



## CITY REGION FOOD SYSTEM TOOLKIT

Assessing and planning resilient and sustainable city region food systems


### Tool: City Region Food System Resilience Indicator Framework

<b>Brief description</b>	The CRFS Resilience Indicator Framework is a practical assessment and planning tool to help explore the specific needs of different parts of the food system in relation to building resilience capacities to climate and pandemic-related shocks and stresses.
<b>Expected outcome</b>	Stakeholders have access to a comprehensive menu of options for building resilience according to priorities, for selection, customisation and further development
<b>Expected output</b>	Tailored indicator framework
<b>Scale of application</b>	Core team, project workshop
<b>Expertise required</b>	-
<b>Examples of application</b>	-
<b>Year of development</b>	2023
<b>Author(s)</b>	Joy Carey, RUAF
<b>Relevant CRFS Handbook modules; related tools, examples and activities</b>	Introduction; Rapid Scan module; In-depth Assessment module. Related to <i>CRFS Sustainability Indicator framework</i> ; <i>Guidance on relationship between CRFS Sustainability and CRFS Resilience Indicator Frameworks</i>

### Full description and justification

The CRFS Resilience Indicator Framework is a practical assessment and planning tool to help explore the specific needs of different parts of the food system in relation to building resilience capacities to climate and pandemic-related shocks and stresses. It is shaped around food value chain nodes, and also includes indicators relation to natural resources and ecosystem services, emergency food provisioning, and food system governance.

The tool is needed to provide inspiration to core teams and stakeholders as they develop indicator frameworks that are tailored to their own context and priorities. The indicators provided may be selected, customised, or further developed.



### Important notes for users

- This CRFS Resilience Indicator Framework should be used alongside the **Tool: CRFS Sustainability Indicator Framework**, as it adds to existing indicators. For example, more indicators relating to food loss and waste, food access, affordability, health and wellbeing can be found in Sustainability Indicator Framework. Both frameworks take a whole food system approach.
- The indicator frameworks offer a comprehensive menu of options that must always be selected, customised and further developed to suit the specific CRFS context, conditions and priorities. Data may need to be further disaggregated – suggestions for this are included.
- The pilot project focussed on climate shocks and pandemic, but the indicator framework can be used for building resilience to all types of shocks and stresses. It also focussed mainly on land-based agriculture, but the framework can be adapted for forestry and fishing.
- The indicators have been developed from the CRFS Sustainability indicator framework, experience of the Covid-19 pandemic, work by the CRFS pilot cities, and the FAO Green Cities Indicator Framework.
- The smooth functioning of inter-related urban systems (e.g. public transportation, road network, electrical power system telecommunications, fuel supply, transportation, storage and distribution) supports activities across all food value chain nodes, while any problems in these systems will impair the functioning of the CRFS <sup>1</sup>. Indicators on these aspects are not included.
- Refer to the Glossary of key terms and concepts (see below).
- The Green Cities Initiative Indicator Framework offers additional complementary indicators in relation to Urban and peri-urban Forestry & Green Spaces, Urban and peri-urban Agriculture and the protection and management of ecosystems and environmental resources. For more information, visit <https://www.fao.org/green-cities-initiative/en>
- The Milan Urban Food Policy Pact also offers complementary Urban Food System indicators. For more information visit <https://www.fao.org/documents/card/en/c/cb4181en>

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<sup>1</sup> Zeuli, K., Nijhuis A. & Gerson-Nieder, Z. 2018. Resilient Food Systems, Resilient Cities: A High-Level Vulnerability Assessment of Toronto's Food System. Boston, The Initiative for a Competitive Inner City. [http://icic.org/wp-content/uploads/2018/07/ICIC\\_Toronto-Food-System\\_FINAL.pdf](http://icic.org/wp-content/uploads/2018/07/ICIC_Toronto-Food-System_FINAL.pdf)



## Reminder of terms and context related to resilience

**Impacts** are the actual consequences or outcomes of a shock or stress on people, livelihoods, assets, infrastructure, and ecosystems.

**Resilience** is the ability of individuals, households, communities, cities, institutions, systems and societies to *prevent, anticipate, absorb, adapt and transform* positively, efficiently and effectively when faced with a wide range of risks, while maintaining an acceptable level of functioning without comprising long-term prospects for sustainable development, peace and security, human rights and well-being for all. <sup>2</sup>

**Vulnerabilities** are conditions or factors (social, economic, environmental) that make people or things more susceptible to harm from the shock or stress that has occurred. Those conditions or factors may be improved/changed so that the susceptibility to harm is reduced.

We work on reducing vulnerabilities and enhancing capacities to manage risks from multiple shocks and stresses, thus helping to build the resilience of agrifood systems. Capacities can be preventative, anticipatory, absorptive, adaptative, and transformative.

- Preventative: to take measures to reduce existing known and future disaster risks and vulnerabilities, e.g. adopting good practices to reduce current and future risks
- Anticipatory: to be warned and acting early, e.g. the existence of and access to effective early warning systems, and being able to act upon them.
- Absorptive: to be able to cope during and after an event, e.g. having risk insurance and social protection; having mutually supportive community/business networks;
- Adaptative: to make initial change to be able to continue functioning (these changes may inform longer term transformation)
- Transformative: to do things differently and change the system, e.g. finding alternative activities or perspectives, diversifying livelihoods.

**Indicators** in this case are quantifiable measures or qualitative evidence that show resilience capacities to shocks and stresses are increased and their related vulnerabilities are reduced.

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<sup>2</sup> United Nations. 2020. United Nations Common Guidance on Helping Build Resilient Societies. New York, United Nations. <https://unsdg.un.org/sites/default/files/2021-09/UN-Resilience-Guidance-Final-Sept.pdf>.



## 1 Introduction

The CRFS Resilience Indicator Framework is a practical assessment and planning tool to help explore the specific needs of different parts of the food system in relation to building resilience capacities to climate and pandemic-related shocks and stresses. It is shaped around the following food value chain nodes.

- Food input supply and production
- Food storage, processing and manufacturing
- Food wholesale and distribution
- Food markets, catering and retail
- Food consumption
- Food loss and waste

The framework also includes indicators that relate to other aspects of a resilient food system.

- Natural resources and ecosystem services (which are directly impacted by climate shocks and stresses and are intrinsic to the functioning of all other components).
- Emergency food provisioning
- Food system governance (related to food, natural resources and ecosystems services, and human-made infrastructure).

## 2 Use of indicators in the CRFS process

The indicators play a multifunctional role in the CRFS process. They allow the project team to:

- Undertake an initial audit of what actions and indicators may already exist
- Develop research questions and appropriate data collection methods to assess the current performance of the CRFS, following a whole-systems approach;
- Further refine priority areas for action with clearly defined outcomes, issues to be measured, and ways of measuring change;
- Help with planning strategy and actions to achieving the desired outcomes;
- Enable establishment of baselines in relation to each priority area;
- Provide an evidence base to support engagement and outreach, mobilization of resources, and communication of experiences and lessons learned;
- Allow for monitoring of changes (progress or regression) resulting from (future) policy and programme implementation (although such monitoring itself falls outside the timeline of this project).

