



# UNDRR

UN Office for Disaster Risk Reduction

# DISASTER RESILIENCE SCORECARD FOR CITIES

JULY 2022

FOOD SYSTEM RESILIENCE ADDENDUM  
Consultative Version 1.0



# Disaster Resilience Scorecard for Cities: Food System Resilience – Addendum

## Structure of the Food Resilience Assessment

The Addendum is structured in sections around the same “[Ten Essentials for Making Cities Resilient](#)” as the Scorecard. The Ten Essentials provide a holistic coverage of the many issues that affect resilience in the “system-of-systems”, which make up a system. This includes food production, supplies, transport and services.

- Integration of the food system and governance (Essential 1);
- Integration of the food system and disaster scenarios (Essential 2);
- Integration of the food system and finances (Essential 3);
- Integration of the food system and land use/building codes (Essential 4);
- Integration of the food system and ecosystem services (Essential 5);
- Integration of the food system and institutional capacity (Essential 6);
- Integration of the food system and societal capacity (Essential 7);
- Integration of the food system and infrastructure resilience (Essential 8);
- Integration of the food system and disaster response (Essential 9);
- Integration of the food system and recovery/building back better (Essential 10).

There are 29 indicators with a score of 0-5, where 5 is best practice.

## What is a Food System?

The Scientific Group of the UN Food Systems Summit in 2021 identified food systems as the entire range of actors involved in the production, processing, distribution, consumption, and disposal of food products originating from agriculture, forestry, fisheries and food industries, and the broader economic, societal, and natural environments in which they are embedded. Production includes farming and pre-production actors such as input industries producing fertilizers or seeds. The range of actors includes those involved in science, technology, data, and innovation. Others include public and private quality and safety control organizations.

The Food and Agriculture Organization of the United Nations refers to a sustainable food system when it delivers food security and nutrition for all, in a way that does not compromise food security and nutrition for future generations.

## Required data for analysis

Data you will need to complete this Addendum will include:

- Demographic data, including nutritional related statistics (especially for stunting);
- Food system capacity, infrastructure, stakeholders and planning documentation;

- Data on ecosystem services, finance, resilience capacities and food system outcomes of previous disasters, if available;
- Climate change-related assessments, trends on climate if these exist, and how they affect the food flows (price volatility, availability, etc.);
- Emergency management planning and procedural documentation;

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## Essential 01: Organize for Disaster Resilience

### Addendum - Integration of the food system and governance

Ref	Subject / Issue	Question / Assessment Area	Indicative measurement scale	Comments
A.1	<b>Integration of the food system and governance (Essential 1)</b>			
A1.1	<b>The food system is part of multisector and multilevel disaster risk management governance</b>	To what extent does/do the governance mechanism(s) for disaster risk management integrate the full breadth of food system needs?	<p>5 – The full spectrum of food availability and access functions routinely provide input to multilevel disaster resilience governance mechanism/meetings. They are part of cross-department cooperation and routinely contribute to all major disaster resilience programs and documents.</p> <p>4 – Representatives of most food system functions usually attend disaster resilience meetings at any level. They also contribute to major programs, and are included as part of cross-department cooperation. However, they may not be involved in all relevant activities.</p> <p>3 – Food system functions have their disaster resilience fora and mechanisms. Still, while including the whole spectrum, these are not thoroughly coordinated with other actors such as city governments, logistics operators or community groups. The focus may be narrowly on immediate event response rather than broader resilience issues such as longer-run impacts.</p> <p>2 – Some food system disciplines are involved in city disaster resilience activities, but there is not complete engagement.</p> <p>1 – Only rudimentary engagement of some aspects of the food system in city disaster resilience activities.</p> <p>0 – There are no food availability and access functions in the region, or if there are, it is not engaged in disaster resilience at all.</p>	<p>The full breadth of the food system includes the nodes and components from production to consumption plus food system actors and stakeholders. Examples include but are not limited to the following:</p> <ul style="list-style-type: none"> <li>• Small-scale producers;</li> <li>• Chefs, cooks and other food handlers;</li> <li>• Care home staff;</li> <li>• Environmental health specialists (e.g. food inspectors);</li> <li>• Supply chain workers;</li> <li>• Companies and organizations involved in supplying and coordinating food delivery;</li> <li>• School administrators and lunchroom managers</li> <li>• Child nutrition specialists;</li> <li>• Actors involved in disaster risk management and resilience-building of the food system;</li> <li>• Emergency workers such as national guard troops, community volunteers and student aides;</li> <li>• Manufacturers, producers and industrial-scale food production.</li> </ul> <p>Representatives of these functions need to be in a position to speak authoritatively about resources available to maintain the food supply system.</p> <p>When considering the ranking, a transparent process for providing input and participating should be available.</p> <p>Multilevel disaster resilience governance includes local, metropolitan, regional, provincial, and national levels.</p>



