<sup>14</sup></p>	<p>“The capacity to deal with change and continue to develop”<sup>9</sup></p>
GOALS	<p>Balancing present and future needs, preventing and mitigating resource or capacity loss, &amp; preventing future disruptions</p>	<p>Maintaining equilibrium, minimizing disruption, &amp; robustness</p>	<p>Learning, adapting, transforming, &amp; persisting despite challenges</p>
EXAMPLE	<p>Some vegetable growers have switched from conventional to organic practices to improve soil health and improve the ability of the land to keep producing food for generations to come.</p>	<p>A farmer who uses greenhouses for growing vegetables can keep temperatures inside the greenhouse stable and production at the same level, even in the case of electrical outages because they have a backup generator.</p>	<p>When COVID-19 containment measures closed restaurants, a farmer who had supplied food to restaurants adapted to distribute food to community members through community-supported agriculture (CSA). Because of the new business generated through the CSA, the farmer was able to expand their operations post-pandemic.</p>



## FOOD SYSTEM RESILIENCE

Food system resilience applies resilience thinking to a food system. It is “the capacity over time of a food system and its units at multiple levels, to provide sufficient, appropriate, and accessible food to all, in the face of various and even unforeseen disturbances.”<sup>1</sup>

One way to think about food system resilience is to ask four key questions:<sup>15</sup>

### 1. Resilience of What?

- What are the things or systems that you are trying to make more resilient? What are the boundaries of the food system you are trying to make more resilient, and what other systems are intersecting with that food system?
- Example: City X is interested in making the local food system, more specifically the food system within the city boundaries, more resilient. City X will have to consider regional, national, and international supply chains as it imports a considerable amount of its food.

### 2. Resilience to What?

- What natural or human-made disasters may impact the food system? Are you concerned with “stressors” or “shocks,” or both?
- Example: City X is interested in taking an all-hazards approach, meaning it is concerned about multiple different hazards that are expected and unknown. Because of its geographic location, and climate change, City X is particularly concerned about extreme coastal weather events and sea level rise.

### 3. Resilience for What Purpose?

- What are the goals in building food system resilience? How can the goals help promote emergency response efforts and long-term systems transformations?
- Example: City X wants to make sure that the food system is prepared for the next disruptive event, but it also wants to make the current and future food systems more equitable and just.

### 4. Resilience for Whom?

- How does resilience work promote procedural, distributional, structural, and intergenerational equity?
- Example: City X wants to work collaboratively with the communities that are most at risk of food system disruptions to build a more equitable, just food system. It wants to collaborate in all stages of the process, share in the leadership, and build community capacity to respond to future disruptions.

**Figure 5** shows the resilience timeline for a food system. The food system starts at a baseline level of functioning prior to a disruption. After a disruption, the system must respond and recover over time. A more resilient food system maintains a higher level of functionality during the disruption and immediately after a disaster. It also recovers more quickly and ideally ends with a higher level of food system functioning (“bouncing back better”).

We can use a hypothetical city and the COVID-19 pandemic as a way to better understand this timeline. Before the start of the COVID-19 pandemic, City X had a moderately well-functioning food system. Food was generally accessible and available, but 12 percent of the population of City X was considered food insecure. A substantial proportion of the actors

## EQUITY CHECK

Consider the following questions for your local food system:

- What would bouncing back better look like?
- What pre-existing inequities could you target with food system resilience work?

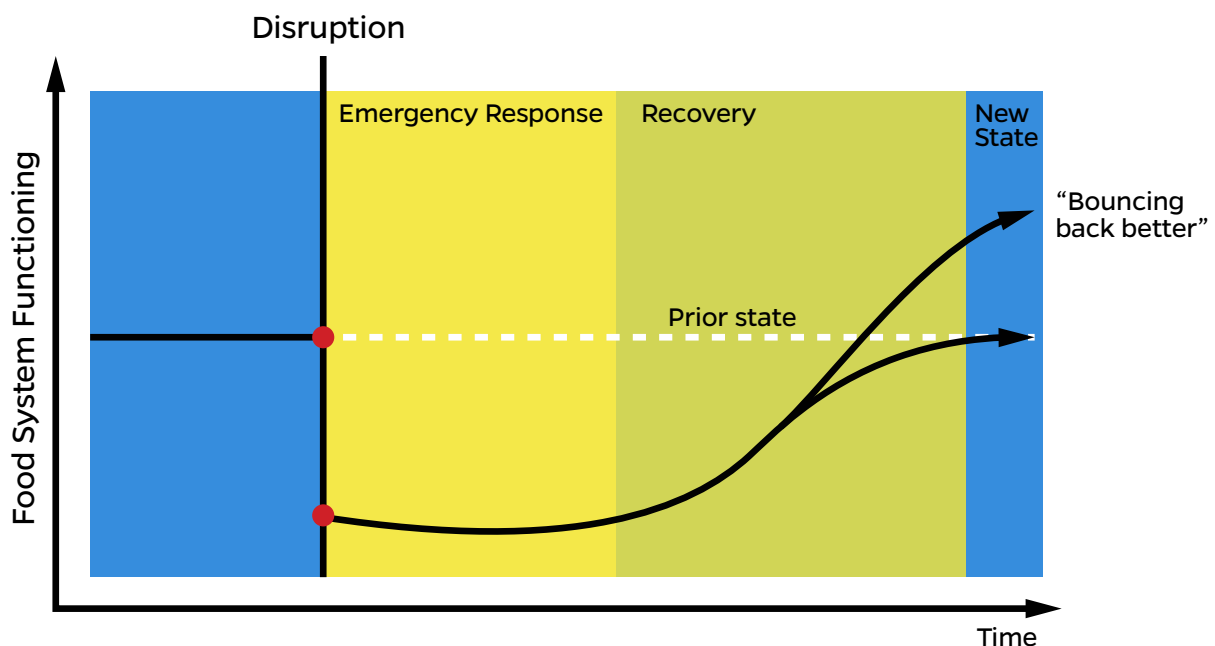
You don't have to know the answers to these questions yet, but they can help you consider how to prioritize equity. The next module digs deeper into equity concerns.

in the food system felt that they had access to food and that the food was acceptable. There were, however, many who felt that the food system was unequal and unjust. You will see that the straight line in the middle of the left side of the diagram represents baseline food system functioning.

When COVID-19 was declared by the World Health Organization a global pandemic in March 2020, this was a shock to City X's food system. Food insecurity rates rose drastically in City X, with many newly food insecure households. You will see in the middle panel that the shock reduced the level of food system functioning. Over time, City X's food system started to recover and food system functioning improved. The recovery did not stop at the initial state of food system functioning but improved beyond where it started. The food system learned, adapted, and transformed into one that functions better than before the shock.

Many characteristics or "attributes" of resilient systems have been identified in research and practice.<sup>17</sup> **Table 2** provides some attributes commonly linked with resilient urban systems and examples of how they could be demonstrated in a food system. The equity attributes were added by the Community of Practice members. Given the complexity of food systems, these attributes can show up in many ways and in some cases can support each other, while in other cases they can even act at cross-purposes. In later modules, you will revisit these attributes and develop strategies aimed at strengthening them.

**Figure 5.** Food System Resilience Timeline. Adapted from *The Resilience of America's Urban Food Systems: Evidence from Five Cities*<sup>16</sup> and *Food system resilience: Defining the concept*<sup>1</sup>



**Table 2. Food System Resilience Attributes, Descriptions, and Examples**

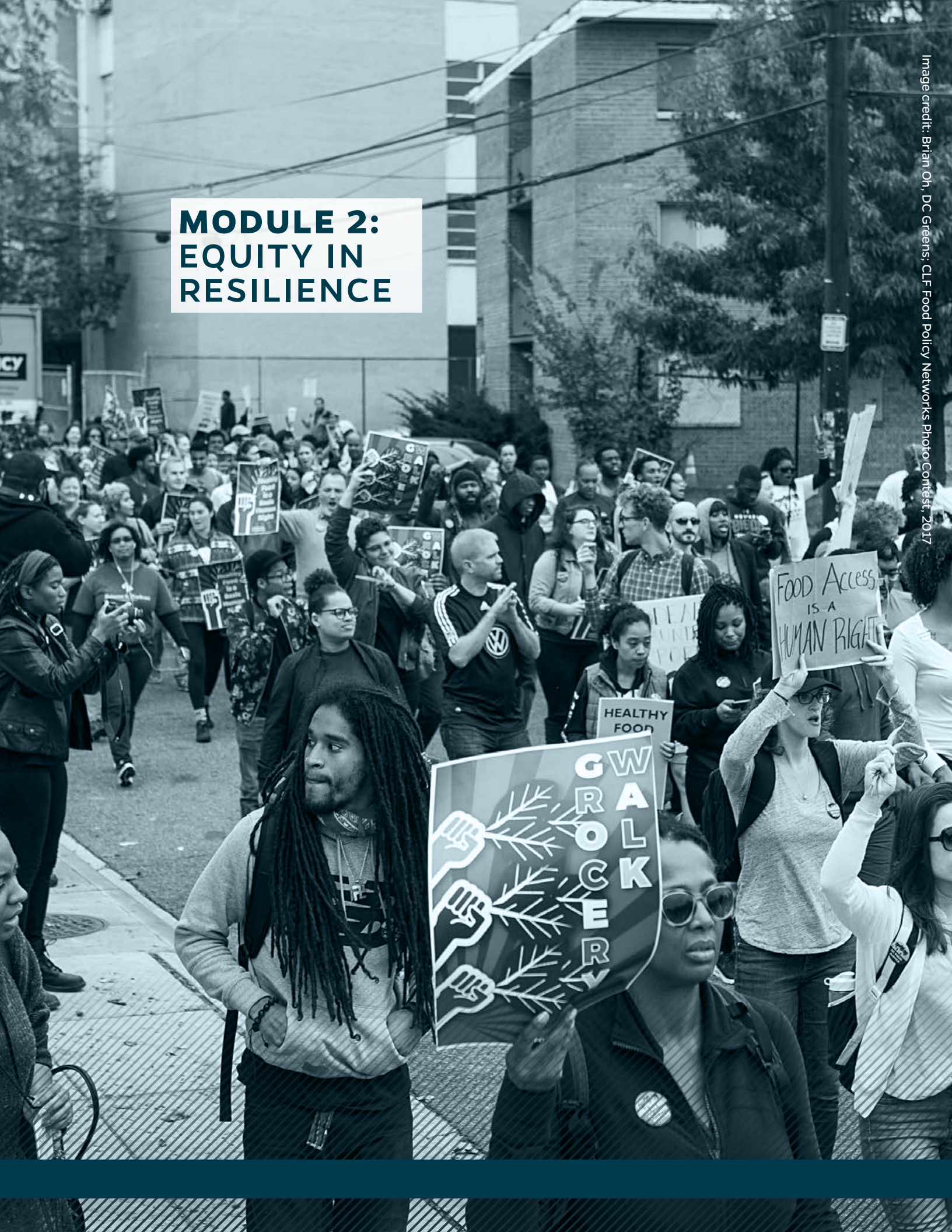
<b>Attribute</b>	<b>Description (in food system context)</b>	<b>Food System Example</b>
Diversity	A variety of food system elements that can serve a similar purpose	A variety of food retail options, such as farmers markets, independent grocers, and supermarkets
Redundancy	Multiple or duplicative food system elements that can serve the same purpose	Neighborhoods with more than one grocery store in walking distance
Connectivity	Multiple food system elements that connect and communicate with one another	Regular communication between food banks and emergency response actors during a crisis
Capital Reserves (social, financial, natural, political)	Available “backup” resources that can be used during a disruptive event	Strong community networks (social), reserve funds (financial), arable soil (natural), state government support (political)
Flexibility	The ability to make modifications to food system elements during disruptive events when needed	Government providing waivers to operate school meal programs outside of normal hours
Preparedness	A plan in place for how to ensure food access, availability, and acceptability during a disruptive event	Food included in emergency management protocol; Formation of an Emergency Food Working Group
Procedural Equity	Establish “transparent, fair, and inclusive” food system resilience planning, implementation, and evaluation processes <sup>18</sup>	Local government food system resilience planning work is done in partnership and co-owned by community partners, and community members are compensated for their engagement in the process
Distributional Equity	Ensure the benefits and burdens of your food system resilience planning are equitably distributed <sup>18</sup>	Food system resilience actions prioritize resources to communities that experience the greatest inequities, disproportionate impacts, and have the greatest unmet needs
Structural Equity	Uproot long-term, embedded structures that perpetuate inequitable food system and resilience outcomes <sup>18</sup>	Local government offers unrestricted grants to projects supporting communities most impacted by food-related injustices <sup>19</sup>
Intergenerational Equity	Actions taken today conserve resources for future generations <sup>20</sup>	Youth are included in the development, implementation, and evaluation of food system resilience actions

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## MODULE 2: EQUITY IN RESILIENCE



# EQUITY & JUSTICE PRINCIPLES

## This section will help you to:

- Understand equity and justice approaches to food system resilience planning, and why they are important
- Apply equity and justice principles to food system resilience work in ways that build procedural, distributional, structural, and intergenerational equity
- Find resources to learn more about inequities and racism in current food systems

This section describes and offers a framework for prioritizing equity and justice in your resilience planning and work. We placed this module at the beginning of the guide to emphasize its importance and help you incorporate equity and justice throughout the entire planning process.

This module does not detail the inequities and structural racism present in food systems. We strongly suggest reviewing the **LEARN MORE ABOUT EQUITY (page 29)** section at the end of this module for more information on centering food system work around equity and justice. If your local government has an Office of Diversity, Equity and Inclusion (or the like), we encourage you to include them in this planning process and work with them to align your work with existing tools, partnerships, and resources.

This module includes the **Equity Considerations to Guide Food System Resilience Planning** tool. This tool provides procedural, distributional, structural, and intergenerational equity considerations to think about and discuss with your community partners and members when developing or implementing food system resilience strategies. This tool should be used as a preliminary step to start conversation and reflect on potential actions and strategies. It is not a comprehensive list of all equity considerations.

## AN EQUITY- AND JUSTICE-CENTERED APPROACH

An equity and justice-centered approach to building food system resilience requires that efforts taken before, during, and after disruptions support the development of food systems that provide safe, healthy, affordable, and acceptable food for all. This approach emphasizes that not everyone needs the same kind or amount of support. It addresses underlying structural and systemic injustices that drive differential needs. Further, this approach means the work is not just done for a community but co-owned by and developed with them.

One way to approach food system resilience work from an equity and justice perspective is to ensure it promotes procedural, distributional, structural, and intergenerational equity. Compared to disaster response, resilience planning addresses longer-term goals and thus is an important opportunity to incorporate an equity framework that also takes a long view.

**Figure 6** presents these equity objectives and applies them to food system resilience work. The framing of these principles is based on work by the Urban Sustainability Directors Network.<sup>1</sup>

**Figure 6.** Core Equity Principles as They Relate to Food System Resilience Planning.

<b>Procedural</b>	<b>Distributional</b>	<b>Structural</b>	<b>Intergenerational</b>
<p>Procedural equity exists when the development and implementation of actions are “transparent, fair, and inclusive.”<sup>1</sup> One possible way to promote procedural equity is by starting your food system resilience planning process with the people and communities most likely to be impacted by a disruption. Inclusive and open dialogue can help you co-develop the steps your jurisdiction can take to build a more resilient food system.</p>	<p>Distributional equity indicates that resources should be prioritized for communities experiencing the greatest inequalities. Because most local governments have limited or no designated funding for food system resilience work, hard decisions must be made about allocating resources. Prioritizing the communities and locations with the greatest vulnerabilities can help to ensure those communities receive the resources they need to respond to disruptions.</p>	<p>When responding to disruptions, the goal of food system resilience is not to return to the status quo after a disruption but to create a food system that is more equitable and just. Food system resilience planning should uproot the long-term embedded structures of racism that perpetuate inequalities. Within food system resilience planning, this means going beyond the outcomes to the reasons for those outcomes and developing strategies that address the root causes.</p>	<p>The intergenerational equity principle states that “every generation holds the Earth in common with members of the present generation and with other generations, past and future.”<sup>2</sup> Or put simply, intergenerational equity is the “fairness among generations in the use and conservation of the environment and its natural resources.”<sup>2</sup> For food system resilience work, this means considering how actions taken today may impact future generations’ access to food system resources.</p>



## DEFINING COMMUNITY IN THIS GUIDE

When “community” is mentioned in this guide, it refers to people who live, work, or are connected to the jurisdiction of focus. We acknowledge that there are multiple communities that should be considered in food system resilience planning. We consider the term “community” in this guide to mean members of different communities that are impacted, affected, part of solutions, allies, colleagues, clients, tribes, advocacy groups, interested parties/groups, implementing partners, working partners, funders, etc.

## PEER PERSPECTIVE

*“Focusing on the community aspect is probably the most important; start there.”*

(Food System Resilience Community of Practice participant, statement edited for clarity)

## APPLYING AN EQUITY- AND JUSTICE-CENTERED APPROACH

- 1. Procedural equity:** Establish “transparent, fair, and inclusive” food system resilience planning, implementation, and evaluation processes<sup>1</sup>

Building food systems that can outlast whatever challenges the future brings requires building authentic and long-lasting relationships between government actors and community partners. All elements of community engagement should be bi-directional and built on trust and open communication between government and community partners. Many resources exist to guide you through principles and methods of community engagement (see the **LEARN MORE ABOUT EQUITY (page 29)** section at the end of this module), but when applying them to food system resilience work, we suggest keeping these questions in mind:

- **Who is included in and representing the community?**
  - As you begin the process of food system resilience planning, consider: What do you mean by “community”? Who is included? Who is not included? Do the people in your community with whom you have relationships represent the diversity of views and experiences from the communities they represent? For the engagement to be equitable and just, prioritize communities that could be most negatively impacted by a disruption in the food system and use strategies that meaningfully include them in the process.
- **Is the community engaged at all steps of the process?**
  - As a core principle of urban planning, community engagement should occur throughout the entire process of preparing, assessing, planning, implementing, and evaluating food system resilience strategies. Consider the ways in which you engage with your community so as to remove barriers to participation and create accessible spaces to engage (e.g., consider location, timing, transportation, childcare, providing food, etc.).
- **Is the process giving equal weight to diverse voices?**
  - Unfortunately, in some approaches, diversity can be a checkbox as an organization moves through a process and diverse voices are marginalized, quieted or ideas are blatantly dismissed. Throughout the planning process, diverse voices should not only be included but it is critical that they are valued and given equal weight in decision-making.