In addition, the process of identifying, developing or fine-tuning indicators helps to focus stakeholders' minds on working towards realizing the shared vision. In the CRFS process indicators are used to clarify where attention should be focused from the start.



### 3 Explanation of the indicator framework structure

The indicator framework is based on an outcomes approach. There is a logical flow from left to right across the table, each column informing the next. It is therefore very important to be clear on priorities and desired outcomes.

Overarching objective (of selected CRFS node/component)	Outcome (desired direction of travel)	Issue to measure (key measurable change)	Possible indicator (how the change will be measured)
<p>Articulation of the overall objective (could be a simple thematic title or articulated as a summary of high-level outcomes).</p> <p>[This objective will not be achieved quickly but is the kind of change that the city wants to achieve.]</p>	<p>Describes a state or position that is reached, which enables the overarching objective to be achieved.</p> <p>[Breaks down the overarching objective into specific outcomes or changes that we want to put in place to achieve the overarching goal.]</p>	<p>Describes specifically what will be assessed or measured.</p> <p>[Important to clarify the focus of the assessment; the indicators will relate to this focus.]</p>	<p>A measure of progress towards delivery of an outcome, that is, a change in a relevant and measurable parameter.</p> <p>[These are suggestions; each city needs to decide on the best and most appropriate indicators for their situation. In most cases cities will need to customise indicators or use more relevant alternatives.]</p>

**Overarching objective:** summary of overarching change needed to reduce vulnerability and increase coping capacities in each of the food system nodes and components. *For example: Food input supply and production in the city region has capacity to withstand climate and pandemic-related, and other shocks and stresses*

**Outcomes:** desired direction of travel, i.e. types of resilience capacities that stakeholders in the CRFS project want to achieve in the future in relation to each priority area (and, in some cases, key commodity value chains). *For example: 80% of CRFS food producers have adopted climate resilient practices by 2030.*

**Issues to be measured/assessed:** these are more specific measurable changes, in relation to each outcome. *For example: Extent of adoption of climate resilient practices by CRFS food producers.*

**Possible indicators:** i.e. specific, measurable characteristics relating to each issue to be measured, that can be used to show change or progress towards the outcome. *For example: numbers of producers adopting climate resilient practices; by type of practice; by geographical location.*

Note: Each outcome must have at least one issue to be measured, but it may have several; each issue to be measured may have one or several indicators (but ideally no more than three to avoid data collection being too challenging).

## 4 CRFS Resilience Framework

### Main areas of focus for building CRFS Resilience

Ecosystem management	Recovery pathways and access to finance	Availability (food, energy, clean water, transportation)
Business plans	Disaster Risk Strategies and contingency plans	Affordability (food, energy, clean water, transportation)
Food production practices	Flexibility	Continued/uninterrupted operations
Early warning systems	Collaboration and coordination	Policy integration and implementation
Sector strategies	Standards and maintenance	Inclusive, mobilized networks with reach
Supply flows	Safe food storage locations and facilities	
Labour availability	Access (to food, energy, clean water, transportation)	
Safety and sanitation		
Diversity of options		

**Overall CRFS Resilience objective:** Build resilience capacities to climate and pandemic-related, and other shocks and stresses across all parts of the city region food system. (*Prevent, anticipate, absorb, adapt and/or transform – it may be useful to also reflect on how your desired outcomes relate to these*).

Overarching objective of CRFS node/component  (*Refer to Glossary for definitions)	Outcomes (Desired resilience capacities that stakeholders want to see in the future; key point in italics)	Key issues to assess or measure (In relation to each resilience capacity)	Possible indicators (How progress towards the increased resilience capacity will be measured; further data disaggregation required)	Suggested data sources	Related SDGs
<b>Natural resources and ecosystem services</b> in the city region have the <i>capacity to withstand</i> climate and pandemic-related, and other shocks and stresses  NOTE: For more indicator options:	The ecosystems and environmental resources in the city region, on which food production systems depend, are <i>strong, healthy and diverse</i> and are monitored, <i>protected</i> and promoted.	<b>Ecosystem management:</b> The extent to which natural resources (land, water, ecosystem services) in both rural and urban areas are valued, conserved, strengthened and protected  <i>Customized examples</i>	1.Data: Existence of ‘state of’ natural resources, ecosystems and climate data per specified area, including: existence, quality and use of watersheds (rivers and aquifers); interannual variability of rainfall, rivers, streams; biodiversity; soil type and quality. (Y/N with <b>additional evidence</b> )  2.Data: Existence of (updated) research on how key natural resources and ecosystems in the city region are	Universities  Research institutes  Water companies  River and lake authorities  Conservation organisations	SDG 15 (all targets);  SDG 13.1 Strengthen resilience and adaptive capacity to climate related disasters



<ul style="list-style-type: none"> <li><b>Tool: CRFS Sustainability Indicator Framework</b></li> <li>Refer to FAO Green Cities Indicators on urban and peri-urban forestry, green spaces and agriculture. See: <a href="https://www.fao.org/green-cities-initiative/en">https://www.fao.org/green-cities-initiative/en</a></li> </ul>		<p><i>Water &amp; flooding: The extent to which reclamation and maintenance of natural marshland reduces flooding during heavy rain periods (Kigali)</i></p>	<p>impacted by climate-related events (Y/N with additional evidence)</p>		<p>15.9 Integrate ecosystem and biodiversity in government planning</p>
		<p><i>Soils &amp; erosion: The extent to which the increased practice of agroforestry helps to reduce erosion and improve soil management (Kigali)</i></p>	<p>3.Monitoring: Existence of assessments of the impacts of current land/water use practices on local ecosystems (Y/N with additional evidence)</p>		
			<p>4.Local Government action: [Increased] Number of implemented actions in local government plans and strategies that specifically seek to protect, preserve and strengthen natural resources on which food production systems depend (disaggregate by type, location)</p>	<p>Local Government</p>	<p>Possibly also SDG 14.2: Protect and restore marine and coastal ecosystems; SDG 14.5 Conserve coastal and marine areas</p>
			<p>5.Sites: [Increased] Number of protected natural areas, restored and naturalized areas on public land in municipality; wider city region (disaggregate by type, location, audit annual changes)</p>	<p>Conservation organisations Indigenous communities</p>	
			<p>6.Initiatives: [Increase in] Number of urban and rural ecosystem conservation initiatives and investments operational within the city region food system</p>		
			<p>7.Producer involvement: [Increase in] Number of farms/fishing businesses taking part in ecosystem conservation initiatives</p>	<p>Food Producer organisations Agroecological organisations</p>	
			<p>8.Tree cover: [Increased] Percentage of tree canopy cover i) within the city boundary; and ii) within the peri-urban area boundary; within the wider city region (audit annual changes)</p>	<p>Forestry Departments Urban Forest organisations Community groups</p>	
			<p>9.Water conservation: Existence of groundwater control and sustainability policy (rainwater harvesting, groundwater recharge zones, recycling) (Y/N with additional evidence)</p>	<p>Water companies Water conservation organisations</p>	





