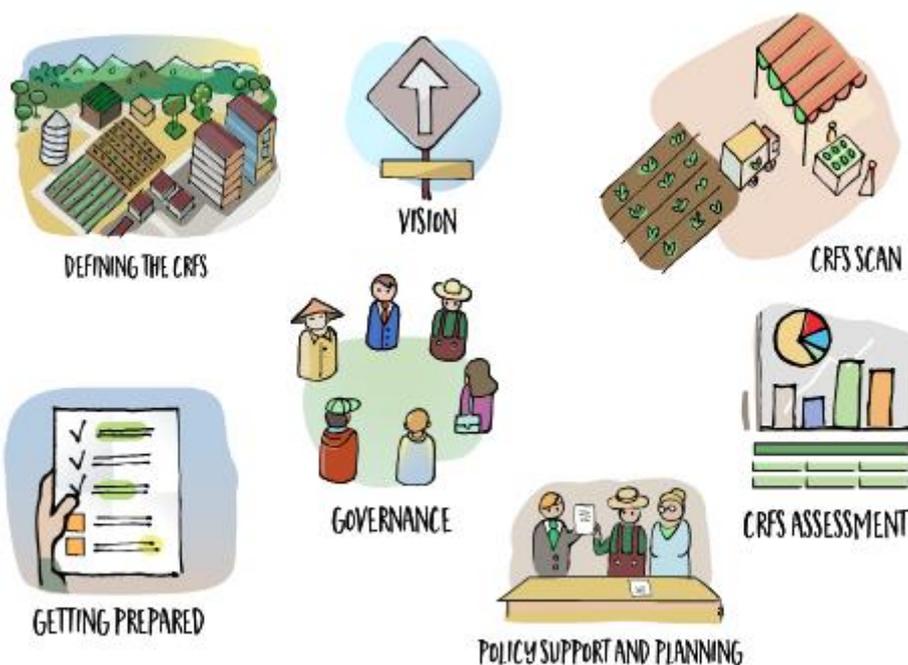




City Region Food System Toolkit  
Assessing and planning sustainable city region food systems

CITY REGION FOOD SYSTEM TOOLKIT  
TOOL/EXAMPLE



Published by the Food and Agriculture Organization of the United Nations  
and  
RUAF Foundation  
and  
Wilfrid Laurier University, Centre for Sustainable Food Systems

May 2018

With support from



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## City Region Food System Toolkit Assessing and planning sustainable city region food systems

### Tool/Example:

### CRFS Indicator Framework

Author(s): Joy Carey and Marielle Dubbeling, RUAF Foundation

Project: RUAF CityFoodTools project/FAO Food for the Cities Programme

#### Introduction to the joint programme

This tool is part of the City Region Food Systems (CRFS) toolkit to assess and plan sustainable city region food systems. The toolkit has been developed by FAO, RUAF Foundation and Wilfrid Laurier University with the financial support of the German Federal Ministry of Food and Agriculture and the Daniel and Nina Carasso Foundation.

#### Link to programme website and toolbox

<http://www.fao.org/in-action/food-for-cities-programme/overview/what-we-do/en/>

<http://www.fao.org/in-action/food-for-cities-programme/toolkit/introduction/en/>

<http://www.ruaf.org/projects/developing-tools-mapping-and-assessing-sustainable-city-region-food-systems-cityfoodtools>

#### Tool summary:

|   |   |
|---|---|
| <b>Brief description</b>                  | This tool is a practical assessment and planning tool designed to help cities to: (1) Assess the current status and performance of a city region food system following a whole-system approach; (2) Identify priority areas for action with clear desired outcomes and ways of measuring change; (3) Help with planning strategy and action to achieving the desired outcomes; (4) Establish baselines and monitor changes resulting from (future) policy and programme implementation. |
| <b>Expected outcome</b>                   | The answers to the questions on longer-term sustainability and resilience of the city region food system.   |
| <b>Expected Output</b>                    | Comprehensive assessment of the CRFS, baselines and monitor changes   |
| <b>Scale of application</b>               | City region   |
| <b>Expertise required for application</b> | Policy maker and academic researchers   |
| <b>Examples of application</b>            | 7 cities piloted in this project  |
| <b>Year of development</b>                | -   |
| <b>References</b>                         | -   |

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## City Region Food System Toolkit

### Assessing and planning sustainable city region food systems

#### Tool description:

#### Purpose

The City Region Food System (CRFS) indicator framework is a practical assessment and planning tool designed to help cities to:

- Assess the current status and performance of a city region food system following a whole-system approach
- Identify priority areas for action with clear desired outcomes and ways of measuring change
- Help with planning strategy and action to achieving the desired outcomes
- Establish baselines and monitor changes resulting from (future) policy and programme implementation.

#### Context

A city might wish to make use of this tool to assemble information in response to the following ‘big picture’ questions about the longer-term sustainability and resilience of the city region food system:

- Who feeds the city region and where does the food come from that is consumed in the city region?
- What are the strengths and vulnerabilities of the current city region food system?
- To what extent is the current city region food system (and the different components of the food system) resilient to shocks and projected circumstances in the longer-term?
- Which areas of the city region, what parts of the food chain and which groups of residents/involved stakeholders would be most adversely affected by vulnerabilities in the food system?
- What are the priority areas that need to be addressed in order to develop a more sustainable and resilient city region food system for the future (in relation to different sustainability and food systems areas and dimensions)?
- What role and powers do the city and city region decision-makers and key stakeholders have in shaping a more sustainable/resilient food system that serves the city region? How can these roles be enhanced/made more equitable?

#### Audience

The tool is aimed at those undertaking food system analyses of sustainability and planning for future resilience at a city and city region level. Areas of interest for a city or city region might be, for example to:

- Develop and strengthen the city region food production capacity and potential
- Optimise regional food processing capacity (that meet food safety standards and provide healthy and sustainable food to the population)
- Retain more of the “local food dollar” and position the city region agri-food sector to contribute directly to the regional economy;
- Increase environmental sustainability and resilience of the city region food system;
- Develop, implement and monitor improved and more resilient city region food policies and strategies.

#### Origins and development

The indicator framework has been developed around 21 key “desired direction of travel” areas that characterise a more sustainable and resilient city region food system (‘A Vision for City

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Region Food Systems', FAO & RUAF<sup>1</sup>). Following initial work at two Expert Meetings organised in Rome (March 2015 and April 2016) a set of 210 indicators/measures has been compiled to help measure both baseline data and ongoing progress towards these desired food system sustainability and resilience changes. The framework further builds on experiences from its application by local team in seven cities on different continents<sup>2</sup>.

Taking a 'whole food system' approach, the indicators are based on a matrix of food system dimensions: the sustainability areas that reflect the multifunctional nature of the food system; and ii) the components of the whole food system (from production through to waste, and also food system policy and planning). Table 1 below sets out this early stage matrix and the overarching research questions that relate to the various components of the food system.

Deciding on the most relevant research questions is an important early stage in shaping the assessment process, leading eventually to the selection of the most relevant indicators. (\*More detailed research questions are included in the separate [Research Guidance](#) document).

<sup>1</sup> A Vision for City Region Food Systems: Building sustainable and resilient city regions.

<http://www.fao.org/3/a-i4789e.pdf/>

Sistemas agroalimentarios Ciudad-Región: Construyendo ciudades-región resilientes y seguras

<http://www.ruaf.org/sites/default/files/City%20Region%20Food%20System%20narrative%20Spanish.PDF>

<sup>2</sup> Kitwe and Lusaka (Zambia), Utrecht (The Netherlands), Toronto (Canada), Colombo (Sri Lanka), Quito (Ecuador) and Medellin (Colombia)



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### Assessing and planning sustainable city region food systems

**Table 1 City Region Food System Research Framework**

| Sustainability areas /<br>Components of food system and overarching *research questions  | Social<br>sustainability<br>and equity<br>(Improve health<br>and well-being) | Economic<br>sustainability<br>(Increase local<br>economic growth<br>and decent jobs) | Environmental<br>sustainability<br>(Improve<br>stewardship<br>of environmental<br>resources) | Urban-rural<br>integration<br>(Improve city<br>region food<br>supply) | Food governance<br>(Improve<br>governance for<br>sustainable food<br>systems) | Reduce<br>vulnerability and<br>increase<br>resilience |
|--|--|--|--|---|---|---|
| <p><b>Input supply and food production</b></p> <p>Food system aim: develop and strengthen the city region food production capacity and potential.</p> <p>Overarching research questions:</p> <ul style="list-style-type: none"> <li>• Has your city region got enough food to feed its population now and in the near future?</li> <li>• To what extent does the volume of available city region produced food contribute to city region consumption? What is the potential for a re-localised food system in the city region?</li> <li>• Can sustainability and resilience of city region food production and input supply be increased?</li> </ul> |  |  |  |   |   |   |
| <p><b>Food storage, processing and manufacturing</b></p> <p>Food system aim: optimise regional food processing capacity (that meet food safety standards and provide healthy and sustainable food to the population)</p> <p>Overarching research questions:</p> <ul style="list-style-type: none"> <li>• Are the food processors and manufacturers providing healthy, safe and sustainable food?</li> <li>• Can sustainability and resilience of city region food storage, processing and manufacturing be increased?</li> </ul>   |  |  |  |   |   |   |