## PROCEDURAL EQUITY EXAMPLE: BALTIMORE FOOD POLICY INITIATIVE

[Baltimore Food Policy Initiative](#) (BFPI) is an interagency collaborative supported by the City of Baltimore Department of Planning, Baltimore City Health Department, and Baltimore Development Corporation.

The initiative has two ways in which community partners can be involved and contribute to food policy planning and action. The BFPI convenes bimonthly with the Food Policy Action Coalition (Food PAC) to network, learn, and engage in discussion around food policy in the city. Food PAC consists of over 60 community partners, mostly nonprofit staff, university students and faculty, farmers, and business owners. In addition, BFPI works with residents as Resident Food Equity Advisors to learn about the City's food and governance systems, share perspectives on neighborhood food environments, and create policy recommendations for city officials to consider.

- 2. Distributional equity:** Ensure the benefits and burdens of your food system resilience planning are equitably distributed<sup>1</sup>

The causes and impacts of food system disruptions and the resources available to recover from them are not equally distributed across all communities. Neighborhoods where low-income and marginalized communities, including Black, Indigenous, and people of color, live have greater exposure to environmental hazards<sup>3,4</sup>, have fewer economic resources to prepare for and overcome disruptions<sup>5</sup>, and are disproportionately excluded from the decisions that could reduce these harms.<sup>6</sup> Additionally, other types of inequities that are particularly relevant for food system resilience, such as primary language spoken, disability status, immigrant or undocumented status, and low socioeconomic status should be considered.

Analyzing and visualizing population data, for example with maps, to identify inequalities, draw connections, and understand trends across systems, such as healthcare, housing, transportation, and food, can better inform policies and create more effective programs. Consider using publicly available datasets such as the [U.S. Centers for Disease Control and Prevention \(CDC\) Social Vulnerability Index](#) to help illustrate the unequal distribution of social vulnerabilities in the United States.

Not only do distributional equity approaches consider the disparities across communities, but they also recognize community assets, including networks of people and organizations, local programs and initiatives, and physical resources. Understanding the layering of individual and community needs, along with the scope of resources available, or lack thereof, can help to appropriately distribute what is needed during any given disruption. It is essential to include community members in data collection efforts to incorporate community-identified deficits and assets, and perceptions of space. Participatory mapping approaches, where community partners identify the salient data and create maps based on their knowledge of their environments, can be an effective strategy to engage and learn from the community.

- 3. Structural equity:** Uproot long-term, embedded structures that perpetuate inequitable food system and resilience outcomes<sup>1</sup>

Addressing vulnerabilities through food system resilience planning requires moving beyond identifying the lack of resources to ultimately understanding the reasons these conditions and environments exist. To do this, we must take a critical look at past and current policies and practices. For example, the historical policy of redlining, whereby the (US) Home Owners'

## COMMUNITY ENGAGEMENT AND BUILDING TRUST

How can community engagement support long-term trust and relationships between government and community partners?

Trust between government and community members is critical in order to react and respond in a quick and coordinated manner during a disruption. Engaging community is more effective when seen and implemented not as the end goal, but as an on-going process towards building and sustaining long-term relationships between local government and community members. Building long-term relationships requires trust, respect, and open communication. Listen to and respect community partners' knowledge. Practice accountability by not only listening to community voices but accurately reflecting their input in goals and actions so there is true co-ownership in the planning process.

Loan Corporation used ranked color-coded maps to exclude racial minorities from financial assistance and ultimately obtaining housing in certain neighborhoods<sup>7</sup>, has had lasting impacts on many communities and food systems.<sup>8</sup> Additionally, historical practices such as those used by local USDA county committees to deny farm loans or offer worse loan terms to Black farmers more frequently than white farmers have led to significant loss of Black farmers and land owned by Black farmers.<sup>9</sup> Current policies, such as zoning regulations, can also influence a community's food environment, such as locations for supermarkets or urban farms.

Data, such as the previously mentioned Social Vulnerability Index, can be used to depict distributional inequities, as well as to examine change over time. Consider the following questions when looking at data across your jurisdiction:

- How has your community changed or stayed the same over time?
- Are there neighborhoods in your community that have fared better or worse?
- What policies or practices (historical or current) may have contributed to the changes you observe?
- What practices outside of food systems may have contributed to inequities in your community? Consider housing, transportation, education, and others.

#### **4. Intergenerational equity:** Actions taken today conserve resources for future generations<sup>2</sup>

When responding to a disruption, the focus is often on emergency response efforts. This is justified, but competing priorities often arise before there is time to work on long-term resilience planning. It is critical to work on these long-term changes that uproot the inequitable systems now to make improvements for future generations. By planning now and addressing potential future disruptions, we can protect resources for future generations. Consider involving partners outside of the food system space who address natural resources, including environmental protection agencies, farmland, soil or water conservation organizations, and air quality advocates. Ensure a variety of ages, from youth to elderly, are included in the process.

## DISTRIBUTIONAL EQUITY EXAMPLE: DANE COUNTY OFFICE OF EQUITY AND INCLUSION

Since 2015, the Dane County Office for Equity and Inclusion in Wisconsin has made intentional investments in county-based community groups addressing systemic racial inequalities in health, education, employment, or criminal justice through the [Partners in Equity Racial Equity and Social Justice Grant](#). Partnering with the Dane County Food Council, the Office of Equity and Inclusion also offers the Partner in Equity Food Project grant to support projects that advance equity and access in local food systems across the county. Programs like these can help to prioritize and support projects centered in communities most in need.

### **PEER PERSPECTIVE**

*“[COVID-19] exposed all the cracks in our system—unemployment, people’s access to food, reliance on free and reduced lunch—it really indicated so many other pieces in our system that are just failing...food is a really interesting lens through which we can see this stuff because it touches everybody.”*

*(Food System Resilience Community of Practice participant, statement edited for clarity)*

## STRUCTURAL EQUITY EXAMPLE: CULTIVATE CHARLOTTESVILLE FOOD JUSTICE NETWORK

The [Cultivate Charlottesville Food Justice Network](#) in Virginia is a network of over 35 organizations that successfully advocated for the Charlottesville City Council to take steps to reshape community health, wealth, and belonging by appropriating funds for the Food Equity Initiative. The Initiative brings together community members, City departments, and Charlottesville City Schools to identify policies and funding to tackle the root causes of food insecurity. A 2021 policy platform identified priority policies at the intersections of food equity, healthy school food, affordable housing, urban agriculture, food access, and transportation.

## INTERGENERATIONAL EQUITY EXAMPLE: AUSTIN YOUTH CLIMATE EQUITY COUNCIL

A new partnership between the City of Austin's Office of Sustainability, Austin Independent School District and nonprofit leaders is creating an opportunity for youth to inform government climate actions. The [Austin Youth Climate Equity Council](#) is made up of 18 high school students who work with city officials and local partners to learn about sustainability and city planning, and to engage in and inform local climate action efforts.

## LEARN MORE ABOUT EQUITY

- [Tools and Resources on how Local Government can Work to Advance Racial Equity](#): Local and Regional Government Alliance on Race and Equity
- [An Annotated Bibliography on Structural Racism Present in the U.S. Food System, Eight Edition](#): Michigan State University Center for Regional Food Systems
- [Measuring Racial Equity in the Food System: Established and Suggested Metrics](#): Michigan State University Center for Regional Food Systems
- [Racial and Social Equity Assessment Tool for Farm to School Programs and Policy](#): National Farm to School Network
- [A Guide to Equitable, Community-Driven Climate Preparedness Planning](#): Urban Sustainability Directors Network
- [Racial Equity Tools for Food Systems Planning](#): University of Wisconsin Department of Urban and Regional Planning
- [Equity Capacity Building Resource List](#): Johns Hopkins Center for a Livable Future
- [Mapping inequality: Redlining in New Deal America](#): University of Richmond, Virginia Tech, and University of Maryland
- [Rebuilding our Cities with an Equity Lens- Self Guided Online Course](#): GovEx Academy
- [Equity in Planning Committee](#): The City of Baltimore Department of Planning
- [Equity in Sustainability: An Equity Scan of Local Government Sustainability Programs](#): Urban Sustainability Directors Network
- [Getting Equity Advocacy Results: Build the Base for Equity Advocacy—Equitable Development Toolkit](#): PolicyLink
- [A Blueprint for Changemakers: Achieving Health Equity Through Law & Policy](#): ChangeLab Solutions
- [The Principles for Equitable and Inclusive Civic Engagement: A Guide to Transformative Change](#): Ohio State University Kirwan Institute

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## TOOL #1. EQUITY CONSIDERATIONS TO GUIDE FOOD SYSTEM RESILIENCE PLANNING

### Description:

Use this tool as a first step in reviewing any proposed policy, program, initiative, budget, etc. related to food system resilience to consider whether it is helping to advance equity and justice. Ideally, you will use this tool with your community partners. This tool is not a comprehensive list of all equity considerations, but it provides a starting point to guide conversation and reflection. You should revisit this tool as actions are modified or new strategies are recommended or developed.

A Microsoft Excel version of this tool is available for [download here](#).

### Instructions:

1. Select an action (a proposed or in-progress policy, program, initiative, budget, etc.) that aims to build food system resilience.
2. For each question, consider how the action supports procedural, distributional, structural, or intergenerational equity principles.
3. Use the questions as a way to start conversations with your community partners and community members and to discuss how the action may or may not fully support equity principles.
4. You may find that some considerations do not apply to the action you are assessing or you may decide that you want to reconsider the chosen action. Remember, this list of questions is a starting point, and further review will be needed. Revisit this tool often as you consider new strategies and actions to build food system resilience.

## TEMPLATE. EQUITY CONSIDERATIONS

Brief Description of Action:	
Consideration	Response
<b>Procedural Equity: Establish “transparent, fair, and inclusive” food system resilience planning, implementation, and evaluation processes<sup>1</sup></b>	
Was the action based on a suggestion from community members?	
Does this action explicitly include a strategy for direct representation by community partners? <sup>2</sup>	
Does this action have a process to collaborate with communities that experience the greatest inequities? <sup>3</sup>	
Does this action include a plan for ongoing engagement of community partners throughout implementation to support community-based work and evaluations? <sup>3</sup>	
Is there a plan for how to communicate progress and outcomes to community partners? <sup>3</sup>	
Is there a plan in place to share data with community partners? <sup>3</sup>	
Is there a plan or policy for how to equitably share responsibility, including funding and/or credit for the action, if applicable, with community partners? <sup>3</sup>	
Is there a plan to ensure people are treated openly and fairly? <sup>1</sup>	
Is there a plan for how to include and support (e.g., stipends) community members or individuals from communities that experience the greatest inequities in the process, including in leadership roles? <sup>2</sup>	
Will this action provide opportunities for local capacity building for community partners? <sup>3</sup>	
<b>Distributional Equity: Ensure that the benefits and burdens of your food system resilience planning are equitably distributed.<sup>1</sup></b>	
Will this action prioritize appropriate resources to communities that experience the greatest inequities? <sup>1</sup>	
Will this action benefit food system workers? <sup>2</sup>	
Is there a plan in place to evaluate the equity impact of this action including potential unintended consequences? <sup>2,3</sup>	
<b>Structural Equity: Uproot long-term embedded structures that perpetuate inequitable food system and resilience outcomes.<sup>1</sup></b>	
Does this action explicitly address racial equity? <sup>3</sup>	
Will this action provide opportunities or directly support communities of color, indigenous communities or communities that experience the greatest inequities to build wealth? <sup>3</sup>	



<b>Brief Description of Action:</b>	
<b>Consideration</b>	<b>Response</b>
Will communities that experience the greatest inequities immediately have greater control over food system resources as a result of this action? <sup>2</sup>	
Will this enable communities that experience the greatest inequities to have greater control over food system resources long-term ? <sup>2</sup>	
Will this action work toward providing living wages for food system jobs? <sup>2</sup>	
Will this action create immediate change in how the food system affects communities that experience the greatest inequities? <sup>2</sup>	
Will this action create systemic change in how the food system affects communities that experience the greatest inequities? <sup>2</sup>	
Will this action correct past harms? <sup>1</sup>	
<b>Intergenerational Equity: Consider how actions taken today may impact future generations.<sup>4</sup></b>	
Will this action help preserve resources for future generations?	
Is there a plan to include multi-generational voices in the development, implementation, and evaluation of this action?	
Have you considered the potential unintended consequences of this action? If yes, how will you mitigate those consequences? <sup>1</sup>	
Is there a plan for how to support the long-term viability of this action (e.g., sustainable funding)?	

**TOOL REFERENCES**

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**MODULE 3:  
DEFINE &  
SCOPE**

*Scope...*

# IDENTIFY PARTNERS AND THEIR ROLES

## PEER PERSPECTIVE

*“We have very closed networks in terms of who we interact with—who we know and what they are working on. I think one of the things that’s been highlighted by the COVID-19 pandemic is that we need to have a clear understanding of roles and responsibilities of different stakeholders.”*

*(Food Systems Community of Practice participate, statement edited for clarity)*

### This section will help you to:

- Generate a list of food system resilience partners
- Collect critical information about partners to better understand the network of partners and community members in your jurisdiction and in the case of disruptive events
- Identify a subset of partners to involve in the resilience planning process

Now that you have a firm understanding of food system resilience concepts and how to implement an equity- and justice-centered approach to the planning work, it is time to dive into the planning work. This module will help you identify key food system partners and provide tips and tools for communicating with them. It will also help you to understand the landscape of food system resilience work in your area and set clear expectations and a vision for the purpose and boundaries of your planning work.

## IDENTIFYING PARTNERS

Food systems depend on and affect many different actors. More resilient systems often have strong connections and networks.<sup>1,2</sup> An important first step to food system resilience planning is to identify the partners who will guide and carry out food system resilience planning and work in your community and clearly identify the roles that they will play.

For this guide, we suggest that you identify partners by generating a list of food system resilience actors. One way to do this is to think about what community partners would be interested and/or critical to food system functioning. Further: what partners would be critical for protecting and promoting food security in the case of a disruptive event such as a pandemic, flood, snowstorm, or civil unrest?

Alternatively, think about how your agency responded to support food security during a recent disruptive event (e.g., COVID-19, flood, snowstorm, civil unrest, etc.). Which community, business, and government partners were involved? Who wasn’t involved but should have been?

## SOCIAL NETWORK ANALYSIS

The strength of relationships between food system partners, and with government workers and community members, can support or detract from the effectiveness of your food system resilience planning and work.

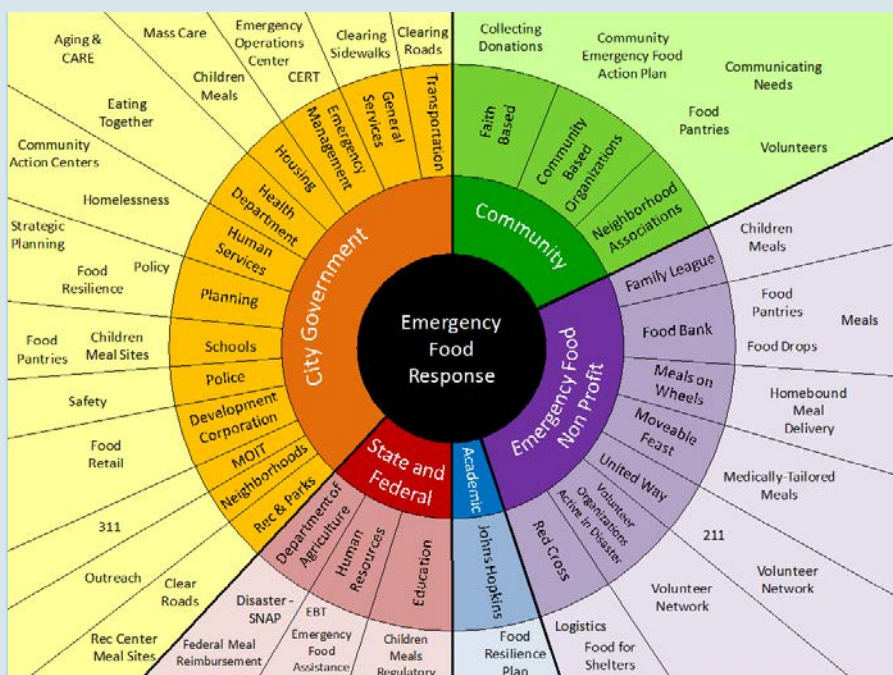
One way to assess and evaluate the strength of the relationships between food system partners is through social network analysis. Social network analysis (SNA) is a way of mapping partners that provides a visual representation of the nature and strength of relationships between different actors in a food system.<sup>3,4</sup> SNA has been used to influence policy change by uncovering strengths and weaknesses in local food system networks as well as to pinpoint where to engage new policymakers and organizations.<sup>5</sup>

There are online tools that can help you do a SNA, including [KUMU](#) and [Gephi](#) (which may have costs associated depending on the desired functionality), or programming options like R. Many people also use PowerPoint or Excel to create network displays.

## BALTIMORE CITY EMERGENCY FOOD RESPONSE PARTNERS

The City of Baltimore’s Office of Sustainability created a framework to organize their emergency food response partners. **Figure 7** shows how the partners were organized by sector (second circle), organization (third circle), and food system function (outermost section). This was not an exhaustive list of partners; rather, it demonstrated that supporting food systems in a crisis required inter-agency and multi-sector collaboration. This framework helped government staff to organize Baltimore’s first Emergency Food Working Group, which was tasked with developing recommendations for how government, nonprofit and for-profit food system organizations could more effectively work together during disruptive events. The framework has also since been adapted for other crises.

**Figure 7.** Baltimore City Emergency Food Response Partners. Source: Baltimore City Food Policy and Planning Division (2017)



## REFERENCES

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2. Moore, M. L., & Westley, F. (2011). Surmountable chasms: networks and social innovation for resilient systems. *Ecology and society*, 16(1).
3. Christensen, L. O., & O'Sullivan, R. (2015). Using social networking analysis to measure changes in regional food systems collaboration: A methodological framework. *Journal of Agriculture, Food Systems, and Community Development*, 5(3), 113-129.
4. Borgatti, S. P., Mehra, A., Brass, D. J., & Labianca, G. (2009). Network analysis in the social sciences. *science*, 323(5916), 892-895.
5. Harden, N., Bertsch, B., Carlson, K., Myrdal, M., Bobicic, I., Gold, A., ... & Hiller, T. (2021). Cass Clay Food Partners: A networked response to COVID-19. *Journal of Agriculture, Food Systems, and Community Development*, 10(2), 181-196.