			10.Circularity: Existence of regulations/incentives supporting use of urban organic wastes and wastewater as resources in the urban agri-food system (Y/N with additional evidence)	Local Government Waste companies Water companies	
<b>Food input supply and production</b> in the city region has <i>capacity to withstand</i> climate and pandemic-related, and other shocks and stresses  Reference GCI & CRFS1	Food production systems are <i>adequately prepared</i> to deal safely with interruptions to the regular flows of inputs and outputs	<b>Plans:</b> The existence of on-farm/fishery plans for dealing with climate shocks (individual business level or commodity sector-wide)	11.Technical support: Existence of extension/technical services that focus on providing climate mitigation planning support to food producers (Y/N with additional evidence)	Local Government Agricultural extension services	SDG 13.1 Strengthen resilience and adaptive capacity to climate related disasters
			12.Business plans: [Increased] Proportion of farms/fisheries with plans in place to withstand or mitigate effects of climate shocks/stresses (also by enterprise size, farmer/fisher socio-economic status and gender)	Business support organisations Food Sector lead organisations Producer Coops and groups	SDG 13.2 Integrate climate change measures into policy and planning
		<b>Practices:</b> The extent to which farmers/fishers have adopted improved production practices to withstand most likely shocks and stresses  <i>Customized examples: Knowledge and skills: The extent to which training in agroecological practices for food producers is available (Kigali &amp; Antananarivo)</i>	13.Training: [Increased] Levels of provision of/access to training/technical services to inform food producers about and support implementation of measures and practices to withstand or mitigate climate shocks and stresses (by production sector; by service type; also by socio-economic status and gender of recipients)	Local Government Agricultural extension services  Other environmental, agroecological and agricultural training providers	SDG 13.1 Strengthen resilience and adaptive capacity to climate related disasters
			14.Demonstration: [Increased] Number of improved practice demonstration sites at sector level in targeted districts (by type; location) KIGALI	Food Sector lead organisations	SDG 13.3 Build knowledge and capacity to meet climate change





		<i>Irrigation: The extent to which farmers have access to affordable climate-smart irrigation infrastructure and knowledge (Kigali &amp; Antananarivo)</i>	15. Adoption: [Increased] Proportion of farmers/fishers who have adopted improved production practices/innovative agroecological techniques (by type of practice, also by socio-economic status and gender). TANA	Producer Coops and groups Conservation organisations	SDG 2.4 Sustainable food production and resilient agricultural practices
			16.Land area: [Increased] Proportion of total agricultural land areas managed according to innovative agroecological techniques (ha) (by type of practice) TANA		
		<b>Early warning systems:</b> The extent to which food producers have access to early warning information about shocks impacting food production	17.Systems: Existence of an established and maintained integrated early warning system (Y/N with additional evidence)	Local Government Agricultural extension services	SDG 13.1 Strengthen resilience and adaptive capacity to climate related disasters
			18.Training: Existence of early warning system training / awareness raising for food producers (Y/N with additional evidence)	Food Sector lead organisations	
			19.Access: [Increased] Proportion of food producers with access to early warning systems (i.e. access/affordability, technology distribution, uptake; also by socio-economic status and gender)	Producer Coops and groups Disaster Management Policy	
		<b>Strategies:</b> The extent to which climate adaptation and mitigation measures are included in Government or Food Sector agricultural / fishery plans and strategies	20.Actions: [Increased] Number of planned actions that address climate adaptation and mitigation (by food sector or commodity value chain; by strategy)	Environment and Climate Change Policy	SDG 13.2 Integrate climate change measures into policy and planning
		<b>Supply flows:</b> The extent to which input supply for food production (e.g, energy, equipment, tools, machinery,	21.Systems: Existence of intervention mechanisms that monitor the security of input supply (Y/N with additional evidence)	Agricultural extension services Private sector suppliers	SDG 13.1 Strengthen resilience and adaptive



		feeds, medicines, seeds, fertilizers, pesticides etc.) is maintained during times of shock and stress	22.Self-sufficiency: [Increased] Number of farms with closed loop input/circular systems & lower external input requirements (by farm type or by food sector or commodity value chain)	Food Sector lead organisations Producer Coops and groups Machinery, seed, feed & farm equipment suppliers	capacity to climate related disasters
		<b>Labour:</b> The extent to which availability of food production workers is maintained during times of shock and stress	23.Status: Recognition of food production workers as having ‘frontline worker’ status (Y/N with additional evidence)	National and local Government	SDG 8.8 Protect labour rights and promote safe working environments
			24.Systems: Existence of legislation/mechanisms and infrastructure that enable food production workers to move to and from places of work (Y/N with additional evidence)	Disaster Management Policy	
		<b>Safety/Sanitation:</b> The extent to which sanitation and food safety can be safeguarded in the event of a climate shock or stress, especially in at-risk areas	25.Guidance: Existence of Government guidance on food safety, sanitation and food production workplace safety in the event of shocks and stresses (Y/N with additional evidence)	National and local Government  Disaster Management Policy	6.7 Expand water and sanitation support to developing countries
		<b>Safety/Sanitation:</b> The extent to which work facilities are clean, well-ventilated, and have safe operation and anti-contamination control measures in place for workers.	26.Safety: [Increased] Number of food production work facilities that have procedures in place to ensure cleanliness, hygiene, and food safety/ decrease in those that do not (by type, location) (by type)	Water companies  Sanitation companies	SDG 8.8 Protect labour rights and promote safe working environments
			27.Protection: Government support for/provision of personal protective equipment for food production workers (Y/N with additional evidence)	Providers of PPE	
			28.Biosecurity: Existence of extension services supporting food producers with measures to keep livestock / fish & sea food healthy & biosecure (Y/N with additional evidence)	Veterinary services	



	Farming systems can <i>recover quickly and remain economically viable</i>	<b>Diversity of options:</b> The extent of farm-level crop diversity	29.Diversification: [Increased] Proportion of CRFS farms with poly-culture-based business models (or flexibility to adapt their operations)	Agronomists Agricultural extension services Agroecological orgs	SDG 2.4 Sustainable food and resilient agricultural practices
		<b>Flexibility:</b> The extent to which food producers can ‘pivot’ (completely change the way things are done) to meet new challenges	30.Survival rates: [Increased] Proportion of food producer businesses that survive a given shock or stress event (by business type, pivot type, location; also by socio-economic status and gender)	Business support  Local Government  Disaster Management Policy	
		<b>Recovery:</b> The extent /speed at which food producers can continue or resume their production and commercial activities, throughout or after a shock or stress	31.Social protection: Existence, and monetary amount of emergency funds to compensate for lost earnings. (Y/N with additional evidence)	Insurance/finance services	
			32.Take-up: [Increased] Proportion of food businesses accessing emergency funds and social support (by type; also by socio-economic status, gender)	Microcredit organisations	
		<b>DRR Strategies:</b> The extent to which food production recovery is included in contingency plans and disaster risk reduction strategies	33.DRR Actions: [Increased] Number of actions addressing food production recovery in contingency plans and disaster risk reduction strategies (by type)		
		<b>Coordination:</b> The extent to which food producers (or their organisations) are involved in communications and preparedness planning for most likely shocks and stresses	34.Participation: [Increased] Proportion of food producers/organisations involved in communications and preparedness planning for climate events and other potential shocks/stresses (by type; by shock event; also by socio-economic status, gender)		
<b>Food wholesale and distribution</b> that supplies food in the city region has <i>capacity to withstand</i> climate and pandemic-related, and other shocks and stresses	The city/city region has supply of key commodities that is <i>secure against interruption/failure</i>	<b>Diversity of options:</b> The extent to which the city/city region is served by multiple, diverse value chains for key commodities, of varying lengths	35.Data: Existence of food flow studies/regular CRFS food value chain security audits (Y/N with additional evidence)	Agricultural extension services	SDG 13.1 Strengthen resilience and adaptive