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| Sustainability areas /<br>Components of food system and overarching *research questions   | Social<br>sustainability<br>and equity<br>(Improve health<br>and well-being) | Economic<br>sustainability<br>(Increase local<br>economic growth<br>and decent jobs) | Environmental<br>sustainability<br>(Improve<br>stewardship<br>of environmental<br>resources) | Urban-rural<br>integration<br>(Improve city<br>region food<br>supply) | Food governance<br>(Improve<br>governance for<br>sustainable food<br>systems) | Reduce<br>vulnerability and<br>increase<br>resilience |
|---|--|--|--|---|---|---|
| <p><b>Food wholesale and distribution</b><br/>Food system aim: develop &amp; strengthen wholesale and distribution of city region produced food e.g. markets, food supply hubs</p> <p>Overarching research questions:</p> <ul style="list-style-type: none"> <li>• Are the wholesalers and distributors connecting the city with food from the region?</li> <li>• Can sustainability and resilience of city region food wholesale and distribution be increased?</li> </ul> |  |  |  |   |   |   |

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### Assessing and planning sustainable city region food systems

| Sustainability areas /<br>Components of food system and overarching *research questions   | Social<br>sustainability<br>and equity<br>(Improve health<br>and well-being) | Economic<br>sustainability<br>(Increase local<br>economic growth<br>and decent jobs) | Environmental<br>sustainability<br>(Improve<br>stewardship<br>of environmental<br>resources) | Urban-rural<br>integration<br>(Improve city<br>region food<br>supply) | Food governance<br>(Improve<br>governance for<br>sustainable food<br>systems) | Reduce<br>vulnerability and<br>increase<br>resilience |
|---|--|--|--|---|---|---|
| <p><b>Food marketing, catering and retail</b><br/>Food system aim: develop and strengthen the presence of food outlets (shops, canteens, markets, street traders) that supply fresh healthy food to city region residents</p> <p>Overarching research questions:</p> <ul style="list-style-type: none"> <li>• Does each citizen in the city region have access to affordable and healthy food outlets?</li> <li>• Can sustainability and resilience of city region food marketing, catering and retail be increased?</li> </ul> |  |  |  |   |   |   |
| <p><b>Food consumption</b><br/>Food system aim: all city region residents consume healthy, safe and nutritious food in the right amounts for good health</p> <p>Overarching research questions:</p> <ul style="list-style-type: none"> <li>• Are city region residents eating nutritious, safe and healthy food in the right amounts for good health?</li> <li>• Can sustainability and resilience of city region food consumption be increased?</li> </ul>   |  |  |  |   |   |   |
| <p><b>Food and organic waste management</b><br/>Food system aims: reduce overall food waste throughout the food chain in the city region and optimise recycling of nutrients, water and energy for city region food production</p> <p>Overarching research questions:</p>   |  |  |  |   |   |   |

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## City Region Food System Toolkit

### Assessing and planning sustainable city region food systems

| Sustainability areas /<br>Components of food system and overarching *research questions   | Social<br>sustainability<br>and equity<br>(Improve health<br>and well-being) | Economic<br>sustainability<br>(Increase local<br>economic growth<br>and decent jobs) | Environmental<br>sustainability<br>(Improve<br>stewardship<br>of environmental<br>resources) | Urban-rural<br>integration<br>(Improve city<br>region food<br>supply) | Food governance<br>(Improve<br>governance for<br>sustainable food<br>systems) | Reduce<br>vulnerability and<br>increase<br>resilience |
|---|--|--|--|---|---|---|
| <ul style="list-style-type: none"> <li>Is food waste actively being reduced?</li> <li>Are closed loop systems being used in organic waste (water) management?</li> <li>Can sustainability and resilience of city region food and organic waste management be increased?</li> </ul>  |  |  |  |   |   |   |
| <p><b>(Cross cutting): City region food system policy planning</b><br/>Food system aim: develop, implement and monitor improved and more resilient city region food policies and strategies</p> <p>Overarching research questions:</p> <ul style="list-style-type: none"> <li>Is there a mechanism for implementing food system change?</li> <li>Can sustainability and resilience of city region food system planning be increased?</li> </ul> |  |  |  |   |   |   |

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### Assessing and planning sustainable city region food systems

#### Elements of the full CRFS indicator framework

The indicator framework connects policy priorities to outcomes that cities may want to see in the future (i.e. changes that characterise a more resilient and sustainable CRFS) and defines possible indicators for each outcome. The indicators provided can thus be used to establish a baseline from which to measure targets and impacts of strategies that are included in a food policy strategy or action plan.

The components of the food system in the left hand column in the table above (Table 1) have been integrated into the indicators. The table 2 below shows how the sustainability areas relate to 9 overarching objectives, 21 outcomes and 29 impact areas.

**Overarching objectives:** For each of the sustainability areas in the second column of the table below (in black), there is one or more overarching objective that relates to different components of the food system. These might connect to policy priorities for cities or rural areas.

**Outcomes:** Outcomes or 'desired direction of travel' are the types of changes that cities may want to see in the future, i.e. changes that characterise a more resilient and sustainable city region food system. These are in the third column of the table below (in green). These might connect to interventions or development programmes or practical initiatives led by municipalities or NGO's or businesses or multi-stakeholder partnerships.

**Impact areas:** The impact areas in the fourth column (in red) are more specific types of changes that could be measured in various ways. It is important to clarify the focus of the assessment; the city may need to select from these impact area suggestions as appropriate. These might feature in research or in monitoring and evaluation strategies of development programmes.



## City Region Food System Toolkit

### Assessing and planning sustainable city region food systems

Table 2. City Region Food System Outcome and Impact Areas

|                                  | Overarching objectives  | Outcomes: desired direction of travel (This will not be achieved quickly but is the kind of change that the city wants to achieve in the longer-term)                         | Impact Areas: key issues to be measured (Important to clarify the focus of the assessment; the city may need to select from these suggestions as appropriate)   |
|----------------------------------|---|---|---|
| Social sustainability and equity | Improve health and well-being and increase access to food and nutrition | All rural and urban residents have access to affordable, sufficient, nutritious, safe, adequate, and diversified food that contribute to healthy diets and meet dietary needs | <p><b>Accessibility:</b> Degree of ease with which vulnerable/low-income groups in the city region can buy and prepare fresh nutritionally balanced food</p> <p><b>Affordability:</b> Trends in food consumption and expenditure for different types of consumers in the city region (including vulnerable groups)</p> <p><b>Health, wellbeing &amp; nutrition utilization:</b> Incidence of diet-related diseases and status of diet-related physical and mental health in specific communities</p> <p><b>Nutritional standards &amp; legislation:</b> Extent to which good quality nutritious food is provided by the processing, retail and catering sectors (including public food procurement) and consumed by customers</p> <p><b>Education and awareness:</b> Extent to which residents of the city region are equipped with knowledge and skills on safe, diversified and nutritious food and healthy diets</p> <p><b>Food safety:</b> Extent to which processing, retail and catering sectors comply with sanitation and food safety regulations</p> |
|                                  | Improve social conditions for workers                                   | All workers in the food system have healthy and safe working conditions   | <b>Workforce conditions:</b> Extent to which all city region food system businesses provide good quality health and safety working conditions and risk assessment/reduction for their workforce   |
|                                  | Build local food culture & heritage                                     | The city region is known for its food culture, food heritage and sense of identity  | <b>Food culture and identity:</b> Extent to which food businesses located in the city region are actually connected to food produced/processed in the city region and make the provenance of food visible to customers  |
|                                  | Ensure acceptability of food provision for all city residents           | The city is known for a readily available diversity of food provision to meet the wide range of preferred dietary habits of its citizens                                      | <b>Food choices:</b> Extent to which food provision meets the needs of a diversity of customers   |
| Economic                         | Increase local economic growth and generate a diversity of              | A vibrant diverse and sustainable regional food economy retains the 'local food dollar'   | <b>Local financial resilience:</b> Extent that money flows circulate within in the city region food system versus 'leakage' to shareholders outside the city region   |