## Essential 02: Identify, Understand and Use Current and Future Risk Scenarios

### Addendum - Integrating the food system into disaster scenarios

Ref	Subject / Issue	Question / Assessment Area	Indicative measurement scale	Comments
A.2	<b>Integration of food availability and access emergencies in disaster scenarios (Essential 2)</b>			
A2.1	<b>Inclusion of food system impacts as a disaster scenario</b>	To what extent is food production, availability, storage and access included in disaster risk planning for disease outbreaks, pandemics, water shortages and other outburst events?	<p>5 – Food production, availability, storage and access emergencies are fully included as a risk scenario in their own right or as a component of a “composite” scenario. The likely impact on staff availability and food supply is modelled and planned for, both alone, and in combination with other risks where an epidemic or pandemic may hinder the ability to respond.</p> <p>4 – Food production, availability, storage and access barriers are addressed as above. Still, they tend to be considered in isolation from other risks. Thus the interaction with other risks may not be fully addressed.</p> <p>3 – Food production, availability, storage and access are considered, and their likely impacts, but these impacts are not fully modelled.</p> <p>2 – Food production, availability, storage and access may be considered, but at a high level only.</p> <p>1 – Risk of food to production, availability, storage and access may be noted as an issue, but without active consideration of the impacts or required responses.</p> <p>0 – Very low-level consideration of food availability and access.</p>	<p>A “worst-case”, “regular case”, and “best case” scenario should be developed to plan for disaster resilience. In this instance, the “worst-case” scenario considers the negative impact of factors that depreciate returns, such as an economic recession, higher interest rates, global disruption, and poor sales. The “best case” scenario considers what will happen if everything goes the organization’s way.</p> <p>This question addresses the extent to which food availability and access emergencies are included in all disaster scenarios. For example, disease outbreaks, pandemics, and water shortages.</p> <p>The next question addresses the impact of food availability and access issues on disaster management planning, response, and recovery.</p>

<p><b>A2.2</b></p>	<p><b>Inclusion of food system logistical impacts in disaster scenarios</b></p>	<p>To what extent are the food system logistical impacts and traceability included in disaster scenario planning?</p>	<p>5 – Food supply chain and logistical impacts are fully included in disaster planning scenarios. The likely impact on staff availability, food facilities, water and sanitation, treatment and care are planned for and modelled. Data on food traceability and public health issues are readily accessible.</p> <p>4 – Food supply chain and logistical impacts are fully addressed as above. Still, they tend to be considered in isolation from other impacts. Thus, the effect they may have on disaster recovery is not fully assessed. Data on food traceability and public health issues are readily accessible.</p> <p>3 – Several food supply chain and logistical issues are addressed, perhaps in detail, but there is no full coverage. Longer-term issues are likely to be omitted. Some data on food traceability and public health issues are accessible.</p> <p>2 – Some immediate food supply chain and logistical impacts are considered and planned for, but in an outline only. Limited data on food traceability and public health issues.</p> <p>1 – Food supply chain and logistical issues may be acknowledged, but without real planning. No data on food traceability and public health issues.</p> <p>0 – No consideration of food supply chain, logistical impacts, food traceability and public health issues post-disaster.</p>	<p>A consideration may be the impact of disasters on managing existing food availability, supply and logistics, and how these may, in turn, impede recovery. Examples of food system, logistical impacts, and food traceability in scenario planning for disasters could include:</p> <ul style="list-style-type: none"> <li>• Awareness of transport networks and logistics options should there be a disaster, crisis or food shortage;</li> <li>• Ability to identify the grower, producer, transporter, handler, and sale location;</li> <li>• Knowledge of small-scale producers and what they need for safe production;</li> <li>• Awareness of local manufacturers, producers and industrial-scale food production.</li> </ul> <p>Please note: The Scorecard requires the development of (at least) a “most severe” (worst case) and a “most probable” (regular case) scenario from which to plan disaster resilience. For example, floods, hurricanes, tornadoes, or earthquakes. This question addresses the inclusion of likely food system issues in a disaster scenario by focusing on the supply chain and logistical needs.</p>
<p><b>A2.3</b></p>	<p><b>Slow onset events and their impacts on food systems are included in disaster planning and preparedness scenarios</b></p>	<p>To what extent are slow onset events such as sea-level rise, shifting of seasons and rainfall variability included in disaster planning and preparedness scenarios?</p>	<p>5 – A comprehensive set of slow onset events are included in disaster planning and preparedness scenarios. This includes data to monitor risks and understand long-term losses and damages.</p> <p>4 – A range of slow onset events are included in disaster planning and preparedness. This includes data to monitor risks and the understanding of likely short and long-term losses and damages.</p> <p>3 – Some slow-onset events are included in disaster planning and preparedness scenarios. This includes data to monitor risks and the understanding of likely losses and damages.</p> <p>2 – Limited consideration of slow onset events in disaster planning and preparedness scenarios. Limited data is also available to monitor risks and understand likely losses and damages.</p> <p>1 – Slow onset events are acknowledged but without real mitigation or planning in place.</p> <p>0 – No consideration of slow-onset risks and data needs.</p>	<p>The Scorecard requires the development of (at least) a “most severe” (worst case) and a “most probable” (regular case) scenario for disaster planning and preparedness. For example, slow onset risks, such as climate change, sea rise and temperature change, should be considered. This question addresses the inclusion of likely food availability and access issues in the future.</p> <p>A further consideration is data availability on losses and damages from slow onset events. Please note: this data is only likely available at the national level. Data at a local level in many parts of the world is rare.</p>

<p><b>A2.4</b></p>	<p><b>Inclusion of pre-existing chronic health issues, nutritional and allergy needs in food system disaster planning</b></p>	<p>To what extent are pre-existing chronic health issues, nutritional and allergy needs included in food system disaster planning scenarios?</p>	<p>5 – Disaster planning scenarios for food systems include pre-existing chronic health issues such as obesity, other childhood maladies, nutritional, and/or allergy needs.</p> <p>4 – Broadly, pre-existing chronic health issues, obesity and other childhood maladies, nutritional, and allergy needs are identified and included in food system disaster planning.</p> <p>3 – Most applicable pre-existing chronic health issues, obesity and other childhood maladies, nutritional, and allergy needs and considerations are included in food system disaster planning, with some gaps.</p> <p>2 – Pre-existing chronic health issues, obesity and other childhood maladies, nutritional, and allergy needs are known but not included in food system disaster planning.</p> <p>1 – Major gaps exist in the identification and inclusion of pre-existing chronic health issues, obesity and other childhood maladies, and nutritional and allergy needs.</p> <p>0 – Very few attempts and usually with very low levels of initiatives to identify pre-existing chronic health issues, obesity and other childhood maladies, nutritional, and allergy needs.</p>	<p>Pre-existing chronic health issues in an area may include obesity, diabetes, hypertension, cancer and childhood maladies. Other factors to consider, for example, are malnutrition, chronic drug addiction, allergies, intolerance, vegetarian, vegan, religious and/climate-friendly diets.</p>
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## Essential 03: Strengthen Financial Capacity for Resilience