		<p><i>Customized examples: Short supply chains: Extent to which key commodities produced in the city region have operational supply and distribution channels (Kigali)</i></p>	<p>36.Diversity: [Increased] Number of value chains and origins for key commodities (by type, complexity)</p> <p>37.Support: Existence of support services to assist the development of city region value chains (e.g. produce development, transportation and logistics, marketing) (Y/N with additional evidence)</p> <p>38.Local: [Increased] Number of city region value chains i.e. entire chain is located within the city region support, certification protocols (by type)</p> <p>39.Local: [Increased] Number of city region food production and distribution coops (by value chain type, scale, location; and by final markets)</p>	<p>Private sector suppliers and distributors</p> <p>Food Sector lead organisations</p> <p>Producer Coops and groups</p>	<p>capacity to climate related disasters</p> <p>SDG 11.9 Implement policies for inclusion, resource efficiency, and disaster risk reduction</p>
	<p>Transportation of food within the city region and into the city is <i>secure against interruption</i></p>	<p><b>Diversity of options:</b> The extent to which there are alternative road routes suitable for food trucks in case main routes within the CR/into the city are subject to extended closure</p> <p><b>Standards &amp; maintenance:</b> The extent to which roads, bridges etc. are fit for use in all conditions</p> <p><b>DRR strategies:</b> The extent to which food distribution logistics infrastructure is included in disaster risk recovery plans</p>	<p>40.Routes: [Increased] Number of alternative road routes suitable for food trucks into the city</p> <p>41.Infrastructure: [Increased] Number of paved roads, reinforced bridges etc. in city region (by type; location)</p> <p>42.Standards: Maintenance of significant 'feeder' transport routes (Y/N with additional evidence)</p> <p>43.DRR Actions: [Increased] Number of specific risk reduction and climate adaptation/resilience measures for key logistics infrastructure for food</p>	<p>Local Government</p> <p>Private haulage and transportation companies</p> <p>Highways maintenance Engineering companies</p> <p>Disaster Management Policy</p>	<p>SDG 13.1 Strengthen resilience and adaptive capacity to climate related disasters</p> <p>2.6 Invest in rural infrastructure, (agricultural research, technology and gene banks)</p> <p>SDG 11.9 Implement policies for inclusion,</p>





			distribution in DRR strategy actions (by type, location)		resource efficiency, and disaster risk reduction
			44.New developments: [Increased] Number of specific risk reduction and climate adaptation/resilience measures for food transport and distribution that are in place/being developed (by type, location)	Police National Government Sanitation companies Health and safety inspectors	2.6 Invest in rural infrastructure, (agricultural research, technology and gene banks)
		<b>Labour:</b> The extent to which availability of food distribution workers is maintained during times of stress	45.Status: Recognition of food wholesale & distribution workers as having 'frontline worker' status (Y/N with additional evidence)	Environmental Health Services	SDG 8.8 Protect labour rights and promote safe working environments
			46.Permissions: Existence of legislation/mechanisms and infrastructure that enable food wholesale & distribution workers to travel to, from and between places of work (Y/N) with additional evidence	E-commerce companies Websites	
		<b>Safety/Sanitation:</b> The extent to which sanitation and food safety can be safeguarded in the event of a climate shock or stress, especially in at-risk areas	47.Guidance: Existence of Government guidance on food safety, sanitation and workplace safety for the wholesale and distribution sector in the event of shocks and stresses (Y/N with additional evidence)		6.7 Expand water and sanitation support to developing countries
		<b>Safety/Sanitation:</b> The extent to which facilities are clean, well-ventilated, and have safe operation and anti-contamination control measures in place.	48.Safety: [Increased] Number of food distribution facilities that have procedures in place to ensure cleanliness, hygiene, and food safety/ decrease in those that do not (by type, location) (by type)		SDG 8.8 Protect labour rights and promote safe working environments
			49.Protection: Government support for/provision of personal protective		





			equipment for food wholesale & distribution workers (Y/N with additional evidence)		
		<b>Flexibility:</b> The extent to which food wholesale & distribution businesses can 'pivot' (change the way things are done) to meet new challenges	50.Food flows: [Increased] Proportion of food wholesale & distribution businesses that can create new distribution services, channels and outlets (e.g. E-commerce) (by type, food products)		SDG 13.1 Strengthen resilience and adaptive capacity to climate related disasters
<b>Food storage, processing and manufacturing</b> in the city region has <i>capacity to withstand</i> climate and pandemic-related, and other shocks and stresses	Storage/distribution centres and warehouses store (surplus) food in <i>safe, hygienic conditions that are secure</i> from the effects of the shocks and stresses	<b>Location:</b> The extent to which food storage/distribution centres and warehouses are located outside of at-risk areas (i.e. areas most likely to be affected by the shock or stress under consideration)	51.Evidence: Existence of studies showing locations of areas at most/least risk (Y/N with additional evidence)	Research Institutes Universities Local Government Disaster Management Policy	SDG 13.1 Strengthen resilience and adaptive capacity to climate related disasters
		<b>Standards &amp; maintenance:</b> The extent to which storage buildings are structurally sound and meet/exceed local building codes.	52.Safe location: [Increased] Number of food storage/distribution centres and warehouses located outside of at-risk areas (by type, location)	Food technology companies Import/Export companies	SDG 13.1 Strengthen resilience and adaptive capacity to climate related disasters  2.6 Invest in rural infrastructure, (agricultural research, technology and gene banks)
			53.Compliance: [Increased] Number of structurally sound food storage/distribution centres and warehouses that meet building codes/ decrease in those that do not (by type, location)		