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### Assessing and planning sustainable city region food systems

|                              |   |  |  |  |
|------------------------------|---|--|--|--|
|                              | decent jobs and income.   |  | <i>Business diversity:</i> The range of types, scales and locations of food businesses   |  |
|                              |   | Fair and decent (formal and informal) jobs and income opportunities exist for small-scale producers, workers and businesses throughout the food system | <i>Jobs:</i> Extent to which a diversity of decent jobs are generated throughout the city region food system<br><i>Income stream diversity:</i> The extent to which opportunities are realised for diversifying income streams |  |
|                              | Urban-rural integration   | Strengthen the city region food production and supply system   | City region food production capacity is optimised  | <i>Production:</i> Extent to which land in the city region is being managed and used to produce as diverse a range of food products as possible                            |
|                              |   |  | Efficient and diverse agricultural supply and value chains connect the city with food producers in the city region providing access to a wide range of market opportunities  | <i>Short (local) supply chains:</i> Extent to which city region supply and value chains are in place enabling city region producers to access a diversity of local markets |
|                              |   | Flows of food, nutrients, energy and other resources and services connect across urban and rural areas   | <i>Mutual benefits:</i> Extent to which there are tangible and mutually beneficial connections between the rural and urban areas   |  |
| Environmental sustainability | Improve protection and management of ecosystems and environmental resources | Agro-ecological diversity is protected and promoted.   | <i>Agricultural practices:</i> The extent to which food production practices in the city region enhance and increase biodiversity, soil and ecosystem health   |  |
|                              |   | Urban and natural ecosystems are well managed.   | <i>Ecosystem management:</i> Extent to which natural resources in both rural and urban areas are valued, conserved and protected   |  |
|                              |   | Greenhouse gas (GHG) emissions in the food system are reduced.   | <i>GHG emissions:</i> Extent to which food system actors, including producers, businesses, etc are reducing their own greenhouse gas emissions   |  |

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### Assessing and planning sustainable city region food systems

|                              |   |   |  |
|------------------------------|---|---|--|
|                              |   | Food loss and waste is reduced (or re-used) throughout the food system.   | <i>Food loss and waste:</i> Extent to which the drivers of food loss and waste generation are understood, quantified and solutions are identified and implemented to actively prevent and reduce in all sections of the food system  |
| Food governance              | Improve horizontal and vertical governance and planning | Food system policies, legislation, and strategies exist and are integrated into other policies, planning processes and programmes | <i>Coordination and integration:</i> Degree to which city regional food system planning and recognition of rural-urban linkages is happening and becoming embedded in wider local and national governance and planning   |
|                              |   | Participatory governance structures are cross-jurisdictional, cross-sectorial and multi-stakeholder                               | <i>Participation:</i> Extent to which participation in food governance involves a wide diversity of stakeholders   |
|                              |   | Participatory governance structures enhance transparency, ownership, collaboration and co-investment                              | <i>Impact:</i> Extent to which food governance structures are understood, trusted and supported, and therefore effective<br><br><i>Monitoring:</i> Extent to which information systems are developed and used for food policy development and accountability by enhancing the availability, quality, quantity, coverage and management and exchange of data related to city region food systems, including both formal data collection and data generated by civil society and other partners. |
|                              |   | Food policies enhance social inclusion and reduce inequalities  | <i>Social inclusion &amp; reduced inequalities:</i> Extent to which food policy addresses and improves i) social inclusion (gender, income, educational and cultural background, age, etc); and ii) reduces inequalities experienced by more vulnerable groups   |
|                              |   | Food policies enhance environmental sustainability  | <i>Environmental sustainability:</i> Extent to which food policy addresses and improves protection and enhancement of natural resources  |
| Vulnerability and resilience | Reduce vulnerability and increase resilience            | There is increased capacity to deal with shocks that impact on the food system (economic, climate change, disaster)               | <i>Capacity:</i> Extent to which the food system is being included in future city region disaster and resilience assessments and response plans.   |
|                              |   | The agricultural resource base is protected and lessens dependence on distant food supply sources                                 | <i>Self-sufficiency:</i> Extent to which the city region food system resources are safeguarded and enhanced in order to maximise degree of self-sufficiency  |
|                              |   | Urban planning processes include food security and resilience   | <i>Food &amp; planning:</i> Extent to which the urban planners are aware of and actively seek to ensure food system security and resilience with regard to land use and future city region development plans.  |

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### The indicators

*A menu:* There are 210 possible indicators included in the full CRFS indicator framework below, in column five (blue). The purpose of the indicators is to help measure the extent to which the desired changes are actually happening. Each city will need to identify the most appropriate indicators for their own priority areas. Indicators can also be used to establish a baseline from which to measure on-going progress/change over time.

*Need for disaggregated data:* There are two important points to note: i) most of the indicators relate to the whole city region and therefore include both rural and urban situations rather than specify them separately; ii) many of the indicators are in fact multiple indicators and will need to be disaggregated. The more the data can be disaggregated – e.g. by geographic location, income group, age category, gender - the better. For example indicator 18: '[Change in] Number and percentage of households consuming minimum 5 portions of fruits and vegetables per day' – differentiate where possible for specific income groups or geographical locations. It may also be that one indicator contains more than one measure. Indicator 59 is a good example: '[Decrease in] Number of prosecutions or requirements to improve workplace conditions/procedures in different types of food business'. In this case the measure is number of prosecutions or requirements to improve conditions and then to specify these numbers for different types of food businesses. In order to make decisions about how to approach such examples, each city needs to decide what direction of travel and impact areas are most important and therefore what specific locally relevant data will indicate changes. (See further details in the separate *Research Guidance* document accessible [here](#)).

*Similarities:* A few indicators may appear to be very similar or repeated in different sections. This is because the similar indicators connect to different impact areas. For example indicator 5: '[Increase in] Number of households (urban and rural; both farmers and gardeners) growing a proportion of their own food needs' is both an indicator of *Accessibility* to fresh nutritious food and also an indicator of *Education and Awareness* being put into practice – indicators 44 & 45. Indicator 111 '[Increase in] Total surface area and production volume of agriculture/community gardens within the city region; in low income areas' is included in the impact area of *Production*, but is also an indicator of *Education and Awareness*. Indicator 47: '[Increase in] Number of city residents involved with urban food growing' is about the numbers of people growing food in the city, and thus relates to *Awareness*, rather than the volume of food produced, which would otherwise be related to *Production*. Indicators 63-68 are listed in relation to the impact area of strengthening the *Food culture and Identity* of the locality by reflecting this in the types of food products and more localised supply chains. They could equally be listed in the impact area of *Short (Local) Supply Chains* that feature later in the table.

*Complexity:* A number of indicators will require very specific data and in themselves may need breaking down into sections to calculate final figures, or example '[Decrease in] Number and type of people requiring emergency food aid'. This process in itself should be informative, even if a final figure proves too difficult to establish. Identifying where data is missing is an

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## City Region Food System Toolkit

### Assessing and planning sustainable city region food systems

important finding.

#### *Links to Sustainable Development Goals (SDG's)*

The document includes a sixth column with corresponding SDG goals indicators that could be adapted to suit the local situation. This might be useful if a city is making use of SDG's in its own strategic plans.

#### *Data sources*

Column seven sets out suggested data sources, either secondary or primary, from which indicator information could be extracted or collected. This list is not comprehensive.

#### **How to use the CRFS indicator framework**

*i) Getting started:* As every city is different, the first step will be to identify food system change priorities that are informed by a deeper understanding of the local city and city region context. The indicator framework sets out ideas for 'desired direction of travel' and each city will of course have to decide on their own (more) specific objectives for attaining sustainable and resilient city region food systems which may need to align with specific policy objectives already set by the city. The matrix above (Table 1 and 2) could be used as an early stage tick-box exercise, to focus discussion and help to identify which dimensions need to be investigated in relation to local needs and priorities.

*ii) Using the indicators:* These will need to be selected according to priorities and possibly modified to suit the local situation. They can be used to help guide and build initial baseline data collection. It is important to note that the indicators on their own are only numbers and ultimately they need to be connected back to their relevant 'impact area' and 'desired direction of travel' through (early stage) analytical narrative. It should also be noted that the extent to which local organisations/researchers in cities can collect/analyse corresponding data is largely dependent on data availability (secondary and primary data) and on the complexity of the indicators. Challenges will include: agreeing on what to measure; finding inexpensive ways to collect data and gain insights into what it means; engaging decision/policy makers or budget holders in prioritising this work; and aligning this work with available resources: money, time, expertise, commitment. One way to start dealing with this is to use a system of prioritisation, for example by colour coding. The first stage is to go through the full CRFS indicator framework and colour code priorities as part of the process of deciding where to focus efforts.

We suggest the approach below to help with prioritisation.

- **Green:** what is most relevant locally (based on multi-stakeholder identification of key issues); most potential for change; available data
- **Yellow:** quite relevant, some potential for change, some data available
- **Red:** no data; too costly or difficult to collect data; least relevant; low opportunity for change

*iii) Finding data alternatives:* Where data is too costly or difficult to collect, but nevertheless the issue is important to include, there may be other approaches. For example greenhouse gas emission assessments will be too costly and time consuming to fall within the scope of

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## City Region Food System Toolkit

### Assessing and planning sustainable city region food systems

this project. However there may be existing studies that could be used e.g. transport emission data. Or there may be no data on food waste but instead successful initiatives could be described as case studies and further analysis done to explore opportunities for improvements and changes. In this case it will be important to view this exercise as a 'rapid appraisal' rather than a robust scientific study and therefore make use of interviews and focus groups to gather data.