## TOOL #2: PARTNERS ASSESSMENT

### Description:

This tool is designed to help you identify possible partners to include in your food system resilience planning effort, and to collect key information about the partners. This exercise will ask you to think about which partners are required for an effective food system resilience planning process, but the matrix may also be useful in identifying emergency response, or implementation actors. Several Community of Practice members suggested sharing the partner list via an online platform, such as Google Drive, so multiple people can simultaneously add to the list. This list can also serve as a foundation for a community partner database.

A Microsoft Excel version of this tool is available for [download here](#).

### Instructions:

- 1.** Brainstorm the organizations that you already work with and those that serve a role that you will need, to strengthen disaster response and build food system resilience. You may already have a relationship with these entities, or you may need to develop a relationship with them. To limit the size of your list, we recommend that you start at the organizational level (rather than individuals within organizations). Focusing on the organizational level is also a way to reduce continuous updates to your list due to staff turnover.
- 2.** Fill in the matrix below with information about these organizations, including:
  - a.** Type of organization: use the list of categories below that is based on food system resilience work done by local governments in the US:
    - i.** Government (local, state, federal, or multi-level/intergovernmental)
    - ii.** Nonprofit (local, regional, state, national, or community-based)
    - iii.** Philanthropy
    - iv.** For-profit
    - v.** Cross-sectoral network
    - vi.** University or Academic institution
    - vii.** Other
  - b.** Constituents served: list key constituencies served by the partners, ensure that a diversity of voices and perspectives are represented.
  - c.** Contact information: if possible, include general contact information and direct contact information for a key point of contact. Remember to periodically update the list.



- 3.** Identify the primary role that these organizations play in supporting food systems functioning. Knowing what role respective partners play can help to know when to engage them in preparing for and responding to disruptive events. Use the menu of FEMA functions provided below:<sup>1</sup>
  - a.** Transportation
  - b.** Communication
  - c.** Information & planning
  - d.** Emergency assistance and human services
  - e.** Logistics
  - f.** Public health
  - g.** Public safety & security
  - h.** Cross-sectoral collaborations
  - i.** External affairs
  - j.** Food production
  - k.** Funder
  - l.** Policymaking
  - m.** Other
- 4.** Rate the strength of your relationship with each partner, based on a scale of 1 (weak or non-existent) to 5 (very strong). It may help to think about how easy it would be for you to coordinate with this partner in the case of a disruptive event.
- 5.** Rate the frequency of communication, based on a scale of 1 (rarely) to 5 (daily). Frequency of communication is identified by researchers as another key characteristic in understanding the strength of relationships.<sup>2</sup> Communication includes, but is not limited to email, phone, text, or in-person or virtual meetings.
- 6.** Start with one disruptive event and continue to add community partners to the list as you consider other disruptions.

## TEMPLATE. FOOD SYSTEM RESILIENCE PARTNERS

Partner (Org. Level)	Type of Organization	Strength of Relationship  (1 - weak or non-existent; 5 - very strong)	Frequency of Communication  (1 - rarely; 5 - daily)	Food System Role  (Select the primary role that this partner plays in emergency food response)	Contact Information	Additional Information
Emergency Services Division	Government - State	1	1	Logistics	Email, phone number	Text after hours if urgent
Regional Food Bank	Nonprofit	4	2	Emergency assistance and human services	Email, phone number	Drop off and pick up Monday - Friday 9am -3pm, Accepting new volunteers now

### TOOL REFERENCES

1. Federal Emergency Management Agency. (2021). National Response Framework. <https://www.fema.gov/emergency-managers/national-preparedness/frameworks/response>
2. Peterson, D., & Besserman, R. (2010). Analysis of informal networking in emergency management. *Journal of Homeland Security and Emergency Management*, 7(1).



## **EQUITY CHECK**

Make sure you are including and recruiting community members who may not be involved at the organizational level. We recommend offering stipends for partners and community members to participate in the planning process. This will help residents and individuals from smaller organizations or community groups to participate in the process by demonstrating that their time is valued and providing their organizations with the funding to support their involvement. Be realistic and transparent about the amount of time and resources partners will need to commit to be a part of the planning process.

## **FORMING A PLANNING TEAM**

Once you have a list of food system resilience partners, use the list to determine who should be engaged in the planning process. It is important to have a diverse and interdisciplinary planning team that brings together people from different sectors, levels of employment, geographic areas, and demographics, and that includes representation from communities affected by food systems injustices. A variety of personal and professional experiences and knowledge will yield a team that thinks critically, raises issues beyond the food supply chain that will impact resiliency, and asks important questions. You may consider creating a smaller team that will lead the planning process and work associated with the plan in addition to an advisory team that can provide input and validate the work as being representative of the community.

- 1.** First, narrow the list to those organizations that will be key to the food system resilience planning process, including those that may be considered for an advisory role. Consider the type of organization, constituents served, and food system role.
- 2.** Next, identify the individual(s) from the organizations who should participate, or reach out to the organizations for recommended participants. You might want to use a chart to track key criteria when developing your team.

## PEER PERSPECTIVE

*“I felt...sometimes that I shouldn't speak because they're talking about food, but most of the time it sorts of dawned on me that we're all talking the same thing. We're talking about a process within the city organization and if it's food or solar panels or something else it's basically the same process, and communication is typically similar across departments”*

*(Food System Resilience Community of Practice participant, statement edited for clarity)*

## BUILD THE CASE

### This section will help you to:

- Improve how you communicate about food system resilience
- Describe how building food system resilience is integral to other systems and infrastructure, such as energy, water, and transportation sectors

Whether you are trying to convince people to join your food system resilience planning team, or to garner funding to create a food system resilience plan, or you've been working on the topic for years, chances are good that you'll need to be able to gain support from funders, political leaders, communities, and your colleagues. When resources are tight, how do you convince someone to invest in lessening the effects of a crisis that may not happen? How do you ask representatives from community organizations to engage in a long-term planning process when they are stretched thin addressing current issues? How do you explain these sometimes-complex ideas without a lot of jargon?

This section provides suggestions for communicating about food system resilience. The suggestions came directly from a workshop with the Food System Resilience Community of Practice. This session was led by Christine Grillo, Contributing Writer for the Johns Hopkins Center for a Livable Future.

## COMMUNICATING ABOUT FOOD SYSTEM RESILIENCE

Many people are unfamiliar with the term, “food system resilience.” It is important to be able to explain it in a way that resonates with others. This might be helping a colleague who approaches this work from a food lens to understand terms like “vulnerability assessment” and “hazard exposure.” Or it might be helping your emergency operations colleagues understand why food systems should be a critical part of emergency response. **Table 3** offers key communication strategies.

**Table 3. Strategies for Effective Communication**

<b>Explain an unfamiliar concept.</b>	Different community groups may require appropriate analogies to understand the rationale for the plan, or several of its intricacies. While the term “food system resilience” itself may be unfamiliar, finding linkages with core values and current work can help show why this work is important.
<b>Illustrate a point or process.</b>	When working on food system resilience planning or management, it is crucial to communicate distinct elements of the process and why you opted for specific strategies. This might be useful for communicating with local government leadership about where your organization is in the food system resilience planning process or communicating to a partner or funder why your organization has decided to focus on a specific set of food system resilience strategies.
<b>Connect people and groups.</b>	Effective food system resilience work is rooted in relationships. You will need to effectively communicate with partners and community members from different perspectives.
<b>Inspire innovation.</b>	The complex challenges of building food system resilience may require innovative thinking, as they don’t have one solution. Communication can be used as a tool for encouraging colleagues, community partners, and others to think creatively about these challenges.
<b>Change minds.</b>	Food systems may not be prioritized in your jurisdiction or community’s short- or long-term resilience planning, because food systems cut across so many different sectors. Local governments may historically have assumed food would be taken care of by state or federal agencies in a disaster, or through emergency feeding by nonprofits such as the American Red Cross. Long-term planning is also often pushed aside by shorter-term priorities and motivated by political cycles. If you are going to engage in this long-term food system work, you will need to communicate to people why considering food as a system is important and why planning for the future can’t wait.
<b>Don’t use a negative frame.</b>	Although resilience by definition involves dealing with negative events and concepts, such as threats, hazards, disasters, disruptions, and more, avoid being simply “against” something. Although it is important to understand such threats in order to prevent or prepare for them, strategies for building resilience can be communicated more positively. Focusing communication about your work on the assets in your system and community and how resilience planning can strengthen them can help redirect attention from negative to positive solutions. Try to also avoid aligning yourself with a political side or using jargon.
<b>Be affirmative.</b>	When sharing this work with potential collaborators, funders, community members, or decisionmakers, consider communicating how this work will help to reach broader social, political, economic, or other goals in your community. Be “for” something and highlight solutions and innovations. Use quotes and anecdotes (real people, real stories) and keep the examples useful. Use data to help build the case.
<b>Learn the mindset.</b>	In addition to framing your work in ways that communicate how food system resilience can contribute to broader community or government goals, you may need to appeal to individuals’ values. For example, if a city council member values her constituents’ well-being as a top priority, learn about the concerns and needs of residents of that area and share how your work can address those needs specifically. Keep in mind that many people may be struggling with daily challenges such as putting food on the table, paying for medication, and caring for children and elders. Rather than talking about how food system resilience work can prepare them for a future disaster, address how it can help alleviate more immediate challenges. Ask yourself, what are their professional or personal priorities? What do they know about food system resilience? What is the core value informing their response?

## EQUITY CHECK

1. Are you building the case with community members? Are they on board with this? [Visit this link to learn more](#) about the approach that Austin, Texas, takes toward community participation.
2. How do you describe resilience? [Learn more about the approach](#) The Praxis Project took to engage a group of partners around defining disaster justice.

## GETTING YOUR AGENCY ON BOARD

Some of the key people you might need to communicate with are those in your organization—leadership, peers, and other staff. Your organizational culture can play a crucial role in the success of your food system resilience planning and work; therefore, an essential early step is to develop a strong link between your organizational mandate and food system resilience. Below are suggestions from the Food System Resilience Community of Practice based on their experiences:

- Ground the work in what has already been established as important to your organization and/or community.
- Link food system functions and goals with needs and vulnerabilities of other interdependent sectors, such as water, energy, and transportation.
- Build on work that is already happening, such as by aligning resilience goals and outcomes with other food access, climate action, or emergency planning goals.
- Use current events to showcase why food system resilience is vital.
- Remind those whom you are trying to convince that prevention and planning work save money in the long term.
- Prioritize actions that promote equity and protect the communities that experience the greatest inequities.
- Start small so you can build buy-in.
- Evaluate so you know what's working and can justify your work.

## DEFINE PROJECT SCOPE

### THE 5 WHYS

The 5 Whys can help you to dig deeper to better understand the core of a person's beliefs and motivations for doing something—in this case, for supporting or implementing food system resilience work. You can start by asking an open-ended question such as “What do you see as the biggest risks to your jurisdiction's food system?”. Then ask “why” five times in a row.

This can be a great method to use if you're trying to get at the human and emotional roots of a problem in order to more effectively communicate with potential supporters or collaborators. In the context of food system resilience planning, using this method while speaking with key partners can reveal deep insights in building a case for implementing a food system resilience plan in your jurisdiction. It can also provide additional insights surrounding the state of food system resilience specific to your jurisdiction.

For more information on the 5 Whys tool, visit [IDEO The Field Guide to Human-Centered Design](#)

#### This section will help you to:

- Understand the landscape of food system resilience work in your jurisdiction and within your organization
- Identify ways to support existing planning goals through food system resilience strategies and identify gaps in existing municipal plans where food systems considerations are missing
- Develop a vision statement to guide your food system resilience planning work

Now that you have identified key food system resilience partners and recruited many of them to be a part of the food system resilience planning process, the next step is to determine, as a team, the scope and purpose of your jurisdiction's food system resilience work. While neither disasters nor food systems have clear boundaries, for the purposes of planning, it is useful to clearly identify the where, when, and why of your food system resilience work.

### DETERMINING FOOD SYSTEM RESILIENCE SCOPE

Food systems are complex, and the threats to food security are numerous, so it is important to set parameters around the geographic area of interest and a realistic timeframe for action, to clearly define why this work needs to happen. It will also be helpful to understand what work has already been done to support food system functioning, emergency planning, and or resilience planning. **Table 4** provides two elements of the planning process that you will want to determine at the start.

**Table 4.** Two Types of Scope to Consider in Food System Resilience Planning

<b>Type of Scope:</b>	<b>Overview:</b>	<b>Examples and Considerations:</b>
<b>Geographic Scope</b>	Food systems exist at multiple scales including local, regional, national, and global. Although they may be regulated by political entities, they do not easily fit within political boundaries. <sup>1</sup> The food that we eat is sourced from many different places and may travel hundreds or thousands of miles to reach the dinner table. <sup>2</sup> It is helpful when thinking of resilience to define the food system in terms of what the local government and community can specifically influence.	<ul style="list-style-type: none"> <li>■ If a city decides to support urban agriculture development as a resilience strategy, it may want to work with partners primarily from within the municipal boundaries.</li> <li>■ If a city wants to build supply chain resilience, it may need to work with multiple county governments and partners across a region or the state to understand and influence policies and regulations that influence the supply chain.</li> </ul>
<b>Temporal Scope</b>	Resilience can be demonstrated in response to a wide range of events, from short-term disasters to long-term stressors. Likewise, planning for more resilient food systems can include both short-term and long-term strategies. Based on your motivation for planning for food system resilience, the planning team needs to decide the length of time the process will cover.	<ul style="list-style-type: none"> <li>■ Will your planning process focus primarily on improving coordination of short-term emergency food response in your defined geographic area?</li> <li>■ Will your planning process focus on identifying ways to build longer-term resilience capacity in the food system to support transformation in the face of future challenges?</li> <li>■ Or will it include both emergency and long-term preparedness and resilience efforts?</li> </ul>

**TABLE REFERENCES**

3. Gold, A., & Harden, N. (2018). Navigating borders: The evolution of the Cass Clay Food Partners. *Journal of Agriculture, Food Systems, and Community Development*, 8(B), 29-38.
4. Lin, X., Ruess, P. J., Marston, L., & Konar, M. (2019). Food flows between counties in the United States. *Environmental Research Letters*, 14(8), 084011.

## CONDUCT A LANDSCAPE ASSESSMENT

It is useful to complete a landscape assessment of the work already happening in your jurisdiction that may be related to food system resilience. Scanning existing work early on in your food system resilience planning process can help ensure that your work builds on, rather than duplicates, existing efforts in your community.

We provide two tools to help you understand the existing work in your jurisdiction that might relate to food system resilience.

- 1. Jurisdictional Inventory:** This tool will help you evaluate your jurisdiction's current level of food system resilience planning, including work that may not be identified as such,
- 2. Policy & Plan Scan:** This activity will help you to identify and understand the types of plans and protocols that may already exist in your community that are relevant to food systems or resilience. It will also help you identify gaps or opportunities that could be addressed through your food system resilience planning work.

## TOOL #3: JURISDICTIONAL INVENTORY

### Description:

The Jurisdictional Inventory tool is designed to help you evaluate your jurisdiction's current level of food system resilience planning. This tool is adapted from "[Get it Toolgether: Assessing Your Food Council's Ability to Do Policy Work](#)," which was created by the Food Policy Networks projects at the Johns Hopkins Center for a Livable Future.

A Microsoft Excel version of this tool is available for [download here](#).

### Instructions:

1. For each section, determine the degree to which you agree (strongly agree, agree, are neutral, disagree, or strongly disagree) with each statement. If you are unsure, select neutral.
2. Each response is assigned points (2=strongly agree, 1=agree, 0=neutral, -1=disagree, -2=strongly disagree). Note the assigned points for your response next to the statement in the corresponding column.
3. Total the points at the end of each section.

This inventory is based on the perspective of the user, so it may be different for each person who completes it. "Organization" refers to the institution or group responsible for setting and implementing local food system work and policy.

The scores are intended to showcase strengths and areas for improvement, not to "grade" your organization's work. A lower score for a section suggests that this area may be a place for additional work to help build food system resilience.





## TEMPLATE. JURISDICTIONAL INVENTORY

<b>Section 1. Resources</b>					
<i>This section will ask questions about leadership, staff, funding, plans, goals, and policies</i>					
	Strongly agree (2 points)	Agree (1 point)	Neutral (0 points)	Disagree (-1 points)	Strongly disagree (-2 points)
Making the food system more resilient to natural and human-made disasters is very important to my organization.					
My organization has a designated staff member(s) to work on food systems.					
My organization has the resources (i.e., skills, knowledge, time) to work on specific projects that support food system resilience.					
My organization has funding to support food system resilience.					
<b>Total</b>	_____ <b>out of 8</b>				

**Section 2. Network & Relationships**

*This section will ask questions about networks and the strengths of the relationships between the actors.*

	Strongly agree (2 points)	Agree (1 point)	Neutral (0 points)	Disagree (-1 points)	Strongly disagree (-2 points)
There is strong collaboration between partners who work on food in my community.					
My jurisdiction has identified the partners who are critical for providing emergency food aid during a disruptive event.					
My jurisdiction has identified the partners who are critical for long-term food system resilience planning.					
My jurisdiction has already engaged with or convened partners who are critical for long-term food system resilience planning.					
In the case of a disruptive event, my jurisdiction has an established communication plan with key food system actors.					
<b>Total</b>	_____ out of 10				

**Section 3. Existing Preparedness & Response**

*This section will ask questions about your jurisdiction's existing preparedness and past response to events that disrupt the food system.*

	Strongly agree (2 points)	Agree (1 point)	Neutral (0 points)	Disagree (-1 points)	Strongly disagree (-2 points)
My jurisdiction has a clear understanding of our food system assets.					
My jurisdiction has identified the natural and human-made hazards that pose a risk to food systems.					
My jurisdiction has conducted a vulnerability assessment specific to the food system.					
My jurisdiction had a strong food response to past disruptive events.					
In the case of a disruptive event, partners' roles and responsibilities are clearly understood.					
My jurisdiction has a plan in place for responding to a crisis that includes food systems.					
<b>Total</b>	<b>_____ out of 12</b>				

**Section 4. Food System Resilience Strategies**

*This section will ask questions about any work that your jurisdiction has or is currently doing on food system resilience.*

	Strongly agree (2 points)	Agree (1 point)	Neutral (0 points)	Disagree (-1 points)	Strongly disagree (-2 points)
My organization has developed or is developing a food system resilience plan.					
My organization has identified strategies to build food system resilience.					
My organization is implementing strategies to build food system resilience.					
My organization collects and tracks data on food system resilience.					
Equity is included in my organization's current food system planning work and policies.					
<b>Total</b>	_____ out of 10				

## TOOL #4: POLICY & PLAN SCAN

### Description:

The Policy and Plan Scan will help you to identify plans and protocols that may already exist in your local government or community that are relevant to the food system or resilience. It will also help you identify gaps or opportunities that could be addressed through your food system resilience planning work.