### Addendum - Integration of the food system and finances

Ref	Subject / Issue	Question / Assessment Area	Indicative measurement scale	Comments
<b>A3</b>	<b>Integration of the food system and finances (Essential 3)</b>			
A3.1	<b>Funding for food systems is part of disaster resilience activities and plans?</b>	To what extent is emergency and regular funding identified and available to address food system risks and impacts of disasters?	<p>5 – Funding (emergency and regular) is identified, accessible and integrated to address all known food system impacts or risks.</p> <p>4 – Funding (emergency and regular) is identified and accessible to address all known food system impacts from the most probable scenario.</p> <p>3 – Funding needs are known, but some funding shortfalls exist. These are actively being addressed.</p> <p>2 – Needs are not fully known, but some shortfalls are identified. Addressing them may or may not be in hand.</p> <p>1 – Food system funding needs have only been assessed in outline, and only a generalized knowledge of funding sources is available. These have not been pursued.</p> <p>0 – No consideration of funding needs or sources.</p>	<p>Consideration of funding sources can include “dividends”. These may include:</p> <ul style="list-style-type: none"> <li>• “Inbound” – expenditures that may confer food system benefits. For example, raising essential food services above flood zones, backup generators at facilities or where a new community center might also be co-opted as a temporary food distribution center;</li> <li>• “Outbound” – expenditures on food system resilience may include flood-proofing transport routes, which allows for continued access to, and transport of, food supplies.</li> </ul> <p>Funding initiatives could include supporting:</p> <ul style="list-style-type: none"> <li>• Agro-climatic and disaster risk information systems (or climate services);</li> <li>• Early warning systems;</li> <li>• Climate and disaster risk governance, including finance;</li> <li>• Risk transfer mechanisms (social protection and insurance);</li> <li>• DRR/CCA agriculture good practices/technologies at farm and community level, including livelihood diversification and alternatives;</li> <li>• Emergency preparedness, anticipatory action and response;</li> <li>• Climate risk proofing along the food value chain;</li> <li>• Nature-based solutions at the territorial/ecosystem level;</li> <li>• Food loss and waste reduction;</li> <li>• Climate-friendly and sustainable diets.</li> </ul>



## Essential 04: Pursue Resilient Urban Development

### Addendum – Integration of the food system and land use/building codes

Ref	Subject / Issue	Question / Assessment Area	Indicative measurement scale	Comments
<b>A4</b>	<b>Integration of the food system and land use/building codes (Essential 4)</b>			
A4.1	<b>Land management and zoning for agriculture, aquaculture, and other food production areas</b>	To what extent does land management and zoning consider the need for agriculture, aquaculture, and other food production areas to be less vulnerable and have the ability to continue operating after a disaster?	<p>5 – All key agriculture, aquaculture, and other production areas are located/protected to survive the “most severe” disaster scenario.</p> <p>4 – All key agriculture, aquaculture, and other production areas are located/protected to survive the “most probable” disaster scenario.</p> <p>3 – Some key agriculture, aquaculture, and production areas are located/protected to survive the “most probable” disaster scenario.</p> <p>2 – More than 50% of key agriculture, aquaculture, and production areas are located/protected to survive the “most probable” disaster scenario.</p> <p>1 – More than 75% of key agriculture, aquaculture, and food production areas are located/protected to survive the “most probable” disaster scenario.</p> <p>0 – No assessment was carried out.</p>	<p>Agriculture incorporates the cultivation of the soil, crop production and raising of livestock to provide food.</p> <p>Aquaculture includes cultivating, breeding, rearing, and harvesting fish, shellfish, algae, and other organisms in water environments.</p> <p>Production includes farming communities and pre-production actors, for example, input industries producing fertilizers or seeds.</p>
A4.2	<b>Land zoning and policies for urban farming</b>	To what extent do land zoning and policies support urban farming before, during and after disasters?	<p>5 – All urban farming areas are located/protected to survive the “most severe” disaster scenario.</p> <p>4 – All urban farming areas are located/protected to survive the “most probable” disaster scenario.</p> <p>3 – Some urban farming areas are located/protected to survive the “most probable” disaster scenario.</p> <p>2 – More than 50% of urban farming areas are not protected from the “most probable” disaster scenario.</p> <p>1 – More than 75% of urban farming areas are not protected from the “most probable” disaster scenario.</p> <p>0 – No assessment carried out.</p>	<p>Urban farming refers to growing or producing food in populated areas such as a city. Examples include community-supported agriculture, city farmers’ markets, indoor farming, vertical farming, and green roofs. Urban farmers often grow vegetables, root crops, fruits, and grains. This is an alternative approach to producing or delivering food in an urban environment.</p>