*iv) Spatial location of data:* It will be important to be able to geographically link specific indicator data collection and analysis to specific areas in the city as a basis for further planning.

#### Glossary of terms and key concepts used

##### *Food businesses*

There are six broad categories of food business, covering the entire food system:

- Food production (including urban and peri-urban food production)
- Processing
- Wholesale & distribution
- Retail
- Catering
- Organic and food waste management/ re-use.

Within these categories there will be more localised business typologies that vary from country to country. Therefore before starting any food business assessment, for each of the six business categories an adapted local typology needs to be developed. For example, localised retail types might include supermarkets, kiosks, street vendors/ itinerant vendors, house shops etc.

##### *Informal business sector*

There is no absolute definition. It is important to be clear on what means to different people. For the purposes of consistency of data collection, the simplest definition is whether the business is registered to pay taxes or not. The informal sector includes small manufacturing enterprises and small traders and service providers, legal and illegal activities and a wide array of artisans. The most visible activities relating to the informal food sector are: i) food production (urban and peri-urban); ii) catering and transport; iii) the retail sale of fresh or prepared products (e.g. the stationary or itinerant sale of street food). The informal sector plays an important and controversial role. It provides jobs and reduces unemployment and underemployment, but in many cases the jobs are low-paid and the job security is poor. It bolsters entrepreneurial activity, but may do so at the detriment of state regulations compliance, particularly regarding tax, labour and (food) safety regulations. The size of the informal labour market varies from the estimated 4-6% in the high-income countries to over 50% in the low-income countries. Its size and role in the economy increases during economic downturns and periods of economic adjustment and transition.

##### *Healthy/nutritious food basket: the household cost of basic healthy eating*

This concept is based on the idea of a nationally agreed minimal essential standard of living in relation to household nutritious food requirements. Many countries have calculated the

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contents and cost of a healthy or nutritious food basket for an average family based on cultural diets and current nutritional recommendations for adults and children. A typical basket will contain fruits and vegetables, grains, meat, fish, dairy (and alternatives), oils and fats. There is a range of terms e.g. basic needs basket, healthy food basket, nutritious food basket. The World Health Organisation has resources to help with [defining a healthy diet](#).

### *Concepts of food security at the household level*

**i) Food accessibility:** whether all households and individuals have adequate resources to obtain the food they need either through production or purchase.

**ii) Food utilisation:** whether an individual can adequately ingest, digest and metabolize sufficient food through adequate diet, clean water, sanitation and health care to reach a state of nutritional wellbeing, where all physiological needs are met (FAO). Food utilisation is a dimension of food security which addresses not only how much food the people eat but also what and how they eat. It also covers the food preparation, intra-household food distribution, water and sanitation and health care practices. The nutritional outcome of the food eaten by an individual will be appropriate and optimum only when food is prepared/cooked properly, there is adequate diversity of the diet and proper feeding and caring practices are practiced. More information can be found [here](#).

### *National food based dietary guidelines*

Food-based dietary guidelines (also known as dietary guidelines) are intended to establish a basis for public food and nutrition. They exist for more than 100 different countries, and can be found [here](#).

### *Food deserts*

Food deserts can be described as geographic areas where residents' access to affordable, healthy food options (especially fresh fruits and vegetables) is restricted or non-existent due to the absence of grocery stores within convenient travelling distance.

### *Urban agriculture*

Urban agriculture can be defined as the growing of plants and the raising of animals within and around cities for both commercial and non-commercial purposes. The most striking feature of urban agriculture, which distinguishes it from rural agriculture, is that it is integrated into the urban economic and ecological system: urban agriculture is embedded in -and interacts with- the urban ecosystem. Such linkages include the use of urban residents as labourers, use of typical urban resources (like organic waste as compost and urban wastewater for irrigation), direct links with urban consumers, direct impacts on urban ecology (positive and negative), being part of the urban food system, competing for land with other urban functions, being influenced by urban policies and plans, etc. Urban agriculture is not a relict of the past that will fade away (urban agriculture increases when the city grows) nor is it simply brought to the city by rural immigrants that will lose their rural habits over time. It is an integral part of the urban system. More information can be found [here](#).

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## City Region Food System Toolkit

### Assessing and planning sustainable city region food systems

#### *Youth or Young people*

The United Nations, for statistical purposes, defines those youth or young people as persons between the ages of 15 and 24 years.

#### *The Living Standards Measurement Study (LSMS)*

The Living Standards Measurement Study (LSMS) is a household survey program housed within the Surveys & Methods Unit of the World Bank's Development Data Group that provides technical assistance to national statistical offices (NSOs) in the design and implementation of multi-topic household surveys. The goal of the LSMS is to facilitate the use of household survey data for evidence-based policymaking. Since its inception in the early 1980s, the LSMS program has worked with dozens of statistics offices around the world: generating high-quality data, incorporating innovative technologies and improved survey methodologies, and building technical capacity. Existing LSMS data sets can be found [here](#). The LSMS team also provides technical support in the design and implementation of household surveys and in the measurement and monitoring of poverty. The LSMS team is currently working to design and implement household surveys with a strong focus on agriculture in eight countries across sub-Saharan Africa. More information can be found [here](#).

#### *The Food Insecurity Experience Scale (FIES)*

The UN Food Insecurity Experience Scale (FIES) is an indicator for measuring food access at household level and can be used to gather information about the adequacy of people's access to food by asking them directly about their experiences. It provides a snapshot of household food insecurity and can act as a rapid assessment tool for practitioners complementing other tools and measures of food insecurity determinants. It measures the severity of food insecurity experience within a household and can also be measured for individuals. The FIES has been collected in over 145 countries since 2014. Statistical techniques have been developed to equate country results against a global standard which allows comparison across all countries. National institutions can use the FIES to obtain data-based evidence about the distribution and severity of food insecurity. The global data reveal that the FIES shows significant and high correlations in the expected direction with most accepted indicators of development, including child mortality, stunting, poverty measures and the World Bank [Gini index](#) (often used as a gauge of economic inequality). Description of the FIES indicator available [here](#).

#### *The Healthy Eating Index (HEI)*

HEI is a measure of diet quality that assesses conformance to the Dietary Guidelines for Americans. There is guidance for researchers on how to [calculate HEI scores](#), which could be applied in other countries.

#### *Living wage and minimum wage*

A national 'minimum wage' is usually set by the national government. This is the lowest wage an employer may legally pay their workers. A 'living wage' is usually an informal benchmark, not a legally enforceable minimum level of pay, like the national minimum wage and may be calculated by other agencies or academics. A living wage is the amount of pay considered

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### Assessing and planning sustainable city region food systems

sufficient for a worker and their family to cover basic costs of living in a specific location. For example, in the UK the minimum wage is set by the National Government each year on the advice of the Low Pay Commission and enforced by HM Revenue and Customs (HMRC). A university calculates the national living wage.

#### *The International Labour Organisation (ILO)*

The ILO brings together governments, employers and workers representatives to set labour standards, develop policies and devise programmes promoting decent work for all women and men. As part of its remit for setting international standards, the ILO has developed a variety of standards covering different areas of labour statistics. These standards include definitions of relevant concepts, operational definitions and guidance on implementation. Labour statistics cover a wide range of topics related to the world of work. They include statistics about different forms of work as well as statistics about labour markets. The ILO holds a [library](#) of databases and also relevant databases of [labour statistics by country](#). In 2017, the ILO and partners will be releasing statistics on global estimates of modern slavery and child labour. Indicators on [forced labour](#) have also been developed. The ILO has developed guidelines for measuring 'decent work', one of which is employees with low pay rate 'ELPR' – more information on these indicators can be found [here](#).

#### *FAOSTAT*

FAOSTAT provides free access to food and agriculture data (e.g. production, trade, values) for over 245 countries and territories and covers all FAO regional groupings from 1961 to the most recent year available – more information on the database [here](#). This data can be used for further calculations. It is possible, for example, to find food import data by quantity and value, 1961-2011 for culturally appropriate, staple foods. Select food categories relevant to city region based on local consumption and production patterns (need to select key food categories e.g. meat, cereals, fruit&veg, dairy; fish/seafood). For city region food production figures use national farm census data and interviews with agricultural production capacity specialists. When using imports data, you may need to make city region assumptions from national food & drink import data. From this, it may then be possible to calculate local production, economic leakage, and food security vulnerabilities based on import fluctuations.