A Microsoft Excel version of this tool is available for [download here](#).

### Instructions:

1. List the plans, protocols (e.g., Emergency Operations Protocol), or assessments created by government agencies and non-governmental organizations that contain information relevant to food systems, disaster preparedness and hazard assessments. This could include plans focused specifically on disaster preparedness or resilience that already include food, as well as plans that could be amended to include strategies to address food security in the case of a disruptive event.
  - a. Be sure to search within your jurisdiction, region and state.
  - b. Consider task forces, institutions like universities, and nonprofit organizations, food councils or alliances that could have plans as well.
  - c. Consider existing maps or data that describe major threats to your community.
2. List the lead agency that is responsible for the development of the plan, protocol or assessment.
3. Note any specific goals (or gaps) related to food to identify potential opportunities for aligning your food system resilience work with broader goals of your community or region.
4. List the year that the plan, protocol or assessment was published or approved by the decision-making body of the local government.
5. Lastly, include a link to the document if publicly accessible, contact information for the lead agency, or other relevant notes.

Consider who has the authority to approve or move forward plans, actions proposed in a document and resources, particularly those associated with achieving your vision. Knowing what is within and outside of the control of the mayor, the city or county administrator, the city council or county commission, advisory boards or issue specific boards is critical to acting on the goals that you set for food systems resiliency.

- Who has direct control of an initiative or action related to your food system resiliency planning effort?
- What is within and outside of the control of the executive branch of your local government?
- How will you ensure that food system resiliency activities outside of the control of the executive branch of the local government will be carried out?



**EXAMPLE. FOOD POLICY & PLAN SCAN FOR THE CITY OF MOORHEAD, MINNESOTA**

<b>Plan, Protocol, Assessment</b>	<b>Lead Agency</b>	<b>Food Related Goals &amp; Gaps</b>
<a href="#">Onward Moorhead Comprehensive Plan</a>	City of Moorhead	One of the five key ideas is to “embrace resilient environmental and equitable solutions” and there is a chapter on Resilience that includes strategies around local food
<a href="#">Metropolitan Food System Plan</a>	Fargo-Moorhead <a href="#">MetroCOG</a> (designated Council of Governments and Metropolitan Planning Organization for the greater Fargo Moorhead planning area)	The Metropolitan Food Systems Plan is intended to outline major components of local food. It was designed to provide the necessary background material and research to inform conversations regarding potential policy choices.
City Emergency Management Plan	City Manager	Addresses short-term disruptions but not long-term (pandemic) food system disruptions. New plan will hopefully incorporate pandemic situations. The challenge is that food systems fall under health and human services which is a core county function. Hence there has to be close coordination between the city and county.
<a href="#">Downtown Development Plan</a> [ <a href="#">DMI site</a> with documents and information about the plan]	<a href="#">Downtown Moorhead Inc</a> (a subsidiary of the City of Moorhead)	DMI acts as the City’s economic development agency. Space for farmers markets and alternative green space uses in the downtown. The Vision for a central downtown redevelopment called <a href="#">More To Moorhead</a> were released September 2022.
<a href="#">Green Step Cities process</a>	Partnership between the <a href="#">MN Pollution Control Agency</a> and <a href="#">Great Plains Institute</a>	Green Step Cities is positioned as a nonpartisan voluntary process that cities can use to increase resiliency.
<a href="#">Moorhead Community Resilience Task Force Asset Map</a>	Resilient Moorhead: Grant funded initiative lead by Concordia College partnering with other Moorhead agencies	Storymap that includes identification of public greenspaces that could be suitable for food and pollinator gardens.

**TEMPLATE. POLICY & PLAN SCAN**

<b>Plan, Protocol, Assessment</b>	<b>Lead Agency</b>	<b>Food-Related Goals &amp; Gaps</b>	<b>Year Published or Approved</b>	<b>Other Information (URL, contact info, notes)</b>

## EXAMPLE VISION AND PURPOSE STATEMENTS FROM: BALTIMORE CITY

Vision: “Baltimore will be a city with a robust and resilient food system, in which government, community, nonprofit and private entities work together to provide healthy and adequate food to all and stand ready to respond to and recover quickly from crises.” – [Baltimore Food System Resilience Advisory Report](#), page 7

Purpose: “The purpose of the Report is to provide an assessment of the Baltimore food system’s resilience and recommend strategies and actions for the City to include in a formal plan for food resilience.” – [Baltimore Food System Resilience Advisory Report](#), page 14

## DEFINE THE VISION AND PURPOSE:

Now that you have identified your partners, narrowed your geographic and temporal scope, considered your organization’s strengths in working on food system resilience, and identified plans that exist within local government and outside organizations related to food system resilience, you are ready to define the vision and purpose for your work. The vision and purpose provide aspirational goals as well as realistic boundaries around your planning process.

## VISION STATEMENT

A vision statement is an aspirational statement about what the future will look like and what will be achieved. The statement should provide context for why this work is important in your jurisdiction. Setting a vision statement will help to clarify expectations for the food system resilience planning process, bring partners together around a collective goal, and help to guide your work. Individually and as a team, members of the planning team should consider the following questions:

- 1.** Why are you working to make your food system more resilient?
- 2.** What does a more resilient food system look like in your community?
- 3.** What do you hope to achieve by engaging in food system resilience planning? How will you achieve it? Who will benefit?



## EQUITY CHECK

In developing your vision statement and purpose for the planning process, seek input from people and communities most vulnerable to food system disruptions or who have historically been left out of these planning processes. This is critical to better understand what people want and need for their communities to be more resilient. Take time throughout the process to re-evaluate these statements alongside the people who helped to shape them. The **Equity in Resilience (page 22)** module of this toolkit provides suggestions on how to support goals of procedural equity from the start.

## PEER PERSPECTIVE

*“One of the challenges that I saw is that we didn’t have a set plan in place going into COVID-19. A plan would have made it a whole lot easier—if it was like, all right, you roll it out, you know exactly what you’re doing, and all the players know exactly what their role is and what they’re doing.”*

(Food System Resilience Community of Practice participant, statement edited for clarity)

## DEFINING THE PURPOSE

A purpose statement will help to narrow the scope of work for the planning team and what you are working to accomplish with this process. Individually and as a team, members of the planning team should consider the following questions.

1. What do you hope to produce as a result of this planning process—a set of recommendations, a report, a government-sponsored plan, etc.?
2. While recognizing the broad needs and possibilities, will you take on the whole system or focus on pieces?
3. What is the timeframe of focus—one year, three years, etc.?
4. Who is the target audience for the products?
5. Who is leading the process?
6. How will the process and product(s) incorporate equity?
7. What resources are available to support the planning work?

**MODULE 4:  
ASSESS**

Food  
Justice

Ecosystem  
Restoration

# ASSESS FOOD SYSTEM RESILIENCE

This module provides tools for investigating how effective your jurisdiction's current food system may be in responding to and recovering from disruptions. We have segmented the assessment into five steps:

## 1. Evaluate baseline food system functioning

How well a food system responds to a crisis depends in part on how well the system was working *before* the disruption occurred. Start by conducting a current (or “baseline”) assessment of the level of food system functioning in your jurisdiction. For this step, you will use the **Baseline Food System Functioning Indicators (page 63)** tool.

## 2. Identify critical food system assets

Take an inventory of assets that are critical to a well-functioning food system. These assets may be physical, social, or natural. Mapping critical assets helps plan for physical hazards such as storms or floods. For this step, you will use the **Asset Inventory (page 67)** tool.

## 3. Assess potential hazards to the food system

Identify the specific hazards that are likely to pose the most risk (i.e., the estimated likelihood and impact) to your food system. Hazards can be natural or human-made and manifest in the food system as short-term shocks such as a hurricane or long-term stressors such as political instability or chronic food insecurity. For this step, you will use the **Risk Assessment (page 70)** tool.

## 4. Consider food system vulnerabilities

Different communities or individuals within communities might experience the food system impacts of hazards in different ways. Therefore, the next step is to understand areas of greater physical and social vulnerability. For this step, you will use the **Vulnerability Assessment (page 80)** tool.

## 5. Examine food system resilience attributes

It is useful to identify food system characteristics that demonstrate resilience attributes that could counteract or reduce vulnerability. The resilience attributes proposed in this section are specific to food system resilience. For this step, you will use the **Resilience Attributes Investigation (page 86)** tool.

Taken together, these five steps will prepare you to identify and implement targeted food system resilience strategies.

# EVALUATE BASELINE FOOD SYSTEM FUNCTIONING

## This section will help you to:

- Develop a definition of a well-functioning food system in your jurisdiction that aligns with and supports work already happening
- Identify and collect indicators of the baseline level of food system functioning in your jurisdiction

We recommend that the first step in assessing food system resilience be to gain an understanding of the baseline (current) level of food system functioning in your jurisdiction, so you can document change over time. To do this, start by determining what a well-functioning food system looks like in your community, and then identify what indicators can be used to measure your baseline level of food system functioning. The guidance and tools in this section are based on the idea that, at a minimum, a well-functioning food system “*provides safe, nutritious, accessible, and culturally acceptable food for all residents of a community before, during, and after disruptive events.*”<sup>1</sup> Included in this definition is the idea that food is accessible, available, and acceptable (the definitions of these terms are provided in the **Understanding Food System Resilience (page 13)** section).

Consider the above definition of a well-functioning food system and add to or alter it according to your local context in the next tool. Your definition of a well-functioning food system might also be informed by:

- Existing plans or documents from your **Policy and Plan Scan (page 53)**
- Community collaborations and engagement processes
- Previous assessments of your jurisdiction’s food system
- Global goals, or work done in other jurisdictions

Once you determine your definition of a well-functioning food system, continue to the table in the **Baseline Food System Functioning Indicators** tool to identify what indicators might be appropriate to measure the functioning of your food system. Collecting baseline data on food system functioning will help to:

- Understand the food system, hazards, and the interconnections between systems
- Track progress on food system resilience goals and indicators
- Prioritize resources and decisions
- Create effective policies and programs
- Prioritize equity in your food system resilience work
- Facilitate collaborations around data collection and sharing

We recommend that you use several different indicators to measure the different dimensions of a well-functioning food system. In **Table 5** we provide examples of select baseline indicators of food system functioning (based on the food system resilience definition used in this guide).

## USING DATA EQUITABLY

When deciding on indicators of food functioning keep in mind how well the data and indicators capture the experiences of the communities that experience the greatest inequities and how using data may or may not contribute to equitable food system outcomes. While data can be beneficial in helping to visualize inequities and for prioritizing resources, data only tell part of the story. Decisions are often only as good as the data they are based on. Making decisions using inaccurate or incomplete data can be just as bad or worse than making decisions with no data at all. Further, often data does not capture the human experience of inequities and injustices, nor the invisible lines and other factors that shape the way we actually experience our food system. Using proxy data can risk not fully grasping the “truth” or characterizing it incorrectly. Missing data, incomplete data, over-generalization of data, and out-of-date data can lead to the wrongful allocation of resources.

To use data equitably, it is important to:

- Use transparency when collecting and analyzing data
- Include community in the identification, collection, analysis, and presentation of data while respecting and ideally reimbursing for the time commitment and potential burden
- Supplement and confirm quantitative data with stories and experiences from those most impacted

The below resources can help you integrate equity considerations into your baseline data collection.

- [Principles for Advancing Equitable Data Practice](#): Urban Institute
- [Toolkit for Centering Racial Equity Through Data Integration](#): University of Pennsylvania Actionable intelligence for Social Policy
- [Powering Health Equity Action with Online Data Tools: 10 Design Principles](#): Ecotrust
- [Measuring Racial Equity in the Food System](#): Michigan State University Center for Regional Food Systems

**Table 5.** Example Baseline Food System Functioning Indicators

<b>Food System Function</b>	<b>Example Indicator</b>	<b>Data Source</b>
Food Accessibility (Economic)	% change in Supplemental Nutrition Assistance Program enrollment	USDA Food and Nutrition Services <sup>2</sup>
Food Accessibility (Physical)	% of homes without internet access—including computer, mobile, etc.	U.S. Census Bureau: American Community Survey <sup>3</sup>
Food Availability	Pounds of milk production	USDA National Agriculture Statistics Service <sup>4</sup>
Food Acceptability	% of households reporting not being able to acquire the type of food they want out of the total state population	U.S. Census Bureau: Household Pulse Survey <sup>5</sup>

The first draft of your indicators table may be idealistic, representing what you would want to measure to understand the food system in your jurisdiction if you had unlimited time and resources. Likely, your final choice of indicators will also be guided by feasibility. When considering an indicator, ask yourself:

- Does national level publicly available data exist for this indicator?
  - How often is it updated?
- Does more granular local level data exist for this indicator?
  - If not, are there time and resources available to collect sufficient data?

The next step is to collect the baseline data for your indicators, so you'll be able to compare over time. For each indicator, you will want to specify:

- The current level/measure of the indicator (*Indicator Current Value*)
  - For example: Current household food insecurity for your jurisdiction is 12%.
- What level/value of the indicator would be needed for the system to be well-functioning (*Indicator Goal*)
  - For example: Household food insecurity will be below 5%.



## TOOL #5: BASELINE FOOD SYSTEM FUNCTIONING INDICATORS

### Description:

In this tool, you will apply the information presented in the previous section to fill in the template of baseline food system functioning indicators. You will first determine the indicators and then fill in the table with data. You might want to put the table into a shareable format to collaborate with colleagues.

A Microsoft Excel version of this tool is available for [download here](#).

### Instructions:

1. Write your definition of a well-functioning food system in the box below.
2. Based on your definition, use Column A in the table to list the core elements of food system functioning (e.g., food accessibility, procedural equity).
3. For each element, in Column B, list the indicators that would be used to measure the element. You likely will have multiple indicators for each element.
4. Next in Column C, write what level/value of the indicator would be needed for the system to be well-functioning.
5. Remember to check your **Policy and Plan Scan (page 53)** tool to see what goals already exist.
6. In Column D, collect and list the current value of the indicator and the year or date it was collected
7. Finally, in Column E, provide the source of the current indicator value.

**Write your definition of a well-functioning food system here:**

<p><b>Example:</b> A well-functioning food system in jurisdiction X provides safe, nutritious, accessible, and culturally acceptable food for all residents before, during, and after disruptive events. It also ensures equitable and just participation in the food system (procedural equity) and distribution of food system resources (distributional equity). It creates new structures that counteract existing inequalities and will prosper for current and future generations (intergenerational equity).</p>
<p><b>Your definition:</b></p>

**TEMPLATE. BASELINE FOOD SYSTEM FUNCTIONING INDICATORS**

<b>A. Food System Functioning Element</b>	<b>B. Indicator</b>	<b>C. Indicator Goal</b>	<b>D. Indicator Current Value</b>	<b>E. Data Source</b>



# IDENTIFY CRITICAL FOOD SYSTEMS ASSETS

## This section will help you to:

- Understand different types of assets that are critical for food system functioning
- Articulate why select assets are important for food system functioning
- Generate a list of key food system assets that help promote a resilient system

Now that you have an understanding of the current level of food system functioning in your community, it is useful to inventory the different assets that are critical for providing these functions. “Critical” for this planning guide means those assets that are vital to ensuring a well-functioning food system before, during, and after a disruptive event (based on your definition of a well-functioning food system). We recommend grouping the assets into four categories: natural, physical/built, political, and social. **Table 6** provides a definition of each asset category and examples from the food system of this asset. Note that some assets may fall into multiple categories.

**Table 6.** Food Systems Asset Categories

Food Systems Asset	Definition of Asset Category	Critical Food System Function
Natural	“Natural assets are those of the natural environment. These consist of biological assets (produced or wild), land and water areas with their ecosystems, subsoil assets and air.” <sup>6</sup>	Land that is protected and used for food production provides a critical asset if global and regional food supply chains are disrupted for long periods of time, and to provide diversification in the food system.
Physical/Built	Physical and/or built assets are those that are human-made. They consist of infrastructure, buildings, community spaces, equipment, etc. <sup>7</sup>	Food pantries are an essential source of food for many households with food insecurity. During disruptive events, they could also play an important role in distributing food to address crisis-related needs.
Political	Political assets refer to the type or amount of power or influence, for making change or engaging in the political process. <sup>7</sup>	Dedicated government staff time and resources, with access to leadership, enable for more efficient and effective food system planning and action.
Social	Social assets include the people, organizations, and connections between them in your community. <sup>7</sup>	An established coalition of community-based organizations, academic institutions and other partners that meet regularly and work together on food system challenges can provide a reliable network of resources in the face of disruptive events.

## EQUITY CHECK

Ensure that you are including a diverse range of voices from your community, including representation from a diversity of neighborhoods, to identify critical assets. Different partners in your community may perceive assets differently or have new ideas to consider.

In thinking about assets in your community that are considered critical for food system functioning, consider:

- What are the most important food system assets critical for community well-being?
- Which assets are necessary for ensuring food availability, accessibility, and/or acceptability or other forms of food system functioning?
- Who are the assets critical for? Who benefits from these assets? How might others in the community define assets as critical?
- What would happen if those assets did not exist?
- What effect would there be on other parts of the food system if one type of food system asset failed or did not exist?

Food system infrastructure is also dependent on and interdependent with other infrastructure systems such as waste and wastewater, transportation, energy, and chemical systems. Considering how food system components depend upon and interact with those other sectors is an important part of understanding and protecting food system functioning. We encourage you to consider assets from those sectors as well.

## MAPPING FOOD SYSTEMS ASSETS

Mapping food system assets and infrastructure has emerged as one way for planners and community partners to better understand local food systems and how they function.<sup>8,9</sup> Using maps to locate food system assets and vulnerabilities can be useful, especially if you are concerned about physical hazards such as storms or floods that are likely to disrupt your food system and physical infrastructure. If your community already has some food system data mapped, consider using it to enhance your understanding of food system assets, hazards, vulnerabilities, and resilience attributes. If you're at the beginning of your food system planning and have not mapped your food system, you can use the resources in this guidebook to identify and collect current data.



## TOOL #6: ASSET INVENTORY

### Description:

This resource can help you to identify assets in your community that are considered critical for food system functioning or may be leveraged to support your vision of a resilient food system. Identifying the most critical assets can also help you communicate more clearly how and why the food system is a key part of your jurisdiction's resilience planning and emergency response. It is important that you include diverse voices when considering assets and engage community partners in this work.

A Microsoft Excel version of this tool is available for [download here](#).