<p><b>A4.3</b></p>	<p><b>Food system compliance with land zoning and building codes</b></p>	<p>To what extent are food system facilities compliant with land zoning and building codes related to disaster resilience?</p>	<p>5 – All food system facilities conform to codes that allow them to mitigate disaster risks and withstand the “most severe” disaster scenario.</p> <p>4 – All food system facilities conform to codes that will allow them to mitigate disaster risks and withstand the “most probable” disaster scenario.</p> <p>3 – Some food system facilities fail to conform to codes that will allow them to mitigate disaster risks and withstand the “most probable” disaster scenario.</p> <p>2 – More than 50% of food system facilities fail to conform to codes that will allow them to mitigate disaster risks and withstand the “most probable” disaster scenario.</p> <p>1 – More than 75% of food system facilities fail to conform to codes that will allow them to mitigate disaster risks and withstand the “most probable” disaster scenario.</p> <p>0 – No assessment carried out.</p>	<p>Food system facilities may include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Storage centers for perishable products;</li> <li>• Storage facilities for maintenance of seed quality in emergencies;</li> <li>• Food businesses;</li> <li>• Supermarkets;</li> <li>• Feeding centers;</li> <li>• Warming or cooling centers;</li> <li>• Residential care homes and assisted living units;</li> <li>• Food supplies, as well as logistics and supply chain facilities;</li> <li>• Emergency food distribution facilities;</li> <li>• Workforce availability post-disaster.</li> </ul> <p>Land zoning and building code compliance should encourage, for example, flood-proofing, earthquake resistant buildings, and cultivation of food crops that are resistant to natural hazards. This applies especially to agricultural communities located near cities.</p>
<p><b>A4.4</b></p>	<p><b>Land management and zoning to sustain and preserve agricultural areas in disaster situations</b></p>	<p>To what extent are land management and zoning considering the need to sustain and preserve agriculture and production areas before, during and after disasters?</p>	<p>5 – All agricultural/producing areas are located/protected to survive the “most severe” disaster scenario.</p> <p>4 – All agricultural/producing areas are located/protected to survive the “most probable” disaster scenario.</p> <p>3 – Some agricultural/producing areas are located/protected to survive the “most probable” disaster scenario.</p> <p>2 – More than 50% of All agricultural/producing areas are located/protected to survive the “most probable” disaster scenario.</p> <p>1 – More than 75% of All agricultural/producing areas are located/protected to survive the “most probable” disaster scenario.</p> <p>0 – No assessment was carried out.</p>	<p>Land management and zoning are vital to preserving and increasing wetlands/productive agriculture areas to prevent floods and other disasters. Zoning also needs to preserve the urban forest areas to ensure ecosystem services such as wood or fruits. This is not just a measure of the existing location of the areas/preservation measures, but to what extent the policies integrate productive (or non-productive) areas to improve disaster resilience.</p>



## Essential 05: Safeguard Natural Buffers to Enhance the Protective Functions Offered by Natural Ecosystems

### Addendum – Integration of food system and ecosystem services

Ref	Subject / Issue	Question / Assessment Area	Indicative measurement scale	Comments
<b>A5</b>	<b>Integration of food system and ecosystem services (Essential 5)</b>			
A5.1	<b>Preservation and management of ecosystems that provide food system benefits</b>	To what extent are ecosystem and nature-based solutions that support subsistent living and overall food system benefits identified and protected from disaster risks?	<p>5 – All food system-relevant ecosystem and nature-based solutions are identified, protected, and known to be thriving.</p> <p>4 – All food system-related ecosystem and nature-based solutions are identified and, in theory, protected but may not be thriving.</p> <p>3 – Some but not all food system-related ecosystems and nature-based solutions are identified. Those identified are protected in theory but may not be thriving.</p> <p>2 – Widespread gaps in identification and protection of food system-related ecosystem and nature-based solutions. Those identified are protected in theory but may not be thriving.</p> <p>1 – Rudimentary efforts to identify/protect food-relevant ecosystem services. Widespread issues with the status of those identified.</p> <p>0 – No attempt to identify or protect food system-related ecosystem and nature-based solutions. A high probability they would be assessed to be severely degraded if formally identified.</p>	<p>The entire ecosystem is important to provide the conditions necessary for food production and subsistence living. This includes pollination, soil structure and fertility maintenance, nutrient cycling, hydrological services, and wildlife habitats. Other examples of an ecosystem and nature-based considerations are agricultural land, waterways (e.g., fish), flood plains, insects, and urban farming.</p> <p>Nature-based solutions are actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.</p>
A5.2	<b>Management of ecosystem and biological risks that may affect food systems</b>	To what extent are biological risks to ecosystems identified and strategies in place to mitigate impacts on food systems?	<p>5 – A broad range of biological factors identified and strategies in place to mitigate risks to food systems.</p> <p>4 – A range of biological factors identified and strategies in place to mitigate risks to food systems.</p> <p>3 - A range of biological factors identified, with limited strategies in place to mitigate risks to food systems.</p> <p>2 – Widespread gaps in identified biological factors and limited strategies in place to mitigate risks to food systems.</p> <p>1 – Limited biological factors identified and no strategies in place to mitigate risks to food systems.</p> <p>0 – No consideration of biological factors.</p>	Biological factors and disaster risks include diseases affecting crops, livestock, and infestations.

A5.3	<b>Integration of disaster risk reduction and climate adaptation strategies to support food systems</b>	To what extent are disaster risk reduction and climate adaptation strategies integrated to support food system resilience?	<p>5 – A wide range of integrated disaster risk reduction and climate adaptation strategies in place to support ecosystems required for food system resilience.</p> <p>4 – A range of integrated disaster risk reduction and climate adaptation strategies in place to support ecosystems required for food system resilience.</p> <p>3 – Disaster risk reduction and climate adaptation strategies in place to support ecosystems required for food system resilience.</p> <p>2 – Some disaster risk reduction and climate adaptation strategies in place to support ecosystems required for food system resilience.</p> <p>1 – Limited disaster risk reduction and climate adaptation strategies in place to support ecosystems required for food system resilience.</p> <p>0 – No disaster risk reduction and climate adaptation strategies in place.</p>	<p>Examples of adaptation strategies for food systems include but are not limited to:</p> <ul style="list-style-type: none"> <li>• Natural resources management;</li> <li>• Waste management;</li> <li>• Understanding climate risks (drought and heavy rain);</li> <li>• adjusting crops and measures to reduce urban heat islands to allow city farming.</li> </ul>
A5.4	<b>Food systems protect ecosystems</b>	To what extent does the food system protect ecosystems?	<p>5 – All food system risks to the ecosystem are identified and effectively mitigated.</p> <p>4 – All food system risks to the ecosystem are identified and, in theory, mitigated.</p> <p>3 – Some but not all food system risks to the ecosystem are identified with mitigation strategies in place.</p> <p>2 – Widespread gaps in identifying food system risks to the ecosystem. Those identified are mitigated in theory.</p> <p>1 – Rudimentary identification of food system risks to the ecosystem. Limited mitigation strategies are in place.</p> <p>0 – No consideration of the food system impacts on ecosystems.</p>	<p>Food systems, if not effectively managed, can negatively impact ecosystems. For example, water, energy, and other food-related waste can negatively impact human health, waterways, land management and wildlife. Also, overgrazing or harvesting can compromise future food production.</p>