#### *Food Balance Sheet*

Annual food balance sheets show the trends in the overall national food supply, disclose changes that may have taken place in the types of food consumed, and reveal the extent to which the food supply of the country is adequate in relation to nutritional requirements. National FBS information may already exist. If not, there is methodological guidance on how to calculate a FBS here. National Crop Forecasting Survey data may provide estimates from agricultural holdings on the area under major crops as well as production and sales estimates during the agricultural season. This information is used to assess the expected food security situation in the country and also to produce the National Food Balance Sheet (NFBS). The food balance sheet is used to determine the food surplus or deficit situation of the country with respect to the major cereals and tubers produced in the country. The information is vital to Government, NGOs, the private sector as well as donors and is useful for strategic planning

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### Assessing and planning sustainable city region food systems

and decision-making purposes. Statistics generated from the survey must be measurable for their accuracy, comparable across time as well as comparable between different countries within the region. The Survey uses an internationally recognized methodology promoted by the FAO.

#### *GAEZ database (global agro-ecological zones)*

The GAEZ database provides the agronomic backbone for various applications including the quantification of land productivity. Maps are available for land resources (soil, water, terrain, land cover, protected areas, agro-ecological zones, selected socio-economic), agro-climatic resources (thermal/moisture regimes, growing period), suitability and potential yield (agro-climatic yield, climate yield constraints, crop calendar, agro-ecological suitability and productivity), actual yield and production (crop production value, crop harvested area), yield and production gaps (aggregate yield ratio, crop yield ratio and production gap) - more information [here](#).

#### *Food loss, food waste and Global Food Loss Index (GFLI)*

Food loss refers to all food produced for human consumption but not eaten by humans. Food loss is defined as “the decrease in quantity or quality of food”. The part of food loss that is called “food waste” refers to discarding or alternative (non-food) use of food that is safe and nutritious for human consumption along the entire food supply chain, from primary production to end consumers. Food waste is recognized as a distinct part of food loss because drivers that generate it are different from those that generate food loss. (FAO, 2014). More information can be found [here](#), including new methodology for measuring food loss using a Global Food Loss Index (GFLI).

#### *The hierarchy of food waste prevention*

The food waste hierarchy (UK) is a framework for the management of food surplus and food waste and favours solutions with more desirable environmental and economic outcomes. It has been adapted from the waste hierarchy, now part of UK law: prevention, reuse, recycle, recovery, and finally disposal. It draws an important distinction between surplus food, which can be used to feed humans or animals and food waste that can be further processed to return nutrients to the soil, extract energy and generate heat. The first action is to reduce food waste simply by avoiding generation of food waste, and then to optimise the recycling of city food and organic wastes in the following order of priority: (1) (Re)Use for human food (fresh or processed); (2) (Re)Use as animal feed; (3) Recycle unavoidable food waste as raw materials for industry, (4) Recover resources through transforming into compost and fertiliser; (5) Provision of energy (incineration) and finally (6) landfill if there is no other option. Further information is available [here](#).

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#### The full CRFS indicator framework

\*D Dimensions of sustainability in the food system

**Outcomes: desired direction of travel** (This will not be achieved quickly but is the kind of change that the city wants to achieve)

**Impact Areas: key issues to be measured** (Important to clarify the focus of the assessment; the city may need to select from these suggestions as appropriate)

**Possible indicators** (These are suggestions; each city needs to decide on the best and most appropriate indicators for their situation and may need to develop different indicators to those listed below)

Correspondence with SDG indicators which can be used/adapted at a local scale

| *D                               | Overarching objectives  | Outcomes: desired direction of travel   | Impact Areas: key issues to be measured  | Possible indicators   | Correspondence with SDG indicators  | Suggested data sources (* See glossary for further explanation)   |
|----------------------------------|---|---|--|---|---|---|
| Social sustainability and equity | Improve health and well-being and increase access to food and nutrition | All rural and urban residents have access to affordable, sufficient, nutritious, safe, adequate, and diversified food that contribute to healthy diets and meet dietary needs | <i>*Accessibility:</i> Degree of ease with which vulnerable/low-income groups in the city region can buy and prepare fresh nutritionally balanced food | <ol style="list-style-type: none"> <li>[Change in] Number of food retail outlets located in or near to low-income neighbourhoods that sell fresh fruit &amp; vegetables</li> <li>[Decrease in] Distance from household location to healthy food retail outlets for different income groups (or degree of access to healthy food outlets within 1 km also referred to as “food deserts”)</li> <li>[Change in] Number of public transport options/routes connecting low income neighbourhoods to food retail locations</li> <li>[Reduction in] Number and % of households without access to adequate food storage and cooking facilities (for different income groups)</li> <li>[Increase in] Number of households (urban and rural; both farmers and gardeners)</li> </ol> | SDG 11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing | <p><i>It is important to understand where the low-income urban households get their food from, including both formal and informal retailers and markets (see glossary for *informal business sector).</i></p> <p>[Existing] Register of *food businesses held by municipality or chamber of commerce<br/>           [Existing] Register of food businesses held with food safety inspection teams<br/>           [Existing or New] Retail surveys of low income neighbourhoods<br/>           [Existing] Data on *‘food deserts’ or food access by vulnerable groups – public health, NGO’s<br/>           [Existing] Government/institutional and food business surveys<br/>           [Existing] Economic development department, transport department, food business department, marketing or public health.<br/>           [Existing or New] Food security, health and nutrition surveys of low income households</p> |

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|  |  |   |  | <p>growing a proportion of their own food needs</p> <p>6. [Increase in] Percentage of household food self-reliance in food consumption by weight or economic value</p>   |   | <p>[Existing] Data from Urban Agriculture (UA) programmes; agricultural department, NGO programmes; UA organisations</p> |
|  |  | <p><i>Affordability: Trends in food consumption and expenditure for different types of consumers in the city region (including vulnerable groups)</i></p> | <p>7. [Change in] Food prices for different food products or commodities and for local versus non local foods)</p> <p>8. [Change in] Proportional consumer expenditure by income group on key food items (fruit and veg, meat, dairy, grains, pulses)</p> <p>9. [Decrease in] Cost of a healthy food basket in the nearby market - (this can also be compared with average income levels for specific groups)</p> <p>10. [Change in] customer preference/willingness to pay for city region/local food products</p> <p>11. [Change in] Number of hours of paid employment at the average wage required to support the minimum costs of a household healthy food basket</p> <p>12. [Decrease in] Annual number and type of people supported by food assistance and aid programmes</p> | <p>SDG 1.3.1 Proportion of population covered by social protection floors/systems, by sex, distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women, newborns, work-injury victims and the poor and the vulnerable</p> <p>SDG 2.c.1 Indicator of food price anomalies</p> | <p><i>Use any relevant existing data including *household food baskets/consumption figures for specific food products appropriate to the city region. If possible, differentiate for population income categories.</i></p> <p>[Existing] National data on food commodity prices – <a href="http://www.numbeo.com">www.numbeo.com</a> (for figures on costs of living, food prices, food baskets)</p> <p>[Existing] Reports on regional food supply, short supply chains, domestic production and markets – National or regional government, NGO's, agriculture departments</p> <p>[New] Low-income household consumption and expenditure surveys</p> <p>[New] Survey of food price comparisons in local retail, linked to income levels for specific groups</p> <p>[Existing] Reports on food security, emergency food provision, update of food assistance and food aid programmes, food basket surveys – national and local government, NGO's</p> <p>[Existing] Information on social protection systems – national and local government, NGO's</p> <p>[Existing] Local food sales &amp; market</p> |  |

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|  |  |   |  |   |   |  |
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|  |  |   |  | <p>13. [Decrease in] Number and type of people requiring emergency food aid</p> <p>14. [Change in] Proportion of population using social protection programmes that address food access</p>   |   | <p>research – Economic Development departments or agencies, local/regional food support programmes</p> |
|  |  | <p><i>Health and wellbeing and *nutrition utilisation: Incidence of diet-related diseases and status of diet-related physical and mental health in specific communities</i></p> | <p>15. [Decrease in] % of food insecure households</p> <p>16. [Change in] Household food consumption basket on key food items (fruit and veg, meat, dairy, grains, pulses)/ Diet quality by income group</p> <p>17. [Change in] Household food consumption and expenditure patterns on processed and fast foods by income groups</p> <p>18. [Change in] Number and percentage of households consuming minimum 5 portions of fruits and vegetables per day (per income group)</p> <p>19. [Decrease in] Number of people eating fast /processed foods more than once a week/ one more one meal/day</p> <p>20. [Decrease in] Numbers of adults and children with type 2 diabetes (total number and percentage of the population, per income group)</p> <p>21. [Decrease in] Numbers of adults and children with</p> | <p>SDG 2.1.1 Prevalence of undernourishment</p> <p>SDG 2.1.2 Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (*FIES)</p> <p>SDG 2.2.1 Prevalence of stunting (height for age &lt;-2 standard deviation from the median of the World Health Organization (WHO) Child Growth Standards) among children under 5 years of age</p> <p>SDG 2.2.2 Prevalence of malnutrition (weight for height &gt;+2 or &lt;-2 standard deviation from the median of the WHO Child Growth Standards) among children under 5 years of age, by type (wasting and overweight)</p> | <p><i>Use all available research or data sets. Health and food security NGO's will have some data, eg urban/area based and income related analysis of livelihood (*LSMS) and food security surveys (SDG monitoring of *FIES). These may provide different proxy indicators such as household diversity scores; food access scores. Months of Adequate Household Provisioning measures are quite useful for getting a sense of "hungry seasons", which can inform programming to respond to food insecurity.</i></p> <p>[Existing] *Healthy eating Index (for the USA):</p> <p>[Existing] National and local statistics on household food security, health and nutrition status</p> <p>[Existing] Household consumption and nutrition reports – local government, public health, NGO's, health and aid agencies</p> <p>[Existing] National and local hospital and clinic records</p> <p>[Existing] Available WHO and FAO food security and health data for different countries.</p> <p>[Existing] Government/institutional</p> |  |