### Instructions:

1. Review your definition of a well-functioning food system. Then, identify which types of natural, physical, political, and social assets and infrastructure would be needed to ensure that those functions continue even during a disruption. If there are other asset categories—intellectual, financial, cultural, etc.—that are critical to your food systems functioning, add the category to the table below under **Asset Type**.
2. Describe each asset and its critical function in the Critical Food System Assets Table.
3. Review the list by asking yourself and others:
  - a. Are there types of assets that have more or less representation in the list?
  - b. Are you missing something critical?

While you do not have to limit your critical assets to what fits in this table, to keep your assessment in the next section manageable, it may help to prioritize them.

**TEMPLATE. CRITICAL FOOD SYSTEM ASSETS TABLE**

<b>Asset Type</b>	<b>List/Describe Asset</b>	<b>Critical Food System Function</b>
<i>Natural</i>	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol>	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol>
<i>Physical</i>	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol>	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol>
<i>Political</i>	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol>	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol>
<i>Social</i>	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol>	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol>

# ASSESS POTENTIAL HAZARDS TO THE FOOD SYSTEM

## This section will help you to:

- Identify key hazards that pose a risk to your jurisdiction's food system, and assign risk scores to the hazards
- Consider how hazards with high-risk scores could harm the food system

Once you have a sense of the critical assets that are required for a well-functioning food system, you will want to identify the specific hazards that are likely to pose the most risk to these assets and the overall functioning of your food system. While hazard and vulnerability are of course intertwined, this guide purposely separates the hazard and vulnerability assessment. This allows you to get a clearer picture of each before focusing on how they intersect.

Hazards can be natural or human-made and manifest in the food system as short-term shocks or long-term stressors. Not every community is at risk of experiencing the same hazards. For example, farms located in coastal areas may be more likely to experience sea-level rise or flooding, whereas inland or urban areas may be more exposed to heat-related disruptions.

Hazards also do not occur in isolation. With a warming climate, for example, it is increasingly likely that communities and their food systems will have to cope with multiple crises at the same time, such as when hurricanes hit the Gulf Coast of the US during the COVID-19 pandemic.

Identifying food system hazards also requires thinking beyond natural disasters and considering other social, economic, or political events or structural inequities that could negatively impact functions, such as ensuring food access, affordability, and acceptability within specified food system boundaries.

The **Risk Assessment** will walk you through a process to estimate the expected risk of natural and human-made hazards to your jurisdiction's food system. This assessment will ask you to:

- 1. Identify hazards:** What are the natural and human-made disruptions that might impact the food system?
- 2. Estimate likelihood:** Based on historic data and projections, how likely is it that the different hazards will impact your jurisdiction's food system?
- 3. Estimate impact:** If the hazard were to happen, how severe would the impact be to the food system?
- 4. Assign a risk score:** Risk is calculated by multiplying the likelihood with the impact of a hazard.<sup>9</sup> Hazards with a higher risk score may be a good target for interventions.

## TOOL #7: RISK ASSESSMENT

### Description:

Use this activity to assess the expected risk of natural and human-made hazards to your jurisdiction's food system.

A Microsoft Excel version of this tool is available for [download here](#).

### Instructions:

- 1. Identify hazards.** In Column A of the Worksheet, list the relevant hazards. For frequent events such as snow, consider putting in a threshold level of concern, e.g., number of inches.
  - a.** Review your **Policy and Plan Scan (page 53)** for existing disaster preparedness, hazard mitigation, and/or climate adaptation documents for your jurisdiction to identify natural and human-made threats that impact the food system. Your local government will likely have an All-Hazards Mitigation Plan. This plan should account for natural disasters that are more likely to impact your jurisdiction.
  - b.** Review maps that indicate areas of geographic concern. [FEMA floodplain maps](#), for example, are available and included in many local hazard assessments. They can show you which food system assets or transportation routes may be more likely to experience closure from flooding.
  - c.** Consider if there are other hazards that have not been included in the documents you reviewed that specifically impact the food system and should be included in this food system resilience planning effort. Recognize that some food system assets are particularly sensitive; for example, if schools are required to close for a relatively small amount of snow, school meals may not be provided.
  - d.** You may want to include rows for systemic threats outside your jurisdiction that harm food access, availability, and acceptability. For example, drought, conflict, or taxation outside of your jurisdiction may impact the prices of food in your jurisdiction.
- 2. Estimate likelihood.** In Column B, assign a likelihood score to each hazard based on historical data and/or projections for the hazard in your community.
  - a.** If there are data on likelihood in the existing documents you reviewed, use that data.
  - b.** If historical data are not available for your community, put in an estimate or guess about the likelihood based on history, nearby areas, or projections for the future.
  - c.** If community and regional data are not sufficient, you can use a scale from 1 (likely to happen once in the next 100+ years) to 5 (likely to happen several times per year).



**Table 7.** Food System Risk Assessment Rubric

Score	Likelihood of hazard occurring
5	Several times per year
4	Once per year
3	Once in the next 5 years
2	Once in the next 20 years
1	Once in the next 100 years or more

d. As you consider the likelihood scores for each hazard, ask yourself and your planning team:

- How often has the hazard occurred in the past?
- Is the frequency likely to change in the future?
- Based on existing estimates of this type of threat, how often is it likely to occur in your community or region?

3. **Estimate impact.** In Columns C-F, assign an impact score on the elements of a well-functioning food system for each hazard.

- a. Assign a column for each the elements of a well-functioning food system that you identified using the **Baseline Food System Functioning Indicators (page 63)** tool.
- b. Consider how severe the impact of this hazard would be on each component of a well-functioning food system? The **Scoring level of impact rubric** below provides one example of a scale of 1 (little to no impact) to 5 (severe) that you could use. Note that in this step you are thinking about how severe an impact different hazards may cause to the food system. In step two you thought about the likelihood/frequency of hazards. You will combine the likelihood and impact in the next step.
- c. If your definition of a well-functioning food system focuses on food access, availability, and acceptability, consider the following questions:
  - How might this hazardous event affect food access (both economic and physical)?
  - How might this event affect food availability? This includes things such as disrupting the supply chain, closing distribution facilities, or harming workers.
  - How might this event affect food acceptability?
  - Could certain types of food become unavailable? Will it affect the safety or nutritional quality of the food available?

The below rubric is intended to be used to stimulate thinking about how to estimate the impact of a hazard to your food system. The examples are provided as a guide, but we encourage you to develop your own criteria for what makes a hazard impactful to your food system, based on local context and the goals of your food system resilience work. Impact is scored on a scale of 1 (little to no impact) to 5 (severe impact).

## EXAMPLE. SCORING LEVEL OF IMPACT RUBRIC

Score	Impact - Food Access	Impact - Food Availability	Impact - Food Acceptability
5	Substantial increases in food insecurity & demand for federal and local food assistance programs among general population observed; store closure is widespread & lasts many weeks; movement restricted due to lockdown orders that last for weeks	Major food retailers are out of nearly all or all stock and unable to replenish within a few days.	Food is unsafe to eat and/or cannot meet dietary needs of general population (i.e., some or all food groups unavailable for prolonged period of time, rising risk of malnutrition).
4	Rates of food insecurity continue to be higher than average but coming down; above average demand for food assistance observed among specific populations; major transportation routes into the jurisdiction closed for many weeks due to damage from flooding and mudslides	Food retailers out of stock of staple food items, very little to no variety in staple food options and not all food groups available, for multiple days or weeks.	Specific food items to meet dietary needs and culturally acceptable foods are hard to find in stores.
3	Food retail hours limited and food pantries unable to keep up with short-term increase in demand; major thoroughfare closed due to damaged bridge but will reopen within 1-2 weeks.	Variety of food available but at a high price due to supply disruptions.	Populations with special dietary needs or cultural/religious preferences have to go to multiple sources to get adequate food.
2	Public transportation to food stores disrupted for no more than one week due to worker strike. Disruption in food bank hours due to volunteer shortage but resolved within one week.	Some food items temporarily unavailable but restocked within one week.	One type of food item is unsafe or limited geographically.
1	Food access disrupted due to technology glitch that lasts no more than one day. All food retails and emergency food providers open regular hours.	Food retail fully stocked but may experience higher demand.	High variety of foods available in stores to meet special dietary needs; all food and water safe to ingest.



- 4. Calculate a risk score:** Once you have assigned likelihood and impact scores, calculate a risk score by multiplying the likelihood score by the sum of impact scores for each hazard (risk = likelihood X impact).
  - a.** First, calculate the Impact Total by adding up the impact scores of each element for a hazard (impact access + impact availability + impact acceptability).
  - b.** Next, multiply the Likelihood Score by the Impact Total to get the Risk Score.

To use this information to identify which hazards pose the greatest risk to food system outcomes, think of risk as a combination of the likelihood of an event occurring in a particular location and the severity of the potential impact from the event. Hazards with the highest risk score theoretically pose the greatest risk to your food system and could be prioritized when considering how to build specified resilience.

- 5. Get feedback and revise your matrix:** Share your matrix with people in other departments or organizations, community partners, academic collaborators, etc. What community members experience on the ground may be different from your estimates, so it is important to consider this tool as a starting point and to revise the scores based on the feedback from reviewers.
- 6. Review:** Review the new scores to identify the key hazards that pose the most risk to your food system's ability to continue functioning.

**TEMPLATE. FOOD SYSTEM RISK ASSESSMENT MATRIX**

<b>A. Hazard</b>	<b>B. Likelihood Score</b> <i>(1-once in 100 years; 5-several times a year)</i>	<b>C. Impact - Food Access</b> <i>(1-little to no impact; 5-severe)</i>	<b>D. Impact - Food Availability</b> <i>(1-little to no impact; 5-severe)</i>	<b>E. Impact - Food Acceptability</b> <i>(1-little to no impact; 5-severe)</i>	<b>F. Impact - Total</b> <i>(Sum C-E)</i>	<b>G. Risk Score</b> <i>(B*F)</i>
Hurricane	4	3	2	1	6	24
Pandemic	3	4.5	3	2	9.5	28.5

## ANALYZE FOOD SYSTEM DISRUPTIONS

Another way to think about how different hazards may impact food systems and lead to disruption is to use what's known in engineering as a fault tree (**Figure 8**). This approach illustrates the pathways through which a hazardous event can disrupt food system functioning and lead to a significant food system disruption. Considering these pathways in a structured way can not only point your attention to risks of concern but also suggest areas for intervention in order to interrupt these pathways.

The **Food System Disruption Analysis** approach was originally developed by the Johns Hopkins Center for a Livable Future and colleagues Xilei Zhao and Judith Mitrani-Reiser<sup>10</sup>, and has been slightly modified and renamed here.

The food system disruption analysis has one main “tree” (**Figure 8**) and eleven subtrees. The main tree shows all the major ways food system disruptions could occur. For example, the system can be disrupted due to food not being available, accessible or acceptable. Below each of those are factors that can lead to food not being available, and so on. The sub-trees dig deeper into the factors on the main tree, all the way back to an original hazard event, to help structure your thinking about pathways.

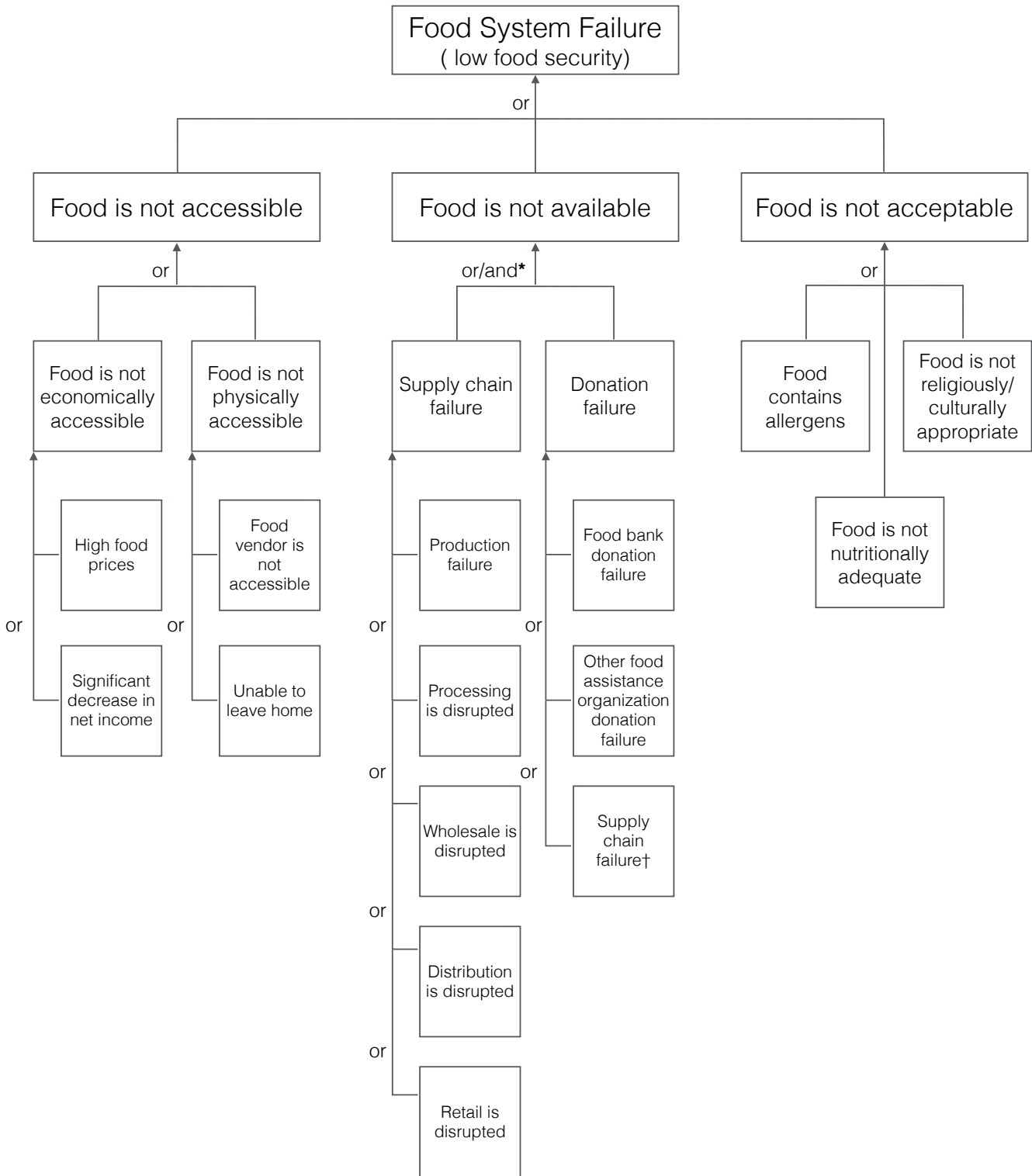
In this section we present the main tree, and how it can be used to think about food system disruptions. We recommend that you review the [original publication](#) for more information about the sub-trees.<sup>10</sup>

In the main tree, factors are combined with “or,” “and”, “or/and.”

- The “or” indicates that it is true if any of the items occur (e.g., food is not economically accessible if there are high food prices or a significant decrease in income (main tree)).
- The “and” indicates that both the items must occur (e.g., food purveyors are not accessible because they are not within walking distance and cannot be accessed by car, bike, or public transportation (subtree three)).
- The “or/and” specifies conditions where you should use them.

Of course, hazards interact in complex ways beyond what can be depicted in this tree, and often occur in tandem. We also note that it's impossible to capture every factor and hazard in the tree. Nonetheless, this visualization can be helpful in thinking through the relevant pathways.

**Figure 8. Food System Disruption Analysis: Main Tree.<sup>3</sup>**



\* This is “or” for populations under an income cut-off, but changes to “and” for populations above an income cut-off

† See the events that contribute to “supply chain failure”

To use the food system disruption analysis approach to examine food system functioning in your jurisdiction:

- Identify a hazard that has affected or is likely to affect the food system. You can use the hazard with the highest risk score from the **Risk Assessment (page 70)** tool.
- Start on the bottom left side of the main tree (**Figure 8**) and ask whether the hazard could significantly
  - increase food prices OR
  - decrease net income
- If you are not sure, go to the original publication,<sup>10</sup> and review the sub-trees. The subtrees provide additional information about how a hazard might lead to the main tree elements (e.g., how a hazard could cause high food prices).
- If you answer yes to either of the conditions (high food price or decrease in net income), this hazard has the potential to make food economically inaccessible.
- Next move to “food is not physically available”, and ask whether the hazard could cause
  - Food purveyors to not be accessible OR
  - People to not be able to leave home
- Next move to “food is not available” part of the tree. Could the hazard you selected lead to a supply chain disruption or/and a food donation disruption?
- Finally, consider if the hazard could lead to food becoming unacceptable.
- If at the end, you have determined that the hazard has the potential to make food not accessible OR not available OR not acceptable, theoretically this hazard could cause a food system disruption.

## PEOPLE-FIRST LANGUAGE AND “VULNERABILITY”

Take care in communicating about vulnerability, to avoid reducing a person or community to their risk factors. We recommend using person-first language indicating that a person or group “has” or “faces” vulnerabilities (or other risks), rather than language such as “vulnerable people,” which can be disempowering or hurtful. See the [Centers for Disease Control and Prevention Key Communication Principles](#) for more information about this.

## DESCRIBE VULNERABILITIES

### This section will help you to:

- Understand the different dimensions of vulnerability
- Explore physical and social vulnerability to hazards that may disrupt the food system in your jurisdiction

In the previous section you identified hazards that pose a risk to your food system. Different communities, or individuals within communities, however, might experience the same hazard in very different ways. Therefore, this section focuses on exploring vulnerability. Vulnerability is the degree to which an asset or group is exposed, susceptible to, or unable to cope with a hazard. Vulnerability is made up of the following:<sup>11</sup>

- **Exposure** is the contact, and the degree of contact, between the hazard and the asset or group.
- **Sensitivity** is the degree to which an asset or group is affected by the exposure.
- **Absorptive/Adaptive/Transformative Capacity** is the ability of an asset or group to adjust to potential disruptions in the food system, take advantage of opportunities, or cope with the consequences.<sup>12</sup>
  - “Absorptive capacity is the capacity to take intentional protective action and to cope with known shocks and stress.”<sup>13</sup>
  - “Adaptive capacity is the capacity to make intentional incremental adjustments in anticipation of or in response to change, in ways that create more flexibility in the future.”<sup>13</sup>
  - “Transformative capacity is the capacity to make intentional change to stop or reduce the causes of risk, vulnerability, poverty, and inequality, and ensure the more equitable sharing of risk so it is not unfairly borne by people living in poverty or suffering from discrimination or marginalisation.”<sup>13</sup>

Vulnerability can be a measure of social, physical, or natural elements. For example, different groups of people in your jurisdiction might have more or less vulnerability to food system disruptions, or different infrastructural items (e.g., roads, bridges, food providers, etc.) in your jurisdiction might be more or less vulnerable to a hazard. Something that is more vulnerable to a particular event is at a greater risk of experiencing negative consequences of a disruption because it is either more exposed to the disruptive event, more sensitive or unable to adapt or transform in the face of the event.