## Essential 06: Strengthen Institutional Capacity for Resilience

### Addendum – Integration of the food system and institutional capacity

Ref	Subject / Issue	Question / Assessment Area	Indicative measurement scale	Comments
<b>A6</b>	<b>Integration of the food system and institutional capacity (Essential 6)</b>			
<b>A6.1</b>	<b>Availability of food system actors with relevant competencies and skills for disaster resilience</b>	To what extent are food system actors with relevant competencies and skills available before, during and after a disaster?	<p>5 – All food system actors with relevant competencies and skills identified and assessed to be adequate for disaster planning, service delivery and post-disaster recovery, both in terms of skill depth and numbers.</p> <p>4 – All relevant food system actors identified, and some minor shortfalls are known to exist in certain skill sets or numbers.</p> <p>3 – All relevant food system actors have skills identified, and more significant shortfalls are known to exist.</p> <p>2 – Incomplete identification of food system actors with significant shortfalls in those that are known.</p> <p>1 – Rudimentary attempt at identifying food system actors and their skills. Shortfalls are universal.</p> <p>0 – No consideration given to this issue.</p>	<p>Key food system actors include, but are not restricted to:</p> <ul style="list-style-type: none"> <li>• Agricultural cooperatives;</li> <li>• Indigenous ways of processing/preserving food;</li> <li>• Chefs, cooks and other food handlers;</li> <li>• Care home staff;</li> <li>• Environmental health specialists (e.g. food inspectors);</li> <li>• Food manufacturers and producers;</li> <li>• Supply chain workers;</li> <li>• Food delivery companies and organizations;</li> <li>• School administrators and lunchroom managers;</li> <li>• Nutrition specialists;</li> <li>• Emergency managers;</li> <li>• Emergency workers, volunteers and student aides;</li> <li>• Farmers and food producers.</li> </ul>
<b>A6.2</b>	<b>Sharing of food system data with stakeholders</b>	To what extent is food system data on vulnerabilities, gender needs and resilience capacities shared with stakeholders?	<p>5 – Relevant food system data identified. This includes data on vulnerabilities and gender needs. Quality data is reliably distributed to all stakeholders who need it, including the public.</p> <p>4 – All key food system data identified. This includes data on vulnerabilities and gender needs. Quality data is reliably distributed to most stakeholders, including the public.</p> <p>3 – Most food system data identified and distributed but may be of low quality and reliability. Some consideration of vulnerable populations and gender needs.</p> <p>2 – Some food availability and access data items and feeds are distributed to one or two stakeholders. Quality and reliability are known to be an issue. Little consideration of vulnerable populations and gender needs.</p> <p>1 – Rudimentary food system data identified and distributed.</p> <p>0 – No food system data identified or distributed.</p>	<p>Relevant data in this context might include, but is not restricted to:</p> <ul style="list-style-type: none"> <li>• Vulnerable populations and gender needs;</li> <li>• Interconnection of systems and ability to make incremental adjustments to address impacts;</li> <li>• Global food supply chain (certain ingredients became scarce during the COVID-19 pandemic);</li> <li>• Early warning and surveillance data for food systems;</li> <li>• Location, capacity and status of food system assets and facilities, pre and post-disaster;</li> <li>• Skill levels and numbers of available staff;</li> <li>• Supplies issues;</li> <li>• Likely impacts of disasters on food availability, access issues, and degradation of capabilities.</li> </ul> <p>Distribution may be through a central point, such as an emergency management coordinator.</p>

<p><b>A6.3</b></p>	<p><b>Institutional capacity to support community-based solutions to improve food system resilience</b></p>	<p>To what extent does institutional capacity exist to support community-based solutions to improve food system resilience?</p>	<p>5 – Institutions involved in the food system have the skills and knowledge to support community-based solutions to improve food system resilience. Plans exist and are in place.</p> <p>4 – Institutions involved in the food system have the skills and knowledge to support community-based solutions to improve food system resilience. Limited plans exist or are in place.</p> <p>3 – Institutions involved in the food system have the skills and knowledge to support community-based solutions to improve food system resilience. No plans exist or are in place.</p> <p>2 – Some skills and knowledge among institutions involved in the food system to support community-based solutions to improve resilience.</p> <p>1 – Limited skills and knowledge among institutions involved in the food system to support community-based solutions to improve resilience.</p> <p>0 – No skills and knowledge among institutions involved in the food system to support community-based solutions to improve resilience.</p>	<p>Food system resilience can be considered the ability to resist, absorb, accommodate, recover and restore capabilities in a timely and efficient manner after a crisis or disruption. This also incorporates capacities to prevent, anticipate, adapt and transform.</p> <p>Increasing institutional capacity to support community-based solutions to improve food systems is a step towards achieving local resilience.</p> <p>Community-based solutions, for example, consider consumption habits and diets, lack of access to food, poverty and inequality, malnutrition, and public health. After understanding this, a “systemic” approach can be used to develop an action plan for achieving food resilience.</p> <p>Community-based solutions could include, for example, the training of local policymakers on food system resilience.</p>
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## Essential 07: Understand and Strengthen Societal Capacity for Resilience