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|  |  |  |  | <p>other diet-related disease (total number and percentage of the population, per income group)</p> <p>22. [Decrease in] Number of stunted or wasted children</p> <p>23. [Decrease in] Number of children being (chronically) malnourished</p> <p>24. [Decrease in] Number of overweight or obese adults, *youth and children</p> <p>25. [Increase in] Proportion of mothers breastfeeding</p> <p>26. [Increase in] Number of people involved in physical and social community food activities (e.g. cooking classes, gardening groups)</p> | <p>SDG 3.4.1 Mortality rate attributed to cardiovascular disease, cancer, diabetes or chronic respiratory disease</p>   | <p>surveys with public health departments/institutes and education</p> <p>[New] Household surveys</p> |
|  |  | <p><i>Nutrition standards and legislation:</i> Extent to which good quality nutritious food is provided by the processing, retail and catering sectors (including public food procurement)</p> | <p>27. [Increase in] Annual number of accreditations for meeting specific nutritional standards (for processors, retail and caterers)</p> <p>28. [Decrease in] Annual sales of sugary drinks in relation to specific target groups (e.g. in hospitals &amp; schools)</p> <p>29. [Increase in] Annual number and type of nutritious food promotion initiatives (e.g. aimed at companies or the public)</p> <p>30. [Increase in] Presence of policies or regulations</p> | <p>SDG 12.7.1 Number of countries implementing sustainable public procurement policies and action plans</p>   | <p>[Existing] National and local data from government or accreditation bodies that deal with nutritional standards (if available)</p> <p>[Existing] National statistics on sugary drink consumption by vulnerable groups</p> <p>[New] Surveys with specific target groups</p> <p>[Existing] Data from national advertising regulators or food standards agencies or public health agencies or campaigning organisations/NGO's</p> <p>[Existing] Statistics from national school food programmes, national or local government; food aid NGO's and agencies; Education authorities</p> <p>[Existing] Food safety team data; food research centres; food business</p> |   |

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|  |  |   |   | <p>promoting healthier food ingredients/consumption</p> <p>31. [Change in] Annual number and percentage of children benefiting from school feeding programmes</p> <p>32. [Increase in] Number of clearly labelled types of processed food products (ingredients, provenance, organic etc.)</p> <p>33. [Increase in] Number of policies and programmes that correspond to the *National Food-Based Dietary Guidelines or other National Food Security and Nutrition Plans</p> <p>34. [Increase in] Number of sustainable and local food public procurement policies and action plans that are being implemented</p> |  | <p>marketing support agencies or programmes; organic certification bodies</p> <p>[Existing] Range of *national food-based dietary guidelines</p> <p>[Existing] National and local government procurement policy data – NGO’s, national food procurement programmes or agriculture departments;</p> <p>[Existing] National and local government statistics on public food procurement contracts</p> <p>[New] Interviews with local government, local health and education authorities</p> |
|  |  | <p><i>Education and awareness: Extent to which residents of the city region are equipped with knowledge and skills on safe, diversified and nutritious food and healthy diets</i></p> | <p>35. [Increase in] Number of practical food education opportunities provided at the community level (cooking classes, nutrition education, food growing)</p> <p>36. [Increase in] Number of city residents involved in community –based food activities (education, campaigns, food growing, processing or marketing, communication etc.)</p> |  | <p><i>Data will need to be collected from any overarching agency concerned with food system training and employment, or with research and development in the food and farming sector; or individual educational institutions. As well as the type and number of courses on offer, it will be important to consider what topics area being taught in relation to health, nutrition sustainability, climate change, food security, etc.</i></p> <p>[Existing] Info from Social support programmes; local government public</p> |  |

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|  |  |  |  | <p>37. [Increase in] Number of food education programmes with a comprehensive food systems perspective that includes health and sustainability in i) higher education; ii) vocational training</p> <p>38. [Increase in] Number of people gaining the above i) higher education; ii) vocational training</p> <p>39. [Increase in] Number of food education services that involve other food system actors (farmers, cooks, food vendors, policy makers) as educators</p> <p>40. [Increase in] Number of schools teaching healthy eating, nutrition and cookery</p> <p>41. [Increase in] Number of farm to school education programmes</p> <p>42. [Increase in] Number of school students participating in farm to school education programmes</p> <p>43. [Change in] Consumer knowledge on healthy diets for different age and income groups</p> <p>44. [Increase in] Number and type (youth, women, adults, migrants, income groups) of people growing (part of) their own food in some way and in</p> | <p>health and planning departments, health related NGO's, consumer groups</p> <p>[Existing] Reports from city food networks or community food organisations or NGO's</p> <p>[New] Survey of food education, higher education and vocational training providers; review of tutors and courses of offer</p> <p>[Existing] Review of school education services, reports &amp; programmes that include healthy eating, nutrition and cookery; farm to school programmes etc</p> <p>[New] School food education surveys</p> <p>[Existing] Information local government agricultural department, urban and peri-urban agriculture groups and networks, supporting agencies and NGO's</p> <p>[New] Neighbourhood or household surveys</p> |
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|  |  |  |  | <p>different locations in the city region</p> <p>45. [Increase in] Number of households preparing meals using fresh seasonal ingredients</p> <p>46. [Increase in] Number of urban agriculture/community gardens within the city region; in low-income areas</p> <p>47. [Increase in] Number of city residents involved with urban food growing</p> <p>48. [Increase in] Numbers of *young people educated in quality food, nutrition and environmental protection through local food programmes</p> <p>49. [Change in] Consumer awareness on healthy diets/ safe food/ environmental impacts of their food consumption among different groups</p> |   |  |
|  |  |  | <p><i>Food safety: Extent to which food processing, retail and catering sectors comply with sanitation and food safety regulations</i></p> | <p>50. Presence of food safety legislation and implementation procedures</p> <p>51. [Increase in] Number of annual food safety inspections carried out by enforcement officials</p> <p>52. [Increase in] Number of food businesses complying with food safety regulations</p>   | <p>SDG 6.1.1 Percentage of population using safely managed drinking water services</p> <p>SDG 16.5.1 Proportion of persons who had at least one contact with a public official and who paid a bribe to a public official, or were asked for a bribe</p> | <p>[Existing] Information on national and local government food safety legislation, monitoring and enforcement</p> <p>[Existing] Local government food safety inspection records – environmental or public health department; food safety agencies or advisors; health authorities</p> <p>[New] Survey with businesses</p> |

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|  |  |   |   | <p>53. [Change in] Number of food businesses penalised for non-compliance with food safety regulations</p> <p>54. [Increase in] Number of food testing samples complying with health and safety regulations</p> <p>55. [Reduction in] Number of food safety incidents and/or prosecutions reported by health authorities</p>   | <p>by those public officials, during the previous 12 months</p> <p>SDG 16.5.2 (below)</p>   |  |
|  | <b>Improve social conditions for workers</b> | All workers in the food system have healthy and safe working conditions | <i>Workforce conditions:</i> Extent to which all city region food system businesses provide good quality health and safety working conditions and risk assessment/reduction for their workforce | <p>56. [Decrease in] Number of children under age (child labour) employed in the city region food system</p> <p>57. [Presence of] Food labour policy and social protection regulations (in government and individual food business)</p> <p>58. [Change/Increase in] Number of workplace health and safety inspections per year (for public and private food business)</p> <p>59. [Decrease in] Number of prosecutions or requirements to improve workplace conditions/procedures in different types of food business</p> <p>60. [Decrease in] Number of food system workplace i) non-fatal; ii) fatal injuries (# and annual % change)</p> | <p>SDG 16.5.2 Proportion of businesses that had at least one contact with a public official and that paid a bribe to a public official, or were asked for a bribe by those public officials during the previous 12 months</p> <p>SDG 16.5.1 (above)</p> | <p><i>Get copies of health and safety guidelines. Try to gain insight into how the different food system workforce conditions compare with each other and whether conditions are improving or not. For example, researchers in South Africa found situations where market traders are expected to have health compliance certification and training. The formal retailers apparently are not. It is assumed that they are already compliant. Interviews with relevant people may be the best way to see records of inspections, prosecutions or requirements for improvements.</i></p> <p>[Existing] *International Labour Organisation (ILO) data – various relevant databases (including child labour, forced labour, health and safety at work etc)</p> <p>[Existing] Data on occupational injury frequency rates from health or labour departments; injuries and fatalities</p> <p>[New] Interviews with businesses or</p> |