## PEER PERSPECTIVE

*“The challenge is to think beyond just food, but to think of what is the root cause of the situation.”*

*(Food System Resilience Community of Practice participant, statement edited for clarity)*

Assessing food system vulnerability requires looking at both the physical environment and infrastructure required to support a functioning food system, as well as the underlying social determinants of food system outcomes, such as poverty, land access, or institutional racism.

The following tool is broken into two parts. The first guides you through a process for assessing physical vulnerability in food system infrastructure based on the assets you identified previously in this module. The second asks you to identify the people or communities whose health and livelihood may be particularly vulnerable to a disruption in the food system, and underlying stressors that may contribute to those vulnerable states. For each part, you will be asked to also identify potential food system characteristics that could counteract or reduce vulnerability.



## TOOL #8: VULNERABILITY ASSESSMENT

### Description:

This tool will take you through the steps of identifying physical and social vulnerabilities in your food system and prioritize the areas that are most critical to address in the short term. Through this process you will consider the physical and social vulnerabilities in your food system and community that may make your food system especially at risk to hazards. This activity draws from the **Risk Assessment (page 70)** tool. Use this tool to assess the vulnerability of each of the hazards with the top risk scores identified using the **Risk Assessment (page 70)** tool.

An Microsoft Excel version of this tool is available for [download here](#).

### Instructions:

#### PART 1. PHYSICAL VULNERABILITY

1. Select one of the hazards you identified as having a high-risk score using the **Risk Assessment (page 70)** tool. Write the hazard at the top of the worksheet.
2. Using the list of critical assets you generated in the **Asset Inventory (page 67)** tool, in Column A list the assets that could be impacted by this hazard. Remember that you should consider physical, social and natural assets
3. In Column B describe how each asset would come into contact with the hazard.
  - a. For example: if the hazard is a hurricane, and the asset is food pantries, the exposure could be a hurricane making landfall in your jurisdiction.
4. For each asset, describe in Column C the factors that might make it more *sensitive* to the impacts of the hazard.
  - a. For example: if the hazard you selected is a hurricane, and the asset is food pantries, are some of your food pantries located near the coast or in a flood plain?
5. In Columns D-F, for each asset, list characteristics that could support its capacity to absorb, adapt, or transform to the hazard.
  - a. For example: if the hazard you selected is a hurricane, and the asset is food pantries,
    - i. **absorptive capacity** would be the food pantry having a back-up power generator so it can absorb the shock and continue operations uninterrupted.
    - ii. **adaptive capacity** would be the food pantry setting up operation sites, in collaboration with community partners, in areas of the jurisdiction that are less prone to flooding and severe hurricane impacts.
    - iii. **transformative capacity** would be the food pantry working with community and government partners to reduce food insecurity in the jurisdiction, by addressing underlying root causes.





## TEMPLATE. PHYSICAL VULNERABILITIES

Hazard:					
Asset	Exposure	Sensitivity	Absorptive Capacity	Adaptive Capacity	Transformative Capacity

## PART 2: SOCIAL VULNERABILITY

In addition to physical vulnerability, you also need to consider the underlying socio-economic characteristics of your jurisdiction and food system that may make certain population groups experience more susceptibility to your top hazards and/or reduce their capacity to cope with the impact.

- Which people or communities face the greatest vulnerability to a disruption in the food system?
- How could this disruption impact a group's food access, availability, and/or acceptability?

For the hazard you selected in part 1, answer the questions below to help you consider the social vulnerabilities.

## TEMPLATE. SOCIAL VULNERABILITIES

<b>Part A. Respond to the following questions about the hazard you selected in part 1</b>
<b>HAZARD:</b>
<i>What groups are most likely to be exposed to this hazard?</i>
<i>What groups may experience greater sensitivity to this hazard?</i>
<i>What groups may have greater absorptive capacity? Less absorptive capacity?</i>
<i>What groups may have greater adaptive capacity? Less adaptive capacity?</i>
<i>What groups may have greater transformative capacity? Less transformative capacity?</i>
<i>What policies, economic or social conditions, or other long-term factors may have led to some groups having higher vulnerability to this hazard?</i>

<b>Part B. For each group identified in part A, consider:</b>
<i>How could the hazard disrupt physical food access for this group?</i>
<i>How could the hazard disrupt financial access to food for this group?</i>
<i>How could the hazard disrupt the availability of food for this group?</i>
<i>How could the hazard disrupt the availability of culturally or nutritionally appropriate foods for this group?</i>
<i>What policies, economic or social conditions, or other long-term factors may have led to this group experiencing greater disruptions in food access and availability?</i>

Note. In this tool you focus on items that put assets and groups at greater risks to hazards. In later modules of this guide, you will consider strategies to address these items.

# EXAMINE FOOD SYSTEM RESILIENCE ATTRIBUTES

## This section will help you to:

- Understand attributes that have been linked with resilient systems
- Assess the presence of these resilience attributes and how they may or may not be present for crucial food system assets in your jurisdiction

In the previous section, you considered how different assets and groups experience vulnerability to food system hazards, including what characteristics contribute to vulnerability. This section focuses on the reverse: a set of characteristics—resilience attributes—that have been linked with more resilient systems. As described in the **Get Started (page 5)** module, these include diversity, redundancy, connectivity, capital reserves, flexibility, preparedness, and equity.

**Table 8.** Resilience Attributes

Attribute	Description
Diversity	A variety of food system elements that can serve a <i>similar</i> purpose
Redundancy	Multiple or duplicative food system elements that can serve the <i>same</i> purpose
Connectivity	Multiple food system elements that connect and communicate with one another
Capital reserves (social, financial, natural, political)	Available “backup” resources that can be utilized during a disruptive event
Flexibility	The ability to make modifications to food system elements during disruptive events when needed
Preparedness	A plan in place for how to ensure food access, availability, acceptability and agency during a disruptive event
Procedural Equity	Establish “transparent, fair, and inclusive” food system resilience planning, implementation, and evaluation processes <sup>14</sup>
Distributional Equity	Ensure the benefits and burdens of your food system resilience planning are equitably distributed <sup>14</sup>
Structural Equity	Uproot long-term embedded structures that perpetuate inequitable food system and resilience outcomes <sup>14</sup>
Intergenerational Equity	Actions taken today conserve resources for future generations <sup>15</sup>

Many different lists of key resilience attributes exist.<sup>16,17,18</sup> We chose this list because we think they are key for food system resilience planning and work. You are welcome to add to or remove attributes from this list as you see fit. We provide some questions to help with this in the tool.

For the activity in this section, you will estimate how much your critical assets exhibit each resilience attribute. This is subjective and should be seen as an initial investigation into the attributes rather than a comprehensive assessment.





## TOOL #9: RESILIENCE ATTRIBUTES INVESTIGATION

### Description:

This activity will help you to gain a better understanding of food system resilience attributes and how they may or may not be present for crucial food system assets in your jurisdiction. This tool builds on the work that you did in the previous section using the **Vulnerability Assessment (page 80)** tool. You will repeat the steps below for each priority hazard.

An excel version of this tool is available for [download here](#).

### Instructions:

1. At the top of the worksheet, fill in a hazard from the **Vulnerability Assessment (page 80)** tool.
2. In the “Asset” column, fill in the critical assets you used for the hazard in that tool.
3. In the remaining columns, assign a value from 1 (low) to 5 (high) for how well the asset demonstrates each resilience attribute.

The questions below, using the example of food pantries, may be helpful in considering these ratings.

- Diversity:
  - *How many food pantries exist? Where are they located? What non-pantry types of organizations exist for people to get foods before, during, and after a disruption?*
- Redundancy
  - *How many food pantries exist? Where are they located? Would people be able to access multiple pantries or alternatives to pantries during the hazard event?*
- Connectivity
  - *Are the food pantries connected or in communication with each other, either directly or via an organization such as a food bank? Are they connected with other food providers in the jurisdiction or region? Are they connected with other key partners, like the local government or larger social services providers in the jurisdiction? Is there an information source where consumers can choose pantries based on closings, hours, etc.?*

- Capital reserves
  - *Do the food pantries have the social, financial, natural and political resources that they would need to act during a disruptive event? What financial resources and insurance do they have? How many staff do they have or is it all volunteer-run?*
- Flexibility
  - *Can the food pantries adapt and transform their operations during the specific hazard you selected? Do they have personnel, communications, or other tools that enable this flexibility? Are they prevented from acting flexibly by any policy or other constraints?*
- Preparedness
  - *Are the food pantries prepared for the specific hazard you selected? Do they have a plan in place for disruptions? Does it include items specific to the risks from this hazard? Is it up to date and well communicated? Do they have insurance coverage relevant to this hazard?*

**TEMPLATE. FOOD SYSTEM RESILIENCE ATTRIBUTES INVESTIGATION**

Hazard:						
Asset	Diversity (1-low; 5-high)	Redundancy (1-low; 5-high)	Connectivity (1-low; 5-high)	Capital Reserves (1-low; 5-high)	Flexibility (1-low; 5-high)	Preparedness (1-low; 5-high)

## EQUITY CHECK

Revisit the **Equity in Resilience (page 22)** module, specifically **Tool #1. Equity Considerations to Guide Food System Resilience Planning (page 31)** to help consider these principles in more depth.

Recognize that the attributes don't always align neatly, and that they can play out in inequitable ways or have other tradeoffs. While we consider procedural, distributional, structural, and intergenerational equity as core resilient attributes, they are not something that can easily be quantified for all assets. Therefore, rather than assigning values, equity should be included in the discussion of every asset and every attribute. We have provided some questions below to help you discuss and consider procedural, distributional, structural, and intergenerational equity issues as they relate to diversity, redundancy, connectivity, capital reserves, flexibility, and preparedness.

- Has building an attribute been done at the expense of procedural equity? Have community members been included in projects that relate to the attributes?
  - For example, was a full equity assessment conducted for a new project on hurricane mitigation measures? Does the project include community partnership and ownership?
- Is the attribute equally distributed?
  - For example, are food pantries accessible to all communities in the jurisdiction in need of their services?
- Does the presence of the resilience attributes promote or result from systematic injustices and racism in the food system?
  - For example, do some grocery stores have more capital reserves than others because of systemic inequities?
- Does the presence of a resilience attribute exist at the expense of future generations? Has the focus been on building the attributes in the short-term, rather than considering long-term impacts?
  - For example, has another shipping terminal been built to improve redundancy but lacks stringent environmental regulations?

You may want to make adjustments to your scores or add notes about any negative effects of the attribute, in terms of how it plays out for the asset in question. For example, while redundancy is beneficial for resilience, “too much” redundancy is inefficient and could lead to challenges in areas such as connectivity.



## LEARN MORE ABOUT ASSESSING FOOD SYSTEMS

### Resilience & Health Assessments

- [Disaster Resilience Scorecard for Cities: Food System Resilience Addendum](#): UN Office for Disaster Risk Reduction
- [U.S. Climate Resilience Toolkit](#): Tools, information and expertise on climate resilience from the federal government
- [The National Risk Index](#): FEMA
- [Assessing Health Vulnerability to Climate Change: A Guide for Health Departments](#): Climate and Health Program, Centers for Disease Control and Prevention
- [The CDC/ATSDR Social Vulnerability Index](#): Centers for Disease Control and Prevention, Agency for Toxic Substances and Disease Registry
- [County Health Rankings](#): University of Wisconsin Population Health Institute

### Food System Assessments

- [Baltimore Food System Resilience Advisory Report](#), Chapter 2: State of the Baltimore Food System, p 21-42.
- [State of the Food System Report 2018](#): City of Austin, TX Office of Sustainability
- [Food and Agriculture Sector-Specific Plan](#): Cybersecurity & Infrastructure Security Agency

### National Data Mapping Resources

- [Excess Food Opportunities Map](#): US Environmental Protection Agency
- [USDA Food Environment Atlas](#): USDA Economic Research Service
- [Food Access Research Atlas](#): USDA Economic Research Service
- [Map the Meal Gap](#): Feeding America

### State & Local Mapping Examples

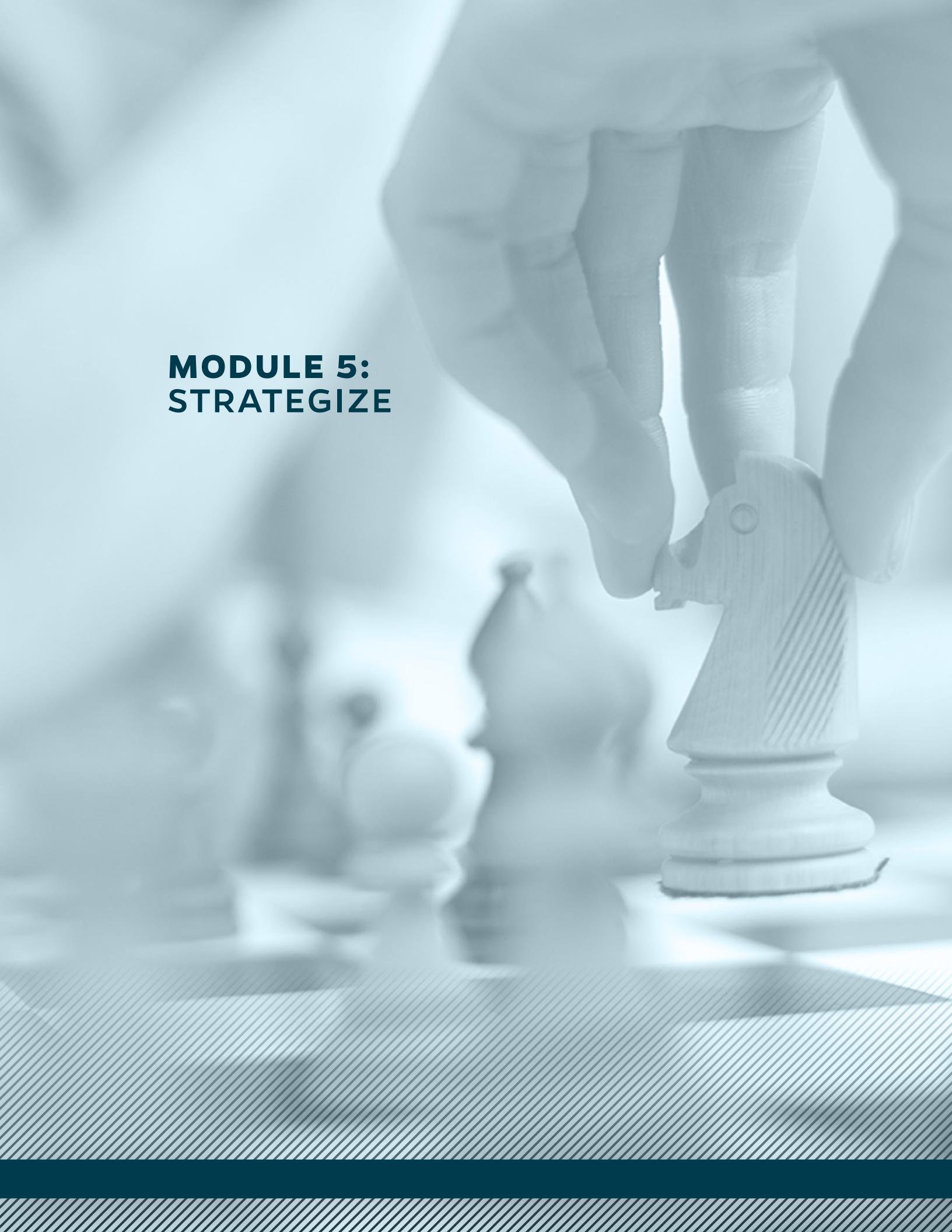
- [Food Access in Austin](#): City of Austin
- [Ohio Food System Map](#): Ohio State University Knowledge Exchange
- [Colorado Food System Map](#): Colorado State University

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**MODULE 5:  
STRATEGIZE**



# DEVELOP STRATEGIES FOR IMPROVING RESILIENCE

## This section will help you to:

- Synthesize information on food system functions, assets, hazards and risk in ways that help you identify strategies
- Learn two different approaches for brainstorming strategies to improve food system resilience
- Prioritize strategies to support more equitable and just food systems as well as resilience

This module will take you through the process of identifying and prioritizing potential solutions and strategies to improve resilience. The activities in this module assume that you have a good understanding of the current health of your food system (Steps 1 and 2 of the **Assess** module), the hazards most likely to pose a risk to it (Step 3 of the **Assess** module), and the vulnerabilities and attributes in the system that you expect will make it more or less resilient to a threat (Steps 4 and 5 of the **Assess** module).

Completing these steps first is critical because they underpin the strategy activities in this module. This module presents two approaches to help you develop strategies: the **Food System Functioning** approach and the **Resilience Attributes** approach. **You only need to use one of these approaches.**

The Food Systems Functioning approach relies heavily on Steps 1 and 2 in the **Assess** module, as the goal is to identify strategies that help promote and preserve a well-functioning food system (and the assets that allow it to function successfully) in the case of disruptive events. The Resilience Attributes approach relies more on information from Steps 4 and 5 of the **Assess** module, as the goal is to develop strategies that reduce vulnerability and bolster resilience attributes. Both approaches use Step 3 on identifying hazards.

We present these two approaches because depending on where the food system resilience work is positioned in your jurisdiction, one approach may align better with other work, existing or developing plans, or terminology used. A detailed description and suggestions for who might want to use each approach is provided below. In the tools, we provide templates that can be used as a starting point.