		<p><b>Safety/Sanitation:</b> The extent to which sanitation and food safety can be safeguarded in the event of a climate shock or stress, especially in at-risk areas</p>	54.Guidance: Existence of Government guidance on food safety, sanitation and workplace safety for the food storage facilities in the event of shocks and stresses (Y/N with additional evidence)	Food Sector lead organisations	SDG 13.1 Strengthen resilience and adaptive capacity to climate related disasters
		<p><b>Safety/Sanitation:</b> The extent to which facilities are clean, well-ventilated, and have safe operation and anti-contamination control measures in place.</p>	55.Safety: [Increased] Number of food storage facilities that have procedures in place to ensure cleanliness, hygiene, and food safety/ decrease in those that do not (by type, location) (by type)	Engineering companies	
		56.Protection: Government support for/provision of personal protective equipment for workers (Y/N with additional evidence)	Pest Control Health and safety inspectors Environmental Health Services		
		<p><b>Recovery:</b> The extent to which storage/distributors/warehouse managers have strategic and financial capacity to quickly resume activities throughout or after a shock or stress</p>	57.Business plans: [Increased] Number of storage/distribution centres and warehouses with business continuity plans or flexibility to adapt their operations (by business type)	Business Development Agencies	SDG 13.1 Strengthen resilience and adaptive capacity to climate related disasters
		58.Insurance: [Increased] Number of storage/distribution centres and warehouses with adequate insurance covering climate-related events (by business type)	Supply coops Insurance companies Finance/banks		
		<p><b>DRR Strategies:</b> The extent to which food storage (recovery of stocks and/or alternative and emergency supply) is included in contingency plans and disaster risk recovery strategies</p>	59.DRR Actions: [Increased] Number of actions in contingency plans and disaster risk recovery strategies that address food storage infrastructure (by type)	Local Government Disaster Management Policy	SDG 11.9 Implement policies for inclusion, resource efficiency, and disaster risk reduction
		<p><b>Coordination:</b> The extent to which food storage/distributors and warehouse managers are involved in communications and preparedness planning for most likely shocks/stresses</p>	60.Participation: [Increased] Number of food storage/distributors and warehouse managers involved in communications and preparedness planning for climate events and other potential	Food Sector lead organisations	





			shocks/stresses (by type; by shock event; also by socio-economic status, gender)		
Food processing and manufacturing facilities can <i>safely operate at normal or increased capacity</i> throughout climate stress/in aftermath of a shock or stress		<b>Location:</b> The extent to which food processing facilities are located outside of at-risk areas (i.e. areas most likely to be affected by the shock or stress under consideration)	61.Safe location: [Increased] Number of food processing facilities located outside of at-risk areas (by type, location; also by socio-economic status, gender)	Research institutes Universities Local Government Disaster Management Policy	SDG 13.1 Strengthen resilience and adaptive capacity to climate related disasters
		<b>Operations:</b> The extent to which production levels (quantity and quality) are maintained	62.Business plans: [Increased] Proportion of processors with business continuity plans or flexibility to adapt their operations (by type; also by socio-economic status, gender)	Business Development Agencies	SDG 13.1 Strengthen resilience and adaptive capacity to climate related disasters
			63.Capacity: [Increased] Proportion of processors that can process & store large quantities of food when usual distribution channels are obstructed (by type, location, scale of operation)	Engineering companies  Import/Export companies	
		<b>Diversity:</b> The extent to which production is diversified and can be flexible to spread the risk of staple food shortages	64.Substitution: Alternative processed foods are available at times of stable food shortages (by type, in relation to usual staple)	Food technology companies  Insurance companies	
<b>Flexibility:</b> The extent to which food processing businesses can 'pivot' (change the way things are done) to meet new challenges	65.Survival rates: Proportion of food processing businesses that survive a given shock or stress event (by business type, pivot type, location; also by socio-economic status, gender)	Finance/banks			







		<p><b>Recovery:</b> The extent to which processors have strategic and financial capacity to quickly resume their production throughout or after a shock or stress</p>	<p>66.Social protection: Existence, and monetary amount of emergency funds to compensate food processors for lost earnings. (Y/N with additional evidence)</p> <p>67.Insurance: [Increased] Proportion of processors with adequate insurance covering climate-related events (by type; also by socio-economic status, gender)</p>		
		<p><b>New entrants:</b> The extent to which specific incentives/financial support target youth and women who would like to invest in the agri-food sector</p>	<p>68.Youth &amp; women: [Increased] Proportion of new food processing businesses owned by youth and women, supported technically and financially (by type; also by socio-economic status, gender)</p>	<p>Business Development Agencies</p> <p>Microcredit</p>	<p>SDG 5.7 Equal rights to economic resources, property ownership and financial services</p> <p>SDG 8.C Develop a global youth employment strategy</p>
		<p><b>DRR Strategies:</b> The extent to which food processing is included in contingency plans and disaster risk recovery strategies</p>	<p>69.DRR actions: [Increased] Number of actions that address food processing and manufacturing infrastructure in contingency plans and disaster risk recovery strategies (by type)</p>	<p>Local Government</p> <p>Disaster Management Policy</p>	<p>SDG 11.9 Implement policies for inclusion, resource efficiency, and disaster risk reduction</p>
		<p><b>Coordination:</b> The extent to which food processors are involved in communications and preparedness planning for</p>	<p>70.Participation: [Increased] Number of food processors involved in communications and preparedness planning for climate events and other</p>	<p>Food Sector lead organisations</p>	<p>SDG 11.9 Implement policies for inclusion,</p>





		climate events and other potential shocks/stresses	potential shocks/stresses (by type; also by socio-economic status, gender)	Health and safety inspectors	resource efficiency, and disaster risk reduction
		<b>Labour:</b> The extent to which availability of food processing or manufacturing workers is maintained during times of stress	71.Status: Recognition of food processing workers as having 'frontline worker' status (Y/N with additional evidence)	Environmental Health Services	
			72.Systems: Existence of legislation/mechanisms and infrastructure that enable food processing workers to move to and from places of work (Y/N with additional evidence)	PPE providers	
		<b>Safety/Sanitation:</b> The extent to which sanitation and food safety can be safeguarded in the event of a climate shock or stress, especially in at-risk areas	73.Information: Existence of Government guidance on workplace safety and sanitation for food processing facilities in the event of shocks and stresses (Y/N with additional evidence)	Economic Development	
		<b>Safety/Sanitation:</b> The extent to which facilities are clean, well-ventilated, and have safe operation and anti-contamination control measures in place.	74.Safety: [Increased] Number of processing facilities that have procedures in place to ensure cleanliness, hygiene, and food safety/ decrease in those that do not (by type, location) (by type)		
			75.Protection: Government support for/provision of personal protective equipment for food processing workers (Y/N with additional evidence)		
Food markets, catering and retail in the city region has <i>capacity to withstand</i> climate and pandemic-related, and other shocks and stresses	Commercial food provision outlets of all types (formal and informal) that sell unprocessed and processed / pre-prepared food products to household level customers can <i>operate at normal or increased capacity in</i>	<b>Access &amp; availability:</b> The extent to which low income/ highly vulnerable populations or neighbourhoods, are serviced by food providers (markets, caterers, retailers, vendors)	76.Diversity: [Increased] Number and diversity of food providers in underserved neighbourhoods (by type of provider; location)	Public Food Business Register	SDG 2.1 Universal access to safe and nutritious food
			77.Fresh produce: [Increased] Proportion of food providers located in or near to low-income neighbourhoods that sell fresh fruit & vegetables	Health and safety inspectors	
		<b>Affordability:</b> The extent to which households can obtain adequate food at affordable prices	78.Prices: [Increased] Proportion of food providers that offer affordable/controlled cost basic nutrition food baskets &	Environmental Health Services	SDG 1.2 Reduce poverty by at least 50%
				Food Safety Inspectors	