### Addendum – Integration of the food system and societal capacity

Ref	Subject / Issue	Question / Assessment Area	Indicative measurement scale	Comments
<b>A7</b>	<b>Integration of the food system and societal capacity (Essential 7)</b>			
<b>A7.1</b>	<b>The ability of a community to maintain food systems before, during and after a disaster</b>	To what extent do communities understand and are able to fulfil their roles in maintaining food systems before, during and after a disaster?	<p>5 – Each community understands, accepts and is able to execute the role expected of it before, during and after a disaster, with a designated organization to lead this food system related work.</p> <p>4 – 90% of communities understand, accept and are able to execute the role expected to maintain food systems.</p> <p>3 – 75% of communities understand, accept and are able to execute the role expected to maintain food systems.</p> <p>2 – Half or less of communities understand, accept and are able to execute the role expected to maintain food systems.</p> <p>1 – There is only rudimentary community level understanding about food systems with limited ability to maintain in a disaster situation.</p> <p>0 – The community level of understanding about food systems and how they can be maintained in a disaster situation is unknown.</p>	<p>Community roles and capacities may include:</p> <ul style="list-style-type: none"> <li>Agro-climatic and disaster risk information systems (or climate services);</li> <li>Early warning systems;</li> <li>Risk transfer mechanisms (insurance);</li> <li>DRR/CCA agriculture good practices/technologies at farm and community level, including livelihood diversification and alternatives;</li> <li>Emergency preparedness, anticipatory action and response;</li> <li>Nature-based solutions at territorial/ecosystem level;</li> <li>Food loss and waste reduction;</li> <li>Climate-friendly and sustainable diets.</li> </ul> <p>Designated organizations might be cultural, tribal, faith-based, school, or other community groups.</p> <p>In addition, communities need to be supported in developing these capacities. Otherwise, it is difficult to be resilient before, during and after a disaster.</p>
<b>A7.2</b>	<b>Community access and willingness to act on information about food supply, safety, and access</b>	To what extent do communities receive and act upon information about food supply, safety and access?	<p>5 – Advice about food supply, safety, and access universally received, accepted, and acted upon.</p> <p>4 – Advice about food supply, safety, and access broadly received, accepted and acted upon.</p> <p>3 – Some communities or other sub-groups may fail to receive, accept or act upon advice about food supply, safety and access.</p> <p>2 – More than 50% of communities may not receive, accept or act on advice about food supply, safety, and access.</p> <p>1 – There would be only scattered receipt and acceptance of the advice about food supply, safety, and access.</p> <p>0 – No productive attempt to convey information about food supply and access, safety, and access.</p>	<p>Information includes, but is not limited to, the following post-disaster needs:</p> <ul style="list-style-type: none"> <li>Nature-based solutions at territorial/ecosystem level;</li> <li>Food loss and waste reduction;</li> <li>Climate-friendly and sustainable diets;</li> <li>Advice on food safety (what to eat and not eat);</li> <li>Hygiene practices;</li> <li>Advice for people with chronic disease (e.g. cardiac conditions, cancer, diabetes, etc);</li> <li>Food provider needs, challenges and opportunities.</li> </ul> <p>Encouraging and facilitating the growing and processing of rich dietary food, especially non-perishable foods, in rural communities located near cities will help reduce the risk of food shortages and produce positive spillover effects to both the rural communities and cities.</p>

<p><b>A7.3</b></p>	<p><b>Community's ability to address food system needs before, during and after a disaster</b></p>	<p>To what extent are communities' food needs addressed before, during and after a disaster?</p>	<p>5 – Community organization(s), schools and other stakeholders are equipped to address the full spectrum of food supply and access issues before, during and after a disaster.</p> <p>4 – &gt;75% of neighborhoods could be covered. Community support groups, schools, businesses and other stakeholders are available.</p> <p>3 – &gt;50–75% of neighborhoods could be covered.</p> <p>2 – &gt;25–50% of neighborhoods could be covered.</p> <p>1 – &lt;25% of neighborhoods could be covered.</p> <p>0 – No neighborhoods could be covered.</p>	<p>Community organizations include community support groups, businesses, restaurants, supermarkets, supplies and other systems involved in food supply and access for a disaster.</p>
<p><b>A7.4</b></p>	<p><b>Public education programs and community empowerment</b></p>	<p>To what extent are public education programs in place to empower communities and support food systems?</p>	<p>5 – Extensive public education and community empowerment programs exist to support food systems.</p> <p>4 – A wide range of public education and community empowerment programs exist to support food systems.</p> <p>3 – A range of public education and community empowerment programs exist to support food systems.</p> <p>2 – Some public education and community empowerment programs are in place to support food systems.</p> <p>1 – Scattered public education and community empowerment programs exist to support food systems.</p> <p>0 – No public education and community empowerment programs exist to support food systems.</p>	<p>Public education programs could include:</p> <ul style="list-style-type: none"> <li>• Gender vulnerability;</li> <li>• Farming practices;</li> <li>• How to connect with farmer's markets, direct to restaurants or grocery stores;</li> <li>• Business planning;</li> <li>• Food safety, hygiene, and traceability needs.</li> </ul> <p>Community empowerment could include, for example, facilitating opportunities for revenue making, social organization into cooperatives, urban agriculture, and valuing indigenous practices. The purpose would be to support and strengthen local income in urban and rural areas.</p>