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|   |  |   |   | <p>61. [Decrease in] Time lost and temporary incapacity due to injury in food system business employees</p> <p>62. [Change in] Food worker's injury compensation rates by food industry/category (and annual % change)</p> |   | <p>workers unions</p> <p>[Existing or new] Interviews with workplace safety/health inspection team/private contractors</p> |
| <b>Build local food culture &amp; heritage</b>    | The city region is known for its food culture, food heritage and sense of identity | <i>Food culture &amp; identity:</i> Extent to which food businesses located in the city region are connected to food produced/processed in the city region and make the provenance of food visible to customers | <p>63. [Increase in] Number of brands and labels developed for food from the city region (e.g. "local food")</p> <p>64. [Increase in] Number of food businesses actively sourcing ingredients produced/processed in the city region</p> <p>65. [Increase in] Number of policies, programmes or instruments to promote food from the city region (production, consumption)</p> <p>66. [Increase in] Number/% of farms in the city region selling direct to consumers (e.g. CSA, box schemes)</p> <p>67. [Increase in] Number/% of farms in the city region trading direct at markets</p> <p>68. [Increase in] Number/% of farms in the city region selling direct to retailers or caterers</p> |  | <p>[Existing] Regional/local food support and marketing programmes, product development support services, specialist farm business support agencies, NGO's</p> <p>[Existing] Regional/local food supply or short supply chain reports, feasibility studies, market research</p> <p>[Existing] Lists or databases of regional/local producers involved in local markets - from market organisers in local government or private sector; farmers unions or cooperatives</p> <p>[Existing] Information on policy and strategy from local government and key food supply support programmes</p> <p>[Existing] Alternative food supply networks or coordinating agencies, NGO's, organic certification bodies</p> <p>[New] Surveys and interviews with key stakeholder agencies, organisations and businesses, consumer groups</p> |  |
| <b>Ensure acceptability of food provision for</b> | The city is known for a readily available diversity of food provision to meet the  | <i>Food choices:</i> Extent to which food provision meets the needs of a diversity of customers   | 69. [Change in] Number of halal meat sales outlets  |  | <p>[Existing] Meat sales outlet data from environmental health or food safety inspectors</p> <p>[Existing] Vegetarian and vegan</p>   |  |

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|                         | all city residents   | wide range of preferred dietary habits of its citizens                                  |   | <p>70. [Change in] Number of vegetarian (or vegan) eating out places</p> <p>71. [Change in] Number of food wholesalers and retailers offering specific cultural foods</p> <p>72. [Increase in] Types of meal options available to i) school children; ii) hospital patients; iii) adults and children in care; iv) prisoners</p> <p>73. [Increase in] Number of catering companies offering various culturally appropriate meal options</p>  |  | <p>consumer groups; local government public register of eating out places; specific food diversity and food culture reports</p> <p>[Existing] Local retail centre reports from economic development agencies or local government department</p> <p>[Existing] Public health data on public sector food provision – quality and standards; food preparation premises inspections</p> <p>[New] Surveys and interviews with different cultural groups; food businesses including catering companies</p>   |
| Economic sustainability | Increase local economic growth and generate a diversity of decent jobs and income. | A vibrant diverse and sustainable regional food economy retains the 'local food dollar' | <i>Local financial resilience:</i> Extent that money flows circulate within in the city region food system versus 'leakage' to shareholders outside the city region | <p>74. [Change in] Number of city-region based supply/value chains</p> <p>75. [Change in] Proportion of household income spent in the local food economy (for different income groups)</p> <p>76. [Increase in] Total value of annual sales of food produced in the city-region to customers based in the city region</p> <p>77. [Change in] Total consumer expenditure on "local food"</p> <p>78. [Increase in] Number of jobs resulting from growth in local food economy</p> <p>79. [Increase in] Procurement of local/total food from local sources by public institutions</p> |  | <p><i>The role of public sector procurement is significant in driving the local food economy and connections between the city and its regional food producers. Typically school food budgets represent a significant proportion of the local government's spending power. They may use formal food supply contracts, or the catering staff may simply buy ingredients themselves.</i></p> <p>[Existing] Regional food supply chain data from agricultural/food and farming support agencies</p> <p>[Existing] Market research studies on food expenditure for different income groups</p> <p>[New] Household or consumer group surveys on food-related expenditure including local food purchasing habits</p> <p>[Existing] Regional supply and market</p> |

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|  |  |  |   | (municipal agencies, publicly funded community organisations, schools, hospitals, health clinics, prisons, universities) |   | reports, by different food products; food flow studies by academics<br>[Existing] Data collected by local economy researchers, agencies, NGO's (eg 'local currency' or 'local spend' programmes and impact reports)<br>[Existing] Local food procurement reports, support programmes, NGO's, local government data<br>[New] Local procurement survey and interviews with local government and institutions that provide meals to staff, students, patients, clients, prisoners etc. |
|  |  | <i>Business diversity: The range of types, scales and locations of food businesses</i> | <p>80. [Increase in] Number of businesses in the city region food system (per type of food business or per 100,000 population)</p> <p>81. [Increase in] Number of types of businesses in the city region food system</p> <p>82. [Change in] geographic spread of different types and numbers of food business throughout the city region</p> <p>83. [Change in] Number of categories of scale of different types of businesses in the city region food system</p> <p>84. [Increase in] Number of business planning, finance, development advice, support service available to food enterprises (including small scale businesses and the informal sector)</p> |  | <p><i>For any food system assessment, an overview of the businesses that create the system is needed. It is essential to include the informal sector as in many cities the informal sector provides crucial services. Once the above work is done, it should be easier to find data on employment figures, or to cross-reference. For city region data, it may be necessary to bring together different sources due to jurisdictional boundaries and separate data. Often local government will have business register lists, possibly held by the food hygiene and environmental health team, or economic development team. Data on the informal sector may be available from NGO's or workers unions. However the data may not exist at all. In many cities and city regions, numbers of businesses will be extremely hard to quantify.</i></p> <p>[Existing] Local government registers of</p> |   |

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|  |  |   |  | 85. [Increase in] Number of viable independent local food businesses and farms (farm profitability)   |  | food businesses; food safety inspector databases<br>[Existing] Regional or local economic reports, analysis, data from local government economy department or relevant agencies; academic studies<br>[Existing] Information from food business support agencies or local government programmes; farmers unions or cooperatives     |
|  |  | <i>Income stream diversity:</i><br>The extent to which opportunities are realised for diversifying income streams |  | 86. [Increase in] total city region food system income (from production to marketing)<br>87. [Increase in] Number of main (> 10% of total gross income) income sources for different individual food businesses, by type of business<br>88. [Increase in] Number of food businesses increasing the diversity of income streams (eg agri-tourism; product value addition; education; training etc)<br>89. [Increase in] Proportion of jobs in sustainable agri-food tourism sector out of total city region tourism jobs | SDG 8.9.2 Proportion of jobs in sustainable tourism industries out of total tourism jobs   | [Existing] National and local agriculture-related and food industry economic statistics from Government departments and food-related agencies<br>[Existing] Food business support and diversification programmes including food tourism development<br>[New] Interviews and surveys with farmer organisations and support agencies |
|  | Fair and decent (formal and informal) jobs and income opportunities exist for small-scale producers, workers and businesses throughout | <i>Jobs:</i> Extent to which a diversity of decent jobs are generated throughout the city region food system      |  | 90. [Increase in] Number of types of jobs in the city region food system by sectors; formal/informal; by business category etc.)<br>91. [Increase in] Number of existing jobs in the city region  | SDG 2.3.2 Average income of small-scale food producers, by sex and indigenous status<br><br>SDG 8.3.1 Proportion of informal employment in | <i>In general, wages in the food-related sectors are lower than in other industries. Important to get some comparisons of different food system workplaces as well as comparisons with other industries and with a national *'living wage' benchmark. Are incomes within the</i>   |