	<i>safe sanitary conditions</i>		household items (by type of provider; by neighbourhood)	Public Health & Nutrition	
		<b>Location:</b> The extent to which food providers (markets, caterers, retailers, vendors) are located outside of at-risk areas	79.Safe location: [Increased] Proportion of food providers located outside of at-risk areas (by type of retailer; location)	Local Government	SDG 13.1 Strengthen resilience and adaptive capacity to climate related disasters
		<b>Safety/Sanitation:</b> The extent to which sanitation and food safety can be safeguarded in the event of a climate shock or stress, especially in at-risk areas	80.Information: Existence of Government guidance on workplace safety and sanitation in the event of shocks and stresses (Y/N with additional evidence)	Research Institutions	SDG 13.1 Strengthen resilience and adaptive capacity to climate related disasters
		<b>Safety/Sanitation:</b> The extent to which food provider facilities are clean, well-ventilated, and have safe operation and anti-contamination control measures in place for both workers and customers.	81.Safety: [Increased] Number of food provider business facilities that have procedures in place to ensure cleanliness, hygiene, and food safety/ decrease in those that do not (by type, location) (by type)	PPE providers	SDG 8.8 Protect labour rights and promote safe working environments
			82.Protection: Government support for/provision of personal protective equipment for food production workers (Y/N with additional evidence)		
		<b>Labour:</b> The extent to which availability of food provision workers (markets, caterers, retail, vendors) is maintained during times of stress	83.Status: Recognition of food provision workers as having 'frontline worker' status (Y/N with additional evidence)	Insurance	
			84.Systems: Existence of legislation/mechanisms and infrastructure that enable food provision workers to move to and from places of work (Y/N with additional evidence)	Banks/finance Microcredit	





		<p><b>Recovery:</b> The extent to which food providers (markets, caterers, retailers, vendors) have a strategic and financial capacity to quickly resume activities throughout or after a shock or stress</p>	<p>85. Business plans: [Increased] Proportion of food providers with business continuity plans (or flexibility to adapt their operations)</p>	Business Development Agencies	
			<p>86. Insurance: [Increased] Proportion of food providers with adequate insurance covering climate-related events (by type)</p>		
		<p><b>New entrants:</b> The extent to which specific incentives or financial support target youth and women who would like to invest in the agri-food sector</p>	<p>87. Youth &amp; women: [Increased] Proportion of new food provision businesses owned by youth and women, supported technically and financially (by type; also by socio-economic status, gender)</p>		<p>SDG 5.7 Equal rights to economic resources, property ownership and financial services</p> <p>SDG 8.C Develop a global youth employment strategy</p>
		<p><b>DRR Strategies:</b> The extent to which food provision infrastructure (markets, caterers, retail, vendors) is included in contingency plans and disaster risk recovery strategies</p>	<p>88. DRR actions: [Increased] Number of actions that address food provision infrastructure in contingency plans and disaster risk recovery strategies</p>	Local Government Disaster Management Policy	<p>SDG 11.9 Implement policies for inclusion, resource efficiency, and disaster risk reduction</p>
		<p><b>Coordination:</b> The extent to which food providers are involved in communications and preparedness planning for most likely shocks and stresses</p>	<p>89. Participation: [Increased] Number of food providers involved in communications and preparedness planning for climate events and other potential shocks/stresses (by type; also by socio-economic status, gender)</p>		<p>SDG 13.1 Strengthen resilience and adaptive capacity to</p>





		<p><b>Access:</b> The extent to which the local road and public transport networks providing residents with access to points of food sales remain operational throughout or after a shock or stress</p>	90.Transport: [Increased] Number of actions aimed at climate resilience of roads and public transportation within local government transportation/infrastructure plans (by type, location)	Public Transport Local Government Highways authority	climate related disasters
		<p><b>Flexibility:</b> The extent to which food provider businesses can 'pivot' (change the way things are done) to meet new challenges</p>	91.Marketing: [Increased] Number of digital marketing platforms that help connect food providers direct with customers (by platform type; business participation)	Web-based platforms Internet companies 'Last mile' delivery businesses	
			92.Delivery: [Increased] Proportion of food providers that can deliver direct to residential areas if required (by type of provider, resident locations)		
			93.Survival rates: Proportion of food businesses that survive a given shock or stress event (by business type, pivot type, location; also by socio-economic status, gender)	Local Government Economic Development	
<p><b>Emergency food provisioning</b> plans and infrastructure enable residents to obtain adequate food and water during climate and pandemic-related, and other shocks and stresses</p>	<p>Emergency food services can <i>safely provide adequate, nutritious food and water</i> to people who need it in the event of shocks and stresses</p>	<p><b>Location:</b> The extent to which food banks and other emergency food providers exist; are located outside of at-risk areas (i.e. areas most likely to be affected by the shock or stress under consideration)</p>	94.Safe location: Ability to rapidly locate facilities for emergency food provision outside of at-risk areas (Y/N with additional evidence)	Third sector organisations/not for profit Community groups Local Government	SDG 13.1 Strengthen resilience and adaptive capacity to climate related disasters
		<p><b>Labour:</b> The extent to which availability of emergency food distribution workers is maintained during times of stress</p>	95.Status: Recognition of food production workers as having 'frontline worker' status (Y/N with additional evidence)	Health practitioners	2.1 Universal access to safe and nutritious food
			96.Systems: Existence of legislation/mechanisms and infrastructure that enable food production workers to	Doctors, Dentists	





			move to and from places of work (Y/N) with additional evidence	Public buildings e.g. libraries	SDG 8.8 Protect labour rights and promote safe working environments
		<b>Safety/Sanitation:</b> The extent to which sanitation and food safety can be safeguarded in the event of a climate shock or stress, especially in at-risk areas	97.Information: Existence of Government guidance on safety and sanitation for emergency food provision infrastructure in the event of shocks and stresses (Y/N with additional evidence)	Environmental Health Food Safety Inspectors	
		<b>Safety/Sanitation:</b> The extent to which emergency food provider facilities are clean, well-ventilated, and have safe operation and anti-contamination control measures in place	98.Safety: [Increased] Number of emergency food provision facilities that have procedures in place to ensure cleanliness, hygiene, and food safety/ decrease in those that do not (by type, location) (by type)	PPE providers	SDG 1.3 Implement social protection mechanisms
			99.Protection: Government support for/provision of personal protective equipment for food production workers (Y/N with additional evidence)		
		<b>Support:</b> The extent to which food banks and other emergency food providers have adequate support	100.Connection: Existence of mechanisms through which emergency food providers have access to local support when required (Y/N with additional evidence)		
		<b>Recovery:</b> The extent to which food banks and other emergency food providers have adequate insurance covering shock and stress events	101.Finance: [Increased] Number of food banks and other emergency food providers with adequate insurance covering shock & stress events or	Local Government	SDG 13.1 Strengthen resilience and adaptive capacity to climate related disasters
			102.Finance: [Increased] Number of food banks and other emergency food providers with business continuity plans / in receipt of government/private financial support (by type of provider; nature of support)	Local Trusts & Grant Funders  Private donors  Local organisations and groups	