## FOOD SYSTEM FUNCTIONING

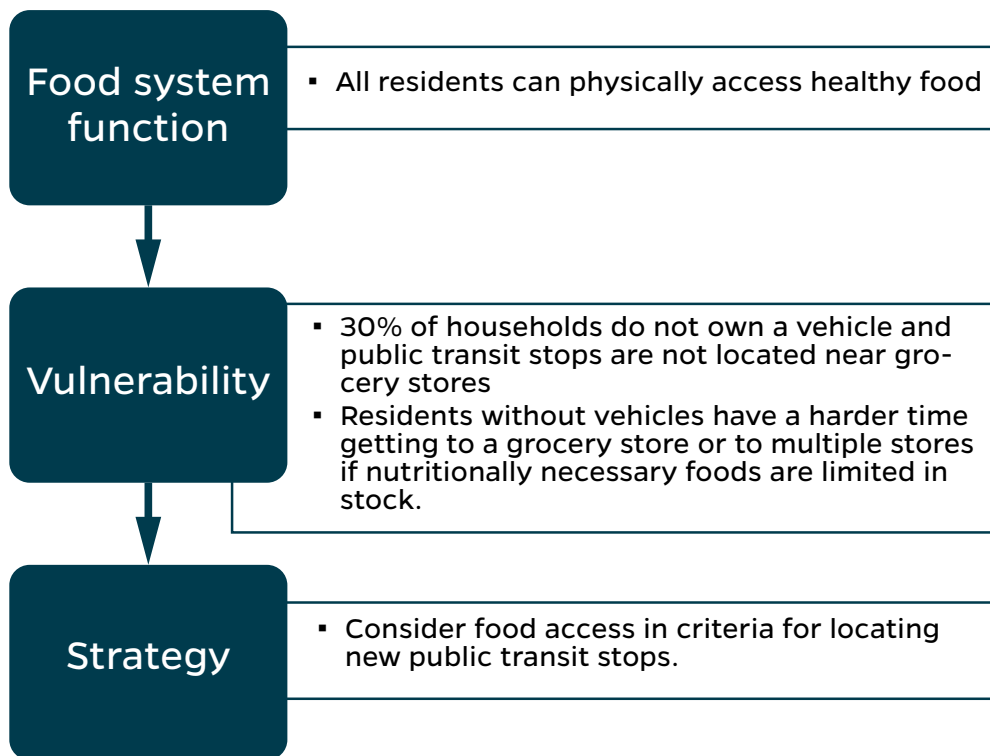
Strategies developed using this approach seek to improve food access, availability, and acceptability before, during, and after a disruptive event.<sup>1</sup> This method relies on the **Risk Assessment (page 70)** introduced in the previous section, which is a way to assess how a hazard can lead to a food system disruption. A disruption occurs when food is not accessible, available, or acceptable.<sup>2</sup>

This approach may be useful and appropriate for your work if:

- Your organization has a program or individuals specifically focused on food systems or food policy work, and the food system resilience work is being led by these individuals or program.
- You plan to integrate food system resilience into an existing or future food, comprehensive or emergency plan to communicate the co-benefits of food system resilience for other planning goals.

**Figure 9** provides an example of how you might identify strategies using a food system functioning approach.

**Figure 9.** Example of Food System Functioning-Focused Approach to Identifying Strategies, adapted from Baltimore Food System Resilience Advisory Report<sup>3</sup>





## TOOL #10: DEVELOPING STRATEGIES: FOOD SYSTEMS FUNCTIONING APPROACH

### Description:

This activity aims to identify strategies that improve the functioning of the food system to ensure all people are food secure. It is important to remember that meeting one's food needs does not look the same for all people and that some people may require more support to reach food security. Strategies developed using this approach address the various elements of food security: economic and physical access, availability along the supply chain and of emergency food resources, nutritional and cultural adequacy, and food safety.

This activity draws from the **Risk Assessment (page 70)** tool. Use this tool to identify strategies that improve food security in the case of each hazard with the top risk scores identified using the **Risk Assessment (page 70)** tool.

A Microsoft Excel version of this tool is available for [download here](#).

### Instructions:

1. Select one of the hazards that you identified as having a high-risk score using the **Risk Assessment (page 70)** tool. Write the hazard at the top of the worksheet.
2. Identify strategies that will help to bolster food accessibility, availability, and acceptability in the case of this specific hazard. The worksheet breaks down each of the key components of food security—accessibility, availability, acceptability, equity—into the elements that impact that component to help you identify strategies that specifically target the various elements that impact food security.
3. Once you identify a strategy, provide a brief description as to why this strategy helps to promote the specific food system functioning element, ultimately improving food system resilience.
4. Some strategies are relevant across multiple hazards; for example, providing financial benefits to consumers will address threats to economic access regardless of the hazard that caused it. Copy/paste these strategies into the documents for other hazards.
5. You may identify strategies that preserve food system functioning but that do not fit in the elements provided. Put them in the Other category.

**TEMPLATE. IDENTIFY STRATEGIES USING A FOOD SYSTEM FUNCTIONING APPROACH**

<b>Specific Hazard:</b>	
<b>Food System Functioning Element<sup>2</sup></b>	<b>Potential Strategies (Be as specific as possible)</b>
<b>Accessibility</b>	
Economic Access	
Physical Access	
<b>Availability</b>	
Supply Chain - Production	
Supply Chain - Processing	
Supply Chain - Distribution	
Supply Chain - Retail	
Donation/ Food Assistance	
Organizations	
<b>Acceptability</b>	
Religiously/Culturally Appropriate	
Nutritional Adequacy	
Dietary Health Concerns	
Food Safety	
<b>Equity</b>	
Procedural	
Distributional	
Structural	
Intergenerational	
<b>Other</b>	

**Remember you should complete this activity for all of your top hazards.**



## RESILIENCE ATTRIBUTES APPROACH

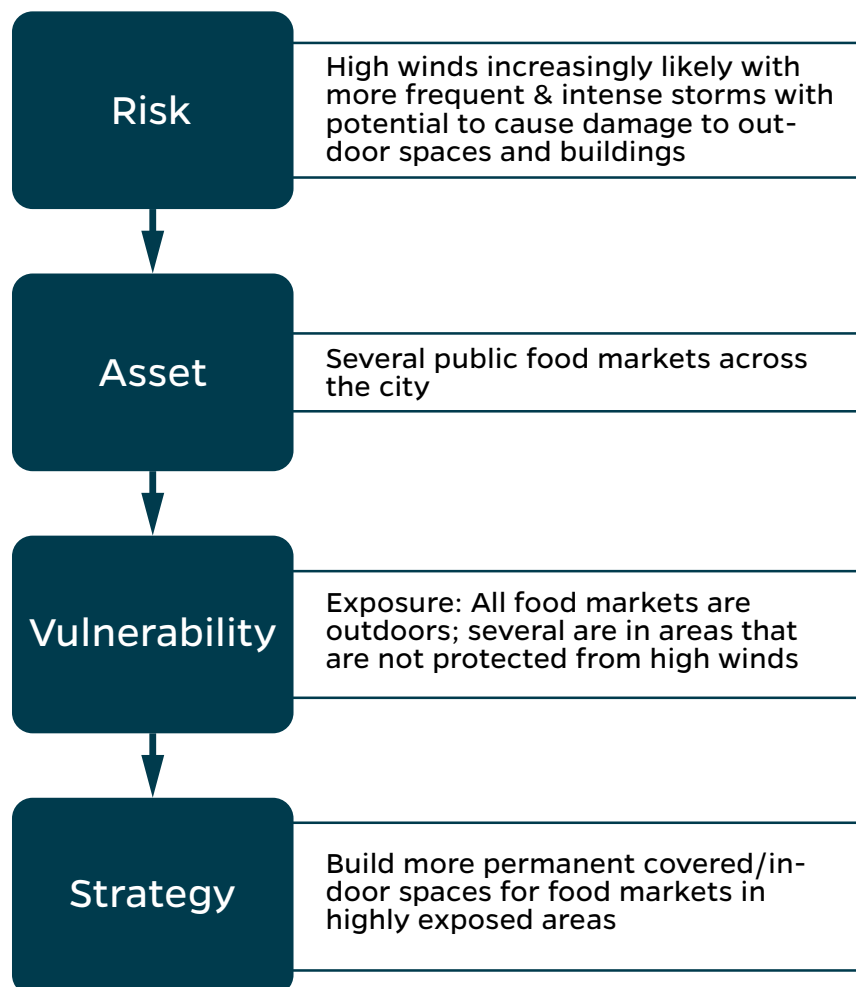
Strategies developed using this approach seek to reduce vulnerability and increase resilience attributes specific to previously identified “critical” food system assets. Assets may be social, political, natural, or physical. It is important to note that different disciplines may use asset-based planning to mean different things. This method aligns with the framing and methods used in hazard mitigation plans, where the focus is on *protecting* critical assets, infrastructure, and populations in the face of specific hazards.

Compared to the Food System Functioning Approach, Resilience Attributes may be more appropriate if:

- The food system resilience work is nested within a resilience or climate change plan for your jurisdiction or is led by individuals familiar with climate adaptation and resilience.
- There is a specific hazard that poses especially high risk, or the group has decided they would like to focus on one or a few hazards.

**Figure 10** provides an example of how you could develop strategies using a resilience attributes approach.

**Figure 10.** Steps of a Resilience Attributes Approach to Identifying Food System Resilience Strategies





## TOOL #11: DEVELOPING STRATEGIES: RESILIENCE ATTRIBUTES APPROACH

### Description:

This method requires familiarity with the elements that contribute to food system vulnerability—exposure, sensitivity, and adaptive capacity—and the food system resilience attributes. (See the **Get Started (page 5)** module, **Understanding Food System Resilience (page 13)**). When developing strategies using this approach, you want strategies that will:

- Reduce exposure
- Reduce sensitivity
- Increase absorptive capacity
- Increase adaptive capacity
- Increase transformative capacity
- Increase diversity
- Increase redundancy
- Increase connectivity
- Increase capital reserves
- Increase flexibility
- Increase preparedness
- Increase procedural equity
- Increase distributional equity
- Increase structural equity
- Increase intergenerational equity

This activity draws from the **Risk Assessment (page 70)** tool and uses both the hazards and respective assets that you identified for your jurisdiction. Use this tool to identify strategies for each of the highest-risk hazards and for each of the hazard's respective assets identified using that tool.

A Microsoft Excel version of this tool is available for [download here](#).

### Instructions:

1. Select a priority hazard and a related asset from your **Risk Assessment (page 70)** tool. Write both at the top of the worksheet.
2. For each asset, identify potential strategies to address food systems vulnerabilities, specifically reducing exposure, increasing sensitivity, or increasing adaptive capacity. In addition to identifying strategies to address vulnerability, identify strategies that enhance resilience attributes—diversity, redundancy, connectivity, capital reserves, flexibility and preparedness. For this exercise, we have also included the category of equity and diversity. Be sure to consider strategies that specifically address inequities caused by a hazard. Think about this first from the food system infrastructure perspective (i.e., reduce exposure for critical infrastructure assets) and then from the social perspective (i.e., reduce exposure for critical human assets).
3. For strategies that do not fit in the listed categories, put them in the Other category.



**TEMPLATE. IDENTIFYING STRATEGIES USING A RESILIENCE ATTRIBUTES APPROACH**

<b>Specific Hazard:</b>	
<b>Asset:</b>	
<b>Resilience Measure</b>	<b>Potential Strategies (Be as specific as possible)</b>
Exposure	
Sensitivity	
Absorptive Capacity	
Adaptive Capacity	
Transformative Capacity	
Diversity	
Redundancy	
Connectivity	
Capital Reserves	
Flexibility	
Preparedness	
Procedural Equity	
Distributional Equity	
Structural Equity	
Intergenerational Equity	
Other	

## EQUITY CHECK

As you narrow down your list of strategies, make sure community priorities are well-represented, and that the list reflects the community's values.

## PEER PERSPECTIVE

*“What I worry is that we’re always in crisis mode and don’t give any bandwidth to recovery and resilience... what needs to happen is we need to be thinking about what response, recovery, and resilience look like and start to put those things in place now. So six months to a year from now, we’re starting to implement them in preparation for the next disaster.”*

(Food System Resilience Community of Practice participant, statement edited for clarity)

# PRIORITIZE STRATEGIES

Once you develop your strategies, it is important to prioritize the strategies so that you know where and when to invest time and resources. The first step is to define the criteria that will be used to evaluate potential strategies. These criteria will help you to focus the list of strategies on those that are most appropriate for your community.

## Define criteria for evaluating potential strategies

To define the criteria by which to evaluate all possible strategies, consider the following questions:

1. What makes a strategy “high-impact”? What do you think are the actions likely to have the highest impact from your list of strategies? Why?
2. What do you think are the most feasible actions from your table? Why are they the most feasible?
3. Which resilience attributes or elements of vulnerability are most important to your community? What actions from your list do you think would have more buy-in from leadership? From communities? From implementation actors? Potential opponents?
4. What actions have the greatest potential to promote equity and justice? Were any of the actions co-developed with community? Which ones reflect values and needs shared by community members throughout the planning process?
5. What factors will affect which strategies you choose—cost, leadership, political will, area/sector targeted, feasibility?
6. Are there targeted populations to consider in your decisions about strategies?
7. What actions are “win-win” (if the hazard never occurs, this action will still be beneficial)?

The following are criteria for consideration from the Community of Practice members.

- Feasibility
- Effectiveness at enhancing/protecting prioritized assets
- Effectiveness at addressing prioritized vulnerabilities
- Effectiveness at addressing long-term goals for food system improvement
- Equity
- Cost
- Cost-Effectiveness
- Political and social will
- Ethics and potential unintended consequences

See the **Learn More** section at the bottom of this module for an additional resource with criteria to consider for prioritizing strategies



Image Credit: CraigKelley62, Non Perishable Food in cabinet, Wikipedia, CC BY-SA 4.0

## TOOL #12: STRATEGIES DECISION MATRIX

### Description:

The Strategies Decision Matrix is a tool that can help you decide what strategies should be top priority for your organization. This tool offers a quantitative approach to help you prioritize strategies. It can also be used to gather input from different partners regarding which strategies to prioritize. The tool provides a list of criteria to evaluate and score each strategy and allows you to assign a weight to each criterion based on importance.

A Microsoft Excel version of this tool is available for [download here](#).

### Instructions:

1. Review the suggested criterion in the table provided and decide what is most important to your team. Add new criteria or remove suggested criteria as appropriate.
2. For each criterion, assign a weight. The weight should indicate how critical this criterion is to your organization. Use a scale of 1-5 for the weight values. For example, if cost-effectiveness is the most important thing to your organization, you might assign it a weight of 5.
3. Rank each food system resilience strategy with a score of 1 (lowest) to 3 (highest) for each criterion. A score of 1 means that the strategy does not meet the criterion while a score of 3 means that it does meet the criterion. A score of 2 means that some aspects of the strategy may meet the criterion.
4. Once you have scored each strategy, multiply the score for each strategy by the weight. Put your final score in the “Decision Score” column.
5. Review the final decision scores with other partners and community members. Consider if the scores seem appropriate and accurate for the strategy.
  - Do any need to be adjusted?
  - Does a low score render the strategy untenable or is it something to consider later on?
  - Does a low score for a criterion render the strategy untenable, even if it scores high on other criteria?
6. After reviewing the scores, order the strategies from high to low scores. Of the low-scoring strategies, are there any that can be removed?
7. Next, consider how you would prioritize the strategies by short-term, mid-term and long-term. Not all strategies that are scored high are short term, some may take longer to achieve.



**TEMPLATE: FOOD SYSTEM RESILIENCE STRATEGIES DECISION MATRIX**

Example Criteria

<b>Strategies</b>						
					Criterion Weight (1-least important; 5-most important)	
			Strategy 3	Strategy 2	Strategy 1	
						<b>Feasibility</b> <b>(1-lowest; 3 highest)</b>
						<b>Effectiveness at enhancing/ protecting prioritized assets</b> <b>(1-lowest; 3 highest)</b>
						<b>Effectiveness at addressing prioritized vulnerabilities</b> <b>(1-lowest; 3 highest)</b>
						<b>Effectiveness at addressing long-term goals for food system improvement</b> <b>(1-lowest; 3 highest)</b>
						<b>Equity</b> <b>(1-lowest; 3 highest)</b>
						<b>Cost-effective</b> <b>(1-lowest; 3 highest)</b>
						<b>Political and Social Will</b> <b>(1-lowest; 3 highest)</b>
						<b>Ethics and potential unintended consequences</b> <b>(1-lowest; 3 highest)</b>
						<b>Decision Score</b> <b>(1-lowest; 3 highest)</b>



## EXAMPLES OF FOOD SYSTEM RESILIENCE STRATEGIES

If you need some inspiration while identifying and prioritizing strategies for your local jurisdiction, this section presents examples from cities and regions across the United States. Some organizations may choose to create a stand-alone food system resilience plan, such as was done by [Baltimore, Maryland](#), or [Boston, Massachusetts](#). Others might integrate food system resilience into existing plans or documents (such as climate change or emergency operations plans). While doing so has the benefit of being able to tap into the support, connections and mandates associated with these broader plans, it may require shrinking the list of food- or resilience-related strategies. The **Policy and Plan Scan (page 53)** activity in the **Define and Scope (page 34)** may suggest opportunities.

Below, we provide several examples of how cities have integrated food system resilience into existing plans.

- **Atlanta, Georgia:** The Atlanta Mayor’s Office of Resilience developed the [Resilient Atlanta: Actions to Build an Equitable Future](#) plan in 2017, which outlines visions and actions the city can take to address the most pressing stresses and build capacity among city residents, organizations, and systems to withstand future shocks. The plan was created by leveraging existing planning efforts and bringing a resilience focus to existing goals and projects. The plan received feedback from residents, advisory members, city businesses, and faith-based and community-based organizations. Below is an example of a food systems goal and action included in the plan (page 81):
  - Develop a resilient local food system by 2025 by:
    - Increasing food access and creating new opportunities for education and employment.
    - Conducting an assessment of the role of local food systems in buffering Atlanta from potential disruptions and to recommend new policies.
- **Hartford, Connecticut:** The [2017 Hartford Climate Plan](#) builds on previous sustainability documents and processes and has been incorporated into the city’s comprehensive plan. The plan has six integrated action areas: energy, food, landscape, transportation, waste and water. Within the food action area, the overall vision is to have “nutritious food that is locally grown or non-carbon-intensive, and is readily available across all neighborhoods, leading to improved health and greater resiliency for area families.” Below are examples of goals and actions that include food resiliency included in the plan (page 38):
  - Increasing food resiliency through strategies such as:
    - Facilitate commercial indoor farming to ensure year-round production of produce through easy permitting and incentive programs;
    - Educate residents on food planning for emergencies to ensure residents are informed about keeping an adequate food supply before an extreme weather event occurs;
    - Create a plan for food distribution in emergency situations to ensure residents who are unable to plan for emergencies are still able to access food.