## Essential 08: Increase Infrastructure Resilience

### Addendum – Integration of the food system and infrastructure resilience

Ref	Subject / Issue	Question / Assessment Area	Indicative measurement scale	Comments
A8	<b>Integration of the food system and infrastructure resilience (Essential 8)</b>			
A8.1	<b>Strengthening the structural and non-structural aspects of food systems</b>	To what extent is food system infrastructure resilient?	<p>5 – All food system infrastructure, including the services on which it depends, is rated capable of dealing with the “most severe” scenario with minimal loss of service.</p> <p>4– All food system infrastructure, including the services on which it depends, is rated capable of dealing with the “most probable” scenario with minimal loss of service.</p> <p>3 – Food system infrastructure would be significantly disrupted in a “most severe” scenario. Still, some services would continue for 75% of the population. It would mitigate most of the “most probable” scenarios, however.</p> <p>2 – The “most probable” scenario would significantly disrupt food system infrastructure. Still, some services would continue for 50% of the population.</p> <p>1 – Food system infrastructure would be significantly disrupted or shut down in a disaster for 50% of the population. It would effectively cease to operate under the “most severe” scenario.</p> <p>0 – Food system infrastructure would effective cease in most disaster situations.</p>	<p>Structural and non-structural food system infrastructure may include, but is not limited to:</p> <ul style="list-style-type: none"> <li>• Access to energy infrastructure;</li> <li>• School cafeterias and temporary food distribution locations (food trucks, tents, community centers, etc.);</li> <li>• Commodity reserves and centers;</li> <li>• Food business and supermarkets;</li> <li>• Feeding centers;</li> <li>• Warming or cooling centers;</li> <li>• Laboratories and testing centers;</li> <li>• Residential care homes and assisted living units;</li> <li>• Transportation;</li> <li>• Logistics and supply chain facilities;</li> <li>• Emergency food distribution facilities;</li> <li>• Infection protection and control in food facilities;</li> <li>• Wholesale markets;</li> <li>• Transportation infrastructure for food supply;</li> <li>• Workforce availability before, during, and after the disaster.</li> </ul> <p>The assessment needs to consider the food systems resilience to the loss of key supporting infrastructure such as communications, energy, water and sanitation, transportation, fuel, law and order, etc.</p> <p>Producers need infrastructure that ensures their activities (seeds and intrants, storage of perishable, pre-processing or packaging) are not interrupted. If impacted, this could impact activity upstream.</p>



<p><b>A8.2</b></p>	<p><b>Surge capacity for food supply and access</b></p>	<p>To what extent can emergency systems handle a sudden demand in food?</p>	<p>5 – Surge capacity exists to deal with additional food availability and access needs likely to arise from the “most severe” scenario and is tested either via actual events or practice drills. Can be activated within 6 hours.</p> <p>4 – Surge capacity exists to deal with additional food availability, and access needs likely arise from the “most probable” scenario and are tested via actual events or practice drills. Can be activated within 6 hours.</p> <p>3 – Surge capacity exists but is known or suspected to have minor inadequacies relative to the “most probable” scenario. Can be activated within 6 hours.</p> <p>2 – Surge capacity exists but is known to have more significant shortcomings in geographical coverage or type of service available. Can be activated within 12 hours or longer. Surge capacity has never been assessed for the “most severe” scenario.</p> <p>1 – Surge capacity is theoretically available but has never been assessed or tested for the “most probable” scenario.</p> <p>0 – No surge capacity identified.</p>	<p>Surge capacity includes personnel, facilities, goods and supplies (e.g., personal protective equipment).</p> <p>This assessment needs to go in hand with the estimated loss of food availability and access. This includes key food providers' ability to access facilities to address availability and access needs in response to disasters.</p> <p>Local (and state) risk assessment data could be used to identify food supply and distribution threats by community to develop surge capacity needs.</p> <p>The required capacity may be achieved through mutual aid arrangements with neighboring areas. It will be important to ensure transportation routes are likely to remain open.</p>
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<p><b>A8.3</b></p>	<p><b>Continuity of food service delivery to critical places</b></p>	<p>To what extent can food service delivery continue at critical places, such as schools, hospitals and shelters, before, during and after a disaster?</p>	<p>5 – Food service delivery to schools, hospitals and shelters could be maintained in the “most severe” disaster scenario. If services need to be moved, transportation facilities and routes are known to have the required capacity and resilience.</p> <p>4 – Food service delivery could be maintained to schools, hospitals and shelters in a “most probable” disaster scenario. If services need to be moved, transportation facilities and routes are known to have the required capacity and resilience.</p> <p>3 – Some impacts on food service delivery to critical places under the “most probable” scenario. The movement of some services is likely to be problematic.</p> <p>2 – More widespread impacts under the “most probable” disaster scenario with movement likely only possible in the most urgent situation.</p> <p>1 – Serious impacts under the “most probable” disaster scenario. Under the “most severe” scenario food services to critical places would fail completely.</p> <p>0 – Food service delivery to students would fail or almost completely under the “most probable” disaster scenario.</p>	<p>This assessment needs to go in hand with an estimated loss of critical food service delivery functions and estimated needs in critical places such as, but not limited to, schools, hospitals, shelters, and nursing homes.</p>
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## Essential 09: Ensure Effective Disaster Response

### Addendum – Integration of the food system and disaster response

Ref	Subject / Issue	Question / Assessment Area	Indicative measurement scale	Comments
<b>A9</b>	<b>Integration of the food system and disaster response (Essential 9)</b>			
<b>A9.1</b>	<b>Early warning systems for food system actors</b>	To what extent are early warning systems designed to prepare food system actors to take early action before an event happens?	<p>5 – Comprehensive and effective monitoring exists and will deliver effective early warnings to food system actors. They will allow time for reaction (as far as technology permits). Warnings are seen as reliable and specific to the city.</p> <p>4 – Comprehensive monitoring exists even if not fully effective in all cases. Warnings exist, but warning time may be less than technology currently permits. Warnings are seen as reliable and specific.</p> <p>3 – Monitoring exists for most likely food system impacts. It is broadly effective, but one or more key risks are not covered. Some hazards are excluded, and warning time may be less than technology permits.</p> <p>2 – Some monitoring exists but has significant gaps. Warning time is less than technology permits and reliability may be perceived as questionable.</p> <p>1 – Monitoring is rudimentary at best and may not deliver warnings. Warnings are seen as ad hoc and unreliable. Likely to be ignored.</p> <p>0 – No monitoring or warnings.</p>	<p>Examples of an early warning system could include awareness of an impending disaster such as a hurricane, flood, frost and drought on food supply chains, logistics and food product land usage (agricultural needs such as produce, grazing land and aquaculture).</p> <p>Early warning systems are not necessarily part of disaster response but should be designed to prepare food system actors to take early action before an event happens.</p>