		<p><b>Operations:</b> The extent to which food banks and other emergency food providers have the capacity to meet increased demand, quickly and over an extended period</p>	<p>103.Immediate supply: Ability of food banks and other emergency food providers to secure supply emergency food supplies at short notice (Y/N with additional evidence)</p>	<p>Public Health and Nutrition</p> <p>Other food businesses</p>	<p>SDG 13.1 Strengthen resilience and adaptive capacity to climate related disasters</p>
			<p>104.Increased supply: Ability of food banks and other emergency food providers to activate increased number of food sourcing streams in the event of a climate shock or stress (Y/N with additional evidence)</p>	<p>Local Government</p> <p>Disaster Management Policy</p>	
			<p>105.Reallocation: Ability to reallocate food from school feeding programmes/procurement and the catering &amp; hospitality sector to the emergency food response (Y/N with additional evidence)</p>		
			<p>106.Storage: Capacity of food banks and other emergency food providers to store ambient food reserves (Y/N with additional evidence)</p>	<p>Community facilities</p> <p>Social Services</p>	
		<p><b>Coordination:</b> The extent to which networks within the CRFS can mobilize and coordinate a rapid emergency food response</p>	<p>107.Preparedness: Existence of an emergency food response plan (Y/N with additional evidence)</p>	<p>Family support services</p>	
			<p>108.Efficiency: Ability to rapidly mobilize the emergency food distribution network (Y/N with additional evidence)</p>	<p>Elderly support services</p>	
			<p>109.Relationships: Existence of collaborative working relationships of trust between key response organisations (Y/N with additional evidence)</p>	<p>Disabled support services</p> <p>Doctors, dentists</p>	
			<p>110.Collaboration: [Increased] Number of Food Businesses working with emergency private &amp; public sector partnerships (by business type)</p>		





		<b>Access:</b> The extent to which emergency food responses can reach the most vulnerable groups	111.Effectiveness: Ability of network to coordinate information, identify and organise logistics to reach the most vulnerable people (Y/N with additional evidence)		
<p><b>Food consumption</b> Residents have the capacity to consume (obtain, prepare, store and eat) <b>adequate food in the event of climate and pandemic-related, and other shocks and stresses</b></p> <p>NOTE: For more indicator options:</p> <ul style="list-style-type: none"> <li><a href="#"><b>Tool: CRFS Sustainability Indicator Framework</b></a></li> </ul>	<p>At all times, all residents (including low income/highly vulnerable population neighbourhoods) can <i>store and prepare a diverse range of healthy, nutritious, safe and appropriate foodstuffs in safe, hygienic conditions in their homes</i> including in the event of shocks and stresses</p>	<p><b>Access &amp; affordability:</b> Extent to which the most vulnerable population can obtain sufficient healthy and nutritious food</p>	112.Government support: Existence of social protection programmes that address food access & affordability (Y/N with additional evidence)	Local Government	SDG 2.1 Universal access to safe and nutritious food
			113.Take-up: [Increased] Proportion of vulnerable populations using social protection programmes that address food access & affordability (by neighbourhood/type of vulnerability)	Disaster Management Policy	SDG 1.4 Build resilience to environmental, economic, and social disasters
			114.Prices: Existence of system to monitor and adjust/subsidize cost of a nutritious healthy food basket for vulnerable groups (Y/N with additional evidence)	Public Health and Nutrition	SDG 11.7 Provide access to safe and inclusive green and public places
			115.Distance: [Decreased] Average distance from household location to healthy food retail outlets for different residential neighbourhoods (or degree of access to healthy food outlets within 1 km also referred to as “food deserts”) (by neighbourhood or by socio-economic status)	Local organisations and groups	SDG 11.5 Reduce the adverse effects of natural disasters
			116.Gardens: [Increase in] Availability of and access to urban agriculture gardens for residents in the city region (land area per location or % population)		SDG 13.3 Build knowledge and capacity to meet climate change
			117.Education: [Increased] Annual numbers of practical food education opportunities provided at the community level - cooking classes, nutrition		







			education, food growing (by type; location; target audience; provider)		
	<p><b>Safety/Sanitation:</b> The extent to which sanitation and food safety can be safeguarded at household level in the event of a shock or stress, especially in at-risk areas</p> <p><b>Food preparation:</b> The extent to which all residents / households have access to <b>hygienic</b> food storage and cooking facilities</p> <p><b>Early warning systems:</b> The extent to which early warning systems highlight socio-economic groups that are most vulnerable and at-risk of food insecurity and lack of adequate nutrition</p>	118.Information: Existence of public information / campaign on household level food safety and sanitation in the event of a shock (Y/N with additional evidence)	Local Government Disaster Management Policy	SDG 6.8 Support local engagement in water and sanitation management	
		119.Essential infrastructure: [Increased] Proportion of population with secure access to fuel/energy; clean water (by neighbourhood; by socio-economic status, gender)	Environmental Health Food Safety Inspectors	SDG 6.7 Expand water and sanitation support to developing countries	
		120.Food poverty: [Decreased] Number or % of vulnerable households without access to adequate food storage and cooking facilities (by neighbourhood; vulnerability type; socio-economic status, gender)	Sanitation suppliers Energy and water suppliers Researchers	SDG 1.2 Reduce poverty by at least 50% SDG 1.5 Build resilience to environmental, economic and social disasters	
		121.Knowledge: Existence, and public promotion of, information and research on traditional food saving techniques adapted for household use (Y/N with additional evidence) (Kigali)	Food education groups		
		122.EWS: Existence of a regularly maintained food security early warning system (e.g. Nairobi's Urban Early Warning Early Action tool) (Y/N with additional evidence)	Local Government Disaster Management Policy	SDG 2.2. End all forms of malnutrition	
		123.Malnutrition: [Decreased] Percentage of population considered food insecure/malnourished or [Decreased] Percentage of population at risk of food insecurity/malnutrition	Public Health and Nutrition		