- The plan also refers to food systems as a way to increase resiliency in other goals, such as empowering communities to grow their own food.
- **Boulder, Colorado:** [City of Boulder’s Resilience Strategy](#), created in 2016, is a strategy document to strengthen the city’s preparedness for and ability to respond to future challenges. Below is an example of an action related to the food system:
  - Ensure the resilience of the local food system by:
    - Designing and conducting a local food system assessment. The city will conduct an entirely new food security assessment and include a broad range of partnerships to understand how changes in the complex dynamics of food production, delivery and consumption system can be impacted by disruption but also meaningfully mitigated by local action.
- **Tampa Bay, Florida:** The Tampa Bay Regional Resiliency Coalition was formed in 2018 and had 31 members from 7 counties and 24 cities in 2021. The [Tampa Bay Regional Resilience Action Plan](#) created by the Coalition in 2021, will help to reduce the risk to people and property by anticipating and preparing for sea level rise, storms, flooding, extreme heat and other emerging hazards in the region. Below are examples of a goal and actions related to food systems included in the plan (pages 98-100):
  - Food systems become more sustainable and resilient, and access to healthy foods is improved through actions such as:
    - Develop a food resiliency plan
    - Develop an inventory of agriculture lands, number of farms, vacant lots and production outputs to understand potential opportunities
    - Develop incentives to increase local food production and processing and distribution
    - Implement sustainability outreach and education efforts to develop culture around reducing food waste

#### LEARN MORE ABOUT PRIORITIZING STRATEGIES:

- [Intervention Decision Matrix](#): Oklahoma State Government

#### REFERENCES:

1. Food and Agriculture Organization of the United Nations. (2006). Food Security. *Policy Brief Issue 2*.
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**MODULE 6:  
IMPLEMENT  
& MEASURE**



# RESILIENCE IN ACTION

## This section will help you to:

- Learn tips from other cities on successful implementation of food system resilience planning
- Consider barriers to implementation and potential strategies to mitigate challenges
- Learn about useful suggestions from Community of Practice members on considerations and barriers to implementation

## CONSIDERATIONS FOR SUCCESSFUL IMPLEMENTATION

Throughout the development of this guidebook, Community of Practice members were asked to reflect on and brainstorm how to implement food system resilience goals successfully, and about potential barriers they may encounter. **Table 9** provides the top suggestions from Community of Practice members. The suggestions range from how best to use data to ensure a community has buy-in and ownership in the process.

Image credit: Stefanie Arck-Baynes, Philabundance; CLF Food Policy Networks Photo Contest, 2017



**Table 9.** Community of Practice Suggestions for Successful Implementation of Food System Resilience Goals

Co-create goals with community partners	Use a combination of powerful data and research and compelling personal stories to advocate/justify/motivate	Secure political support for the goal from leadership	Develop bipartisan goals
Be transparent in the planning process and implementation of goals	Allocate sufficient time for implementation; without time there is no action	Center equity	Make data-driven decisions
Recruit partners to help with implementation and evaluation	Use existing research and evidence to inform goals	Develop quantifiable goals	Increase staff capacity to focus on the goal/issue
Use plain language so your goals are easy to understand by everyone	Create meaningful goals that make resilience a concept and term that the general public/community can relate to	Secure sustainable funding to implement goals	Allocate time and money to consider unintended negative consequences when developing actions
Consider goals and actions that do not require a financial request from elected officials	Recognize the importance of community champions and their support	Create a sense of urgency, so that goals and actions do not get pushed behind other priorities	Create goals that can outlast or supersede a political administration or a particular champion who may be replaced or leave

## POTENTIAL BARRIERS AND MITIGATION STRATEGIES

Ensuring that the strategies you identify in this process are maintained, sustained, and effective in the long run despite hurdles you may encounter along the way requires building *internal* resilience, too. Communities, governments, organizations, and individuals are constantly changing and must adapt to external and internal pressures. In a local government, for example, a program supported by one Mayor or County Commissioner one year may be cut in the next year after an election. A community-based organization leading local emergency response work might lose a key funding source after national or global priorities shift. This section shares some tips from Community of Practice members on sustaining this work in the long run and overcoming common hurdles.

**Table 10.** Common barriers discussed by the Community of Practice members and potential strategies to mitigate challenges.

<b>Barrier</b>	<b>Description</b>
<b>Lack of funding</b>	Getting funding for food system policy work has been historically challenging because food systems are diverse and do not neatly fit within one aspect of a community’s policies or infrastructure. Organizations such as the Council of Development Finance Agencies have produced <a href="#">resources</a> to help partners get financial support for food system development.
<b>Lack of human resources/ understaffed</b>	Although most local governments do not have a division or staff member dedicated solely to food systems policy, let alone food system resilience work, a few pioneers have developed specific roles and positions for this purpose. Still more have found ways to add food to other sectors such as health and emergency preparedness.  Regardless of the title or official job description of the person or people who are responsible for supporting food system resilience work, ensuring that there is both redundancy and diversity in staff connected with the food system resilience goals can help keep them going.
<b>Lack of time available to monitor and evaluate progress</b>	It is important to collect data on your local government’s response in the hours, days, or weeks after a disruption occurs. Monitoring and evaluating progress can take a significant amount of time and resources. Consider partnering with local universities or develop data agreements with other state agencies and community partners who may have access to and are willing to share timely and reliable data.
<b>Lack of leadership support or community buy-in</b>	It is critical to have sufficient political capital for supporting long-term outcomes for resilience planning. Find champions who are supportive of this work and connected to funding opportunities and decision makers. Secure buy-in from others outside of the political process so that programs and initiatives do not get discarded after new leadership is elected. Include a diversity of perspectives and people who are engaged in the work.

# MEASURE AND MONITOR FOOD SYSTEM RESILIENCE

## This section can help you to:

- Identify metrics that can be used to measure the functioning and potential resilience of your food system in the face of disruptions
- Find data sources that can be used to measure your indicators

Food systems and resilience can be complex and difficult to measure, but there are resources available to help make sure that your planning and strategies are rooted in scientific evidence as well as the experiences of community members. This section will explore data considerations and two approaches to measure resilience. You will need to refer back to the activities you completed in **Module 4: Assess (page 58)** module and **Module 5: Strategize (page 92)** module.

## MEASURING FOOD SYSTEM RESILIENCE

As defined in the **Get Started** module, food system resilience is the capacity of a system and its units at multiple levels, to provide sufficient, appropriate, and accessible food to all, in the face of various and even unforeseen disturbances and therefore, can be difficult to measure until after a disruptive event occurs.<sup>1</sup> Scientific researchers from psychology to engineering have explored what it means for different systems or individuals to be more or less resilient.<sup>2,3,4</sup> Some have even suggested metrics for measuring food system resilience (See the **Learn More** resources at the end of this module for examples), but this work is still in its infancy compared to measuring resilience in other systems.

In order to understand whether your strategies and actions are working to build resilience in our food system, it is necessary to plan for on-going measurement and monitoring. As you monitor your strategies and actions, this will allow for an understanding of progress and where adjustments may need to occur.

## DATA CONSIDERATIONS

Data collection is necessary, but it can be time and resource intensive. When measuring food system resilience, you will need to consider data across time, geography, and the type of data available or needed to accurately measure impact and progress. Keep in mind the following data considerations as you decide what approach is most beneficial for your food system resilience planning and work:

- **Scale:** Consider what geographic scale is most beneficial to your assessment and evaluation. Some data are available at multiple scales—census tract, zip code, county, state or regional. Depending on the strategies you outlined in the previous section, different scales may be important.
- **Frequency:** Depending on the shock or stressor you are attempting to measure, the frequency with which data are updated may be important. If you are evaluating long-term resilience, such as how did your jurisdiction respond and improve years after a hurricane, annual data may be sufficient. However, if a disaster strikes and you need to evaluate the government’s response immediately, you may need data that are updated more frequently.
- **Type:** Both secondary (collected by another entity) and primary (collected by you and your team) data can be important in assessing and evaluating food system resilience. If you have the time and resources, collecting primary data can add to your evaluation of food system resilience given every community has different food system assets and vulnerabilities, as well as underlying contextual factors that influence food system outcomes. However, there are many publicly available datasets that exist and can be used to measure attributes of resilience or by proxy. You may also consider qualitative (e.g., interviews, focus groups, observations) and quantitative (e.g., surveys or administrative data) data collection methods to build a robust understanding of your local food system.

We recommend the resources by the [Bloomberg Center for Government Excellence](#) on open data, data management, and performance analytics to learn more about how data can strengthen your organization’s work.



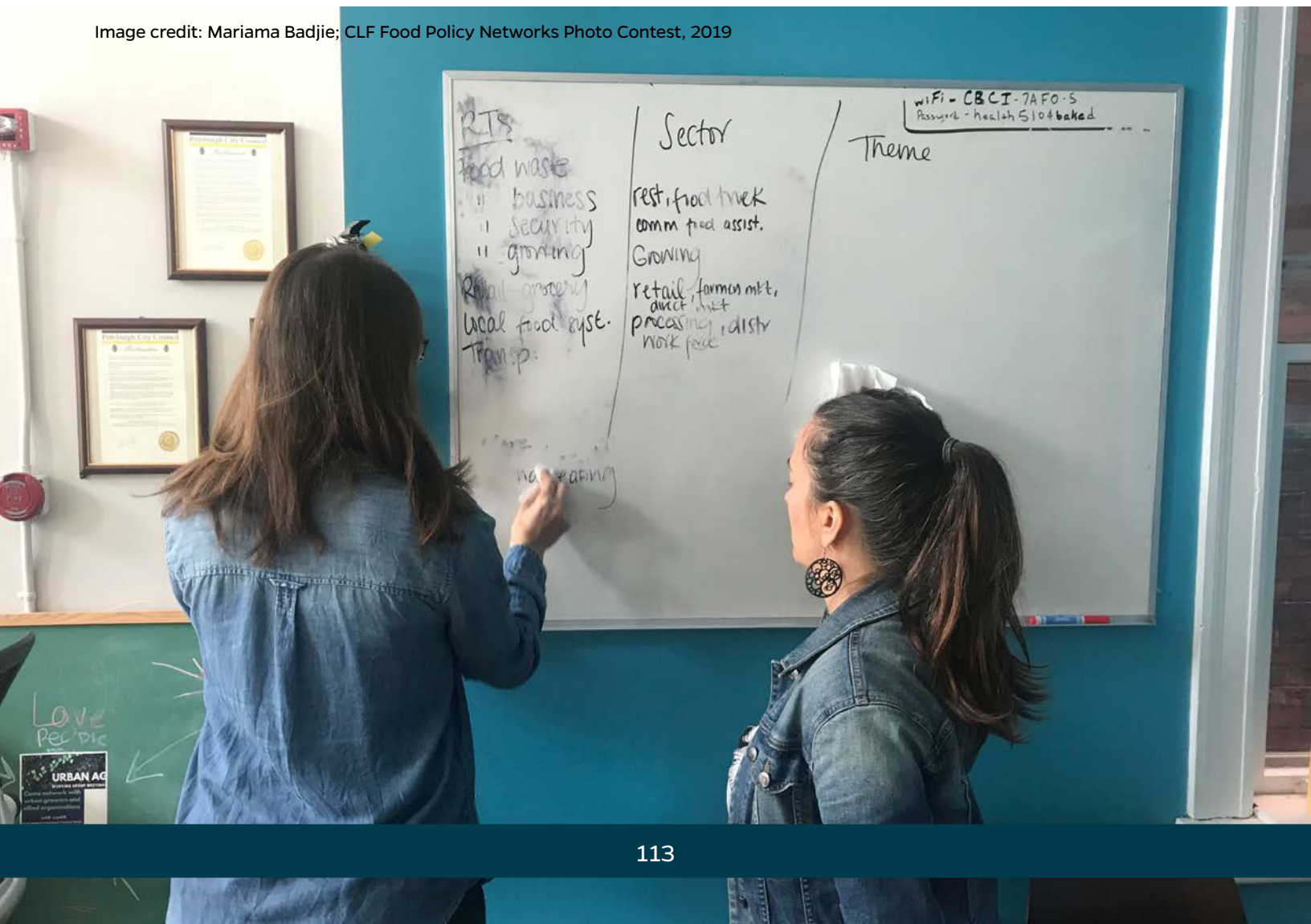
## METHODS TO EVALUATE FOOD SYSTEM RESILIENCE

**Method 1:** Food system functioning over time as a proxy measure for food system resilience

In the **Evaluate Baseline Food System Functioning (page 60)** section of this planning guide, we presented the concept of food system functioning as one way to identify indicators and data sources that could measure how well your system is working and meeting its goals *before* a crisis occurs. If food system functioning indicators are measured consistently over time, they can also provide post-disruption information on how the food system and community are withstanding and recovering from a disruption.

The food system functioning approach can be time and resource intensive if your jurisdiction decides to update data frequently, especially if it is weekly or monthly data. Fortunately, there are existing data sources that you can use to track food system functioning, some of which are provided in the **Baseline Food System Functioning Indicators (page 60)** table found in **Module 4: Assess (page 58)** section of this guide.

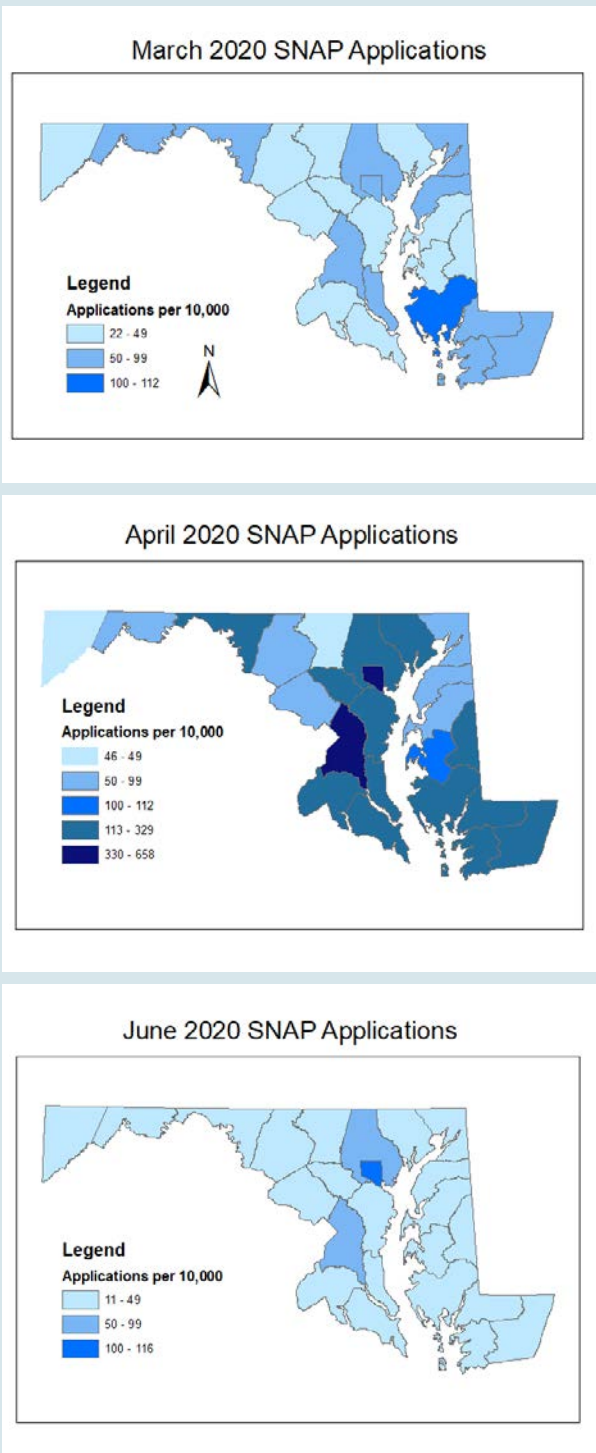
Image credit: Mariama Badjie; CLF Food Policy Networks Photo Contest, 2019



## EXAMPLE OF FOOD SYSTEM FUNCTIONING MEASURED OVER TIME

During the COVID-19 pandemic, the State of Maryland reported residents' applications for the Supplemental Nutrition Assistance Program (SNAP) each month, by county. **Figure 12** illustrates how data can be used to demonstrate where need for food assistance exists. The maps display data on the number of applications submitted to participate in SNAP from March, April and June 2020. It is clear to see the drastic increase in people needing assistance across Maryland. From March to April, the counties with the darkest blue coloring experienced a large jump in SNAP applications. By the end of summer 2020, however, applications had fallen again in many counties. Although there could be many reasons for the change in certain counties, it could suggest an improvement in the ability of families in those counties to afford enough food. This type of spatial information can help policymakers and emergency food service providers understand where to focus response and recovery resources in the wake of a disruption.

**Figure 12.** Data Source: Maryland Department of Human Services.  
Created by Emma Moynihan.



## EQUITY CHECK

Remember when using maps, the maps are only as good as the data used to create them, and that data might not be equitably telling the full story. Make sure that your maps are telling the true story and are not distorting the information because of missing, incomplete, or inaccurate data. Engage your community partners, community members, and colleagues from other departments in this work. Review the **Using Data Equitably (page 61)** in the **Assess** module for more on this.

## Method 2: Resilience Attributes Observed in Food Systems

While Method 1, the food system functioning approach, depicts the system's functioning and level of recovery, Method 2, the resilience attributes approach, focuses on the system's *capacity* for resilience. This can be done in the absence of a disruption. Further work is needed to develop approaches to and specific data sources for measuring these attributes, but we mention it here as another promising route to pursue. The **Resilience Attributes Approach (page 98)** provides a starting framework to help you think through ways you might measure the resilience attributes. Although the attributes do not have to be measured after an event occurs in order to tell you something about the systems' resilience, we suggest making a plan for reassessing the attributes periodically as part of the evaluation of your resilience plan implementation.

## LEARN MORE ABOUT IMPLEMENTATION & MEASUREMENT

- [Food and Agriculture Organization of the United Nations City Region Food System Indicators – Indicators Framework](#)
- [The Economics of Local Food Systems: A Toolkit to Guide Community Discussions, Assessment and Choices](#)
- [Councils of Development Finance Agencies: Food Systems Finance Resource Center](#)

## REFERENCES

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4. Holling, C. S. (1996). Engineering resilience versus ecological resilience. *Engineering within ecological constraints*, 31-44.

# CONCLUSION



## CONCLUSION

Natural and human-made disasters and disruptions can happen at any time, without warning, and directly and indirectly disrupt food security and the functioning of a food system. Food system resilience planning can help to mitigate harm often while improving food systems overall. While food system resilience work is still in its infancy, we hope that this guide is a useful starting point and place to build upon as more cities, counties, states, and regions develop and implement their plans. This work takes time, dedication to equity for all, forward-thinking, and collaboration, but the end result of a more prepared and equitable food system is more than worth it.

As you work through this guide and new ideas, strategies, and considerations arise, please consider sharing with your networks and peers so we can all continue to learn together and build the field of food system resilience.