<p><b>A9.2</b></p>	<p><b>Integration of the food system actors with emergency management</b></p>	<p>To what extent are food system actors integrated with emergency management?</p>	<p>5 – Food system actors are fully represented and engaged with the emergency management system. This includes integration into all food related decision-making. The engagement has been tested via drills (within the last year) or live response.</p> <p>4 – Food system actors are mostly integrated into emergency management systems. The engagement has been tested, but maybe more than 12 months ago.</p> <p>3 – Food system actors are somewhat integrated into emergency management systems. Engagement has not been tested, but some key disciplines are included and are contacted on an ad hoc basis.</p> <p>2 – Food system actors have little integration with emergency management systems. Some disciplines receive ad hoc phone calls or similar type engagement.</p> <p>1 – Food system actors are not integrated into emergency management systems but have been identified as an area of need.</p> <p>0 – Food system actors are not integrated into emergency management systems.</p>	<p>This assessment covers the quality and depth of the working arrangements between food system actors and the emergency management system. This includes disaster planning, emergency management and the response.</p>
<p><b>A9.3</b></p>	<p><b>Ability to deliver food supplies to people in need.</b></p>	<p>To what extent can food supplies be provided to people in need before, during and after a disaster.</p>	<p>5 – A comprehensive list of required items exists, and tested plans are known to be adequate to deliver food supplies rapidly to the entire population.</p> <p>4 – A list exists, but it may not be comprehensive, and plans may not be tested or fully adequate for the entire city.</p> <p>3 – A list exists, and key items will be available to 75% of the population.</p> <p>2 – No list but stockpiles and supplies exist for some items. Distribution capability may reach 50% of the population.</p> <p>1 – Some stocks of key items exist. Still, no attempt to plan these and the distribution mechanism is unlikely to be successful even if it exists at all.</p> <p>0 – No attempt to address this issue.</p>	<p>Emergency management supplies include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Redundancy in the power system or cold chain for storage of temperature-sensitive food;</li> <li>• Low safety risk foods in case of a disaster such as cans, sterilized food, packaged food, dry food</li> <li>• Water purification tablets and equipment;</li> <li>• Hygiene and sanitation supplies;</li> <li>• Baby needs;</li> <li>• Personal protective equipment (PPE);</li> <li>• Culture- and age-appropriate food;</li> <li>• Allergens;</li> <li>• Paper goods and single-service articles.</li> </ul> <p>Testing plans would help effectively deliver items rapidly to the entire population. This would also test accountability and transparency processes.</p>



## Essential 10: Expedite Recovery and Build Back Better

### Addendum – Integration of the food system and recovery/building back better

Ref	Subject / Issue	Question / Assessment Area	Indicative measurement scale	Comments
<b>A10</b>	<b>Integration of the food system and recovery/building back better (Essential 10)</b>			
<b>A10.1</b>	<b>Mitigating long-term impacts on the food system and well-being</b>	To what extent do multi-stakeholder food system plans and strategies exist to mitigate long-term impacts?	<p>5 – Fully comprehensive plans exist addressing longer-term food system needs after the “most probable” and “most severe” scenario.</p> <p>4 – Fully comprehensive plans exist where they address longer-term food system needs after the “most probable” scenario.</p> <p>3 – Plans exist for post “most probable” events but with some shortfalls. More significant shortfalls for the “most severe” scenario.</p> <p>2 – Plans exist for post “most probable” events but with more significant shortfalls. Generalized inadequacy for the “most severe” scenario.</p> <p>1 – Plans exist for post “most probable” events but with generalized inadequacy.</p> <p>0 – No plan.</p>	<p>Comprehensive plans should include (not an exhaustive list):</p> <ul style="list-style-type: none"> <li>• Mechanisms for Multi-stakeholder input. For example, a food system cluster within municipalities,</li> <li>• Strategies for restoring food services and environmental safety to pre-event levels and reducing risks of future events;</li> <li>• Food distribution;</li> <li>• Ensuring food safety;</li> <li>• Water and waste management;</li> <li>• Workforce needs.</li> </ul>
<b>A10.2</b>	<b>Learning and improving</b>	To what extent do formalized mechanisms to learn from the performance of the food system systems before, during and after disasters exist?	<p>5 – Defined learning mechanism exists. They integrate food availability and access with other lessons and have been used with demonstrable results.</p> <p>4 – Defined learning mechanism exists that integrates food availability and access with other lessons but has not yet been used.</p> <p>3 – Learning will occur via a food availability and access review mechanism, but is unilateral or bilateral only. There is no attempt to integrate food availability and access learnings with other disciplines within the city.</p> <p>2 – No real defined mechanism, but ad hoc learning exercises either have been used or may be expected in future disasters.</p> <p>1 – Scattered and fleeting attempts to learn and improve in the past have occurred or are anticipated in the future.</p> <p>0 – No attempt to learn and improve.</p>	<p>The learning and improving functions should take into consideration multi-disciplinary and interdisciplinary perspectives. This also includes all the parameters of innovation as circumstances would demand, ranging in increasing order of complexity from things such as ad hoc innovation, sustainability innovation, incremental innovation, breakthrough innovation, disruptive innovation, and radical innovation.</p>