<p><b>Food loss, food waste</b> and waste management practices help the city region to withstand climate and pandemic-related, and other shocks/stresses</p>	<p>Circular food loss and food waste management services, platforms and enterprises can <i>operate at normal or increased capacity in safe sanitary conditions</i></p>	<p><b>Reductions:</b> The extent to which food losses and waste is being reduced</p>	<p>124. Initiatives: [Increased] Number of circular programmes and initiatives addressing food loss and waste in the city region (by type; location; scale)</p>	<p>National and local Government</p> <p>Waste management companies</p> <p>Food businesses</p>	<p>SDG 11.9 Implement policies for inclusion, resource efficiency, and disaster risk reduction</p>
		<p><b>Labour:</b> The extent to which availability of food waste collection and management workers is maintained during times of stress</p>	<p>125. Status: Recognition of food loss and waste management workers as having 'frontline worker' status (Y/N with <b>additional evidence</b>)</p>	<p>126. Systems: Existence of legislation/mechanisms and infrastructure that enable food loss and waste management workers to have freedom of movement to, from and around places of work (Y/N) with <b>additional evidence</b></p>	
		<p><b>Safety/Sanitation:</b> The extent to which food provider facilities are clean, well-ventilated, and have safe operation and anti-contamination control measures in place.</p>	<p>127. Information: Existence of Government guidance on food waste management workplace safety and sanitation in the event of shocks and stresses (Y/N with <b>additional evidence</b>)</p>		
		<p><b>Nutrient capture:</b> Extent to which recovery of nutrients from organic waste exists and enables reduction of the use of chemical fertilizers</p>	<p>128. Systems: Government support for/provision of personal protective equipment for food waste management workers (Y/N with <b>additional evidence</b>)</p>	<p>PPE providers</p>	<p>SDG 8.8 Protect labour rights and promote safe working environments</p>
			<p><b>Nutrient capture:</b> Extent to which recovery of nutrients from organic waste exists and enables reduction of the use of chemical fertilizers</p>	<p>129. Composting: Existence of fertilizer/soil conditioner production from composting household and commercial food and organic wastes (Y/N with <b>additional evidence</b>)</p>	
		<p><b>Food recovery:</b> Extent to which safe food is recovered and</p>	<p>130. New products: [Increased] Annual recycling rate of municipal (green and food-borne) waste as soil conditioner and/or fuel (%) (by municipality; by type of recycling)</p>	<p>Waste management companies</p> <p>Urban and peri-urban farmers</p>	<p>SDG 12.3 Halve global per capita food waste</p> <p>SDG 12.4 Responsible management of chemicals and waste</p>
			<p>131. Humans: [Increased] Annual proportion of surplus food recovered and redistributed for direct human</p>	<p>Community organisations</p>	





		redistributed for human and animal consumption.	consumption (percentage increase and targets)	Third sector/not for profit		
			132.Livestock: [Increased] Annual proportion of surplus food recovered and redistributed for animal consumption (percentage increase and targets)			
			133.Networks: Presence of collaborative food redistribution initiatives or networks (Y/N with additional evidence)			
		<b>Location:</b> The extent to which food waste management facilities are available and well used in the city region	134.Knowledge: Existence of demonstration and training at district level disposal/recycling centres (Y/N with additional evidence)	Environmental organisations Eco-business support Waste management companies	SDG 12.4 Responsible management of chemicals and waste	
			135.Participation: [Increased] Number of District level food waste collection and management platforms involving food business operators			
		<b>Post-harvest:</b> The extent to which food producers can reduce food losses, through increased capacity/access to post-harvest technologies, and opportunities for value addition to preserve or process perishable surpluses	136.Training: Existence of post-harvest technologies demonstration and training at district level (Y/N with additional evidence)	Food enterprise support and start up agencies	SDG 12.3 Halve global per capita food waste	
			137.New businesses: Existence of training and start-up programmes to promote and support new processing opportunities for food producers, including for fruits and vegetables (Y/N with additional evidence)	Food technology companies Food Labs		SDG 12.5 Substantially reduce waste generation
			138.Equipment: Existence of support programmes to provide value addition equipment (Y/N with additional evidence)	Environmental Health Food Safety Inspectors		
			139.New businesses: [Increased] Number of new value addition enterprises for food producers (by product type; location)			





		<p><b>Flexibility:</b> The extent to which operations can respond and adapt to changes</p>	140.Capacity: Ability to rapidly deal with sudden changes in food waste trends (collection, management, processing) (Y/N with additional evidence)	Waste management companies	SDG 11.9 Implement policies for inclusion, resource efficiency, and disaster risk reduction
		<p><b>DRR Strategies:</b> The extent to which food loss and waste management infrastructure is included in contingency plans and disaster risk recovery strategies</p>	141.DRR actions: [Increased] Number of actions that address food loss and waste management infrastructure in contingency plans and disaster risk recovery strategies	Disaster Management Policy	
<p><b>Food System Governance</b> is effective in building integrated resilience capacities across food, natural resources and ecosystems services, and human-made infrastructure</p>	<p><i>Strong coordination of food policy and planning work</i> strengthens the integration of governance related to food, natural resources and ecosystems services, and human-made infrastructure</p>	<p><b>Collaboration:</b> The existence of a multi-stakeholder network for CRFS resilience</p>	142.Integration: Evidence that a multi-stakeholder network for CRFS resilience exists and includes representatives from the wider food system elements (Environment, Disaster Risk, Forestry, Water, Planning, Transport, Energy, Climate Change etc.) (Y/N with additional evidence)	Local Government; various departments	SDG 11.9 Implement policies for inclusion, resource efficiency, and disaster risk reduction
		<p><b>Effectiveness:</b> The size and reach of the multi-stakeholder network for CRFS resilience</p>	143.Participation: [Increased] Number of different sectors, food chain nodes, government levels actively involved in the multistakeholder network (by sector/interest, annual changes)	Wide range of food system stakeholders	
		<p><b>Policy integration:</b> The extent of development, adoption, and implementation of policies/regulations/by-laws to enhance CRFS resilience, including additions to and re-wording of existing policies</p>	144.Wording: [Increased] Number of policies /regulations/by-laws that have been developed, adopted, implemented, re-worded (by policy type)	Environmental organisations	
			145.Climate: Existence if an integrated strategy for CRFS climate resilience (Y/N with additional evidence)	Community organisations	
146.Food waste: Presence of incentive systems supporting Food Loss and Waste reduction and/or circularity (Y/N with additional evidence)					
		147.Food safety: [Increased] Number of actions to improve / safeguard sanitation			SDG 11.8 Strong national and regional





			and food safety in local government infrastructure/public health plans and strategies (by type, beneficiaries)		development planning
			148.Response: Improvement in the anticipated response speed to sanitation and food safety threats in local government contingency/disaster risk recovery plans resilience (Y/N with additional evidence)		
			149.Planning: Strict implementation of city and neighbouring districts master plans to sort out the conflicting issue between land for agriculture and settlement development. (Y/N with additional evidence)		
		<b>Coordination:</b> The extent of connectivity and integrated working between stakeholders at different nodes of the food chain, between different government departments	150.New initiatives: [Increased] Number of CRFS resilience actions and programmes involving multiple stakeholders from different food chain nodes (by type, location)		SDG 11.9 Implement policies for inclusion, resource efficiency, and disaster risk reduction
			151.New initiatives: [Increased] Number of cross-departmental policies and programmes related to the food system and climate that are developed and implemented (by type, location)		
		<b>Human-made infrastructure:</b> The extent to which all residents and food businesses have safe access to fuel and energy (electricity); clean water; sanitation; communications	152.Energy: Actions to ensure fuel & energy in contingency planning (by local governments, fuel and energy suppliers) (Y/N with additional evidence)	Local Government departments	SDG 1.5 Build resilience to environmental, economic and social disasters  SDG 11.9 Implement policies for inclusion, resource
			153.Water: Actions to ensure clean water supply in contingency planning (by local governments and water suppliers) (Y/N with additional evidence)	Supply companies	
			154.Safety/Sanitation: Actions to ensure adequate sanitation services in contingency planning (by local	Disaster Management Policy	





			governments and sanitation suppliers) (Y/N with additional evidence)		efficiency, and disaster risk reduction
			155.Communication: Actions to ensure access to internet, radio and telecommunications in contingency planning (by local governments, radio and telecoms suppliers) (Y/N with additional evidence)		