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|  |  | the food system |  | <p>food system (this could be separated by sectors; formal/informal; by business category etc.)</p> <p>92. [Increase in] Percentage of city region food system jobs as compared to all jobs in the urban system/ per 100,000 population</p> <p>93. [Change in] Number of women employed in the food system (for the different categories of food business)</p> <p>94. [Decrease in] Number of food system workers with low pay rate (*ELPR)</p> <p>95. Presence of a *'Living Wage' promoted by the national/local government</p> <p>96. [Increase in] Proportion of i) male and ii) female food system workers earning the living wage</p> <p>97. [Increase in] Average income of food system workers, including small scale producers</p> <p>98. [Increase in] Number of food businesses adopting the 'living wage'</p> <p>99. [Increase in] Number of public and private sector organisations adopting fair and equitable food procurement policies (including Fairtrade) and</p> | <p>[the food and farming sectors], by sex</p> <p>SDG 5.c.1 Percentage of countries with systems to track and make public allocations for gender equality and women's empowerment</p> | <p><i>informal urban food system sector (or within a specific category of food business) sufficient to cover living costs and provide adequate livelihoods?</i></p> <p>[Existing] *ILO data and suggested 'decent work' indicators including *'Employees with low pay rate (ELPR)</p> <p>[Existing] National regional and local government economic data relating to jobs and working conditions</p> <p>[Existing] Reports from NGO's and other social protection NGO's concerned with decent work conditions, living wage rates and work related gender/equalities issues</p> <p>[New] Interviews with relevant organisations or a sampled survey with food businesses with examples from different types of food businesses</p> |
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|  |  |  |   | <p>paying a fair price/wage to workers in the food chain.</p> <p>100. [Change in] Number of young people employed (under 18 yrs)</p> <p>101. [Change in] Number of temporary/seasonal jobs</p> <p>102. [Change in] Number of low-paid jobs in the food system (relative to relevant national benchmark/below living wage equivalent)</p> <p>103. [Decrease in] Differences between average wages of women compared to men (in each food business categories)</p>  |  |   |
|  |  |  | <p><i>Skills, expertise and knowledge: Extent to which the food system workforce is enabled to develop skills and expertise</i></p> | <p>104. [Increase in] Number of food system workforce training opportunities in food safety</p> <p>105. [Increase in] Number of development support programmes for food businesses with a focus on improving i) performance (efficiency, profitability, marketing) and ii) sustainability, (reduced GHG emissions etc)</p> <p>106. [Increase in] Number of businesses offering staff job skills training opportunities - by business category</p> <p>107. [Increase in] Number of employees who have received job skill training in</p> | <p>SDG 4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill</p> <p>SDG 2.a.1 The agriculture orientation index for government expenditures</p> <p>SDG 2.a.2 Total official flows (official development assistance plus other official flows) to the agriculture sector</p> | <p>[Existing] Data and information from food business related training providers, chamber of commerce, economic development department of local government</p> <p>[New] Interviews with relevant organisations including farmers cooperatives or farmers unions</p> <p>[New] Sampled survey with different types of food businesses including farmers</p> |

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|                         |  |   |  | <p>the past year – per individual business/business category</p> <p>108. [Increase in] Number of opportunities for i) food producers and ii) food businesses to gain ICT skills</p> <p>109. [Increase in] Proportion of (youth) producers who have adopted ICT in farming practices</p>   |  |   |
| Urban-rural integration | Strengthen the city region food production and supply system | City region food production capacity is optimised | Production: Extent to which land in the city region is being managed and used to produce as diverse a range of food products as possible | <p>110. [Change in] Number of farms in the city region i) per commodity or by type of farm eg arable, livestock, fruit, vegetables, mixed, poultry etc, and ii) farm size operation</p> <p>111. [Increase in] Total surface area and production volumes of agriculture/community gardens within the city region; in low income areas</p> <p>112. [Increase in] Percentage of total surface areas (current and potentially available currently unfarmed) available for food production within the city region</p> <p>113. [Increase in] Total volume and market value of food production within the city region</p> <p>114. [Change in] Total volumes of annual local food sales in the city region for different market types (e.g. farmers</p> | SDG 2.3.1 Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size | <p><i>Data at this level is likely to be difficult to get, so the focus of effort needs to be on finding any relevant available data. Some estimation may be needed in an analysis of results. Even if the final picture is incomplete, it will indicate data gaps and help to clarify what new data will be needed in the future.</i></p> <p>[Existing] National food and agricultural data from *FAOSTAT and further calculations eg *Food Balance Sheet</p> <p>[Existing] Farm census data on food production from national, regional or local government and agricultural support agencies/programmes</p> <p>[New] interviews with agricultural production capacity specialists.</p> <p>[Existing] Specific urban &amp; peri-urban agriculture (UPA) data from specialist organisations and UPA networks</p> <p>[New] Interviews with community garden support networks</p> <p>[Existing] *GAEZ database on global agroecological zones</p> <p>[Existing] Land maps &amp; farm land data from local government planning</p> |

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|  |  |   |  | <p>markets, public sector food procurement, direct to consumers)</p> <p>115. [Change in] Types of food products and volumes imported (from outside the city region) compared with similar types of product volumes produced in the city region</p> <p>116. [Decrease in] City region food production deficit compared to total consumption requirements (for different products)</p> |   | <p>departments, universities, geological survey agencies</p> <p>[Existing] Farm census data on agricultural production, annual yields and values from local government, agricultural support agencies, key processing companies, farmers unions</p> <p>[New] Surveys and interviews with market organisers, procurement officers, companies that sell direct to consumers</p> <p>[Existing] National data on food imports in relation to domestic production</p> <p>[New] Interviews with wholesale markets to get figures for import vs regional/national produce</p> <p>[New] Calculations on city region supply capacity in relation to city consumption requirements</p> |
|  | <p>Efficient and diverse agricultural supply and value chains connect the city with food producers in the city region providing access to a wide range of market opportunities</p> | <p><i>Short (local) supply chains: Extent to which city region supply and value chains are in place enabling city region producers to access a diversity of local markets</i></p> | <p>117. [Increase in] Types and numbers of local supply/value chains ie entire chain is located within the city region</p> <p>118. [Increase in] Types of market opportunities available to city region food producers (e.g. farmers markets, public sector food procurement, direct to consumers)</p> <p>119. [Increase in] Types and numbers of outlets where regional products are sold in the city</p> <p>120. [Increase in] Types and total annual economic value of different city region marketing channels</p> | <p>SDG 9.1.1 Proportion of the rural population who live within 2 km of an all-season road</p>   | <p>[Existing] Reports on regional or local supply chains</p> <p>[New] Interviews with agricultural department support agencies, wholesale markets and key processors to get figures for local supply/value chains and local market channels, infrastructure assessment</p> <p>[New] Surveys with agricultural support agencies and local farming organisations on market channels, local supply chains, infrastructure and support needs</p> <p>[Existing] Retail outlet studies by universities, local government economic development or public health; NGO's</p> <p>[Existing] Local product promotion and marketing programmes; city tourism agencies</p> |  |

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|  |  |   |   | <p>121. [Increase in] Infrastructure to support city region/local food supply chains (e.g. wholesale markets, warehouse storage, new market outlets)</p> <p>122. [Increase in] Support services to assist the development of city region/local food supply chains (eg produce development, transportation and logistics, marketing support, certification protocols)</p> <p>123. [Increase in] Local supply chain development support specifically focussed at smaller scale city region food enterprises</p> <p>124. [Increase in] Number of food procurement contracts which purchase products from the city region</p> |  | <p>[New] Interviews with enterprise support agencies and local food NGO's</p> <p>[New] Interviews with procurement contract managers in public and private sector institutions</p>  |
|  |  | <p>Flows of food, nutrients, energy and other resources and services connect across urban and rural areas</p> | <p><i>Mutual benefits: Extent to which there are tangible and mutually beneficial connections between the rural and urban areas</i></p> | <p>125. [Increase in] Annual volume of food produced in the city region and consumed in the city</p> <p>126. [Increase in] Annual volume of waste-water originating from the city region (safely used in city region agricultural production<sup>3</sup>)</p>   | <p>SDG 6.1.1 Percentage of population using safely managed drinking water services</p> | <p>[Existing] Data as above on food production and supply into the city.</p> <p>[Existing] Water supply data from local government or water supply agencies, from agricultural departments, geological survey agencies, water management companies, NGO's</p> <p>[Existing] Energy supply data from local government or energy supply agencies, agricultural departments, NGO's</p> |

<sup>3</sup> Indicator 126 is specifically about increased waste-water use with view to reducing use of potable water in agriculture. In addition, researchers could look into total water footprint of city regional agriculture if they have any data.

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|                              |   |   |   | <p>127. [Change in] Annual amounts of (waste) energy generated in the city region and used in city region food production and processing</p> <p>128. [Increase in] Annual volumes of city-generated organic waste recycled in the city region food system</p> <p>129. [Increase in] Number of ways in which city-generated waste is recycled in the city region food system (water, energy, food, organic waste, soil nutrients)</p> <p>130. [Increase in] Number of jobs created in the city region resulting from growth in the local food system (e.g. seasonal agricultural labour; processing and distribution of city region products; number of jobs created in the circular economy)</p> |   | <p>[Existing] Waste management data from local government or waste management companies supply agencies,</p> <p>[New] Interviews with agricultural departments, farmer organisations, NGO's about farm/organic waste and recycling</p> <p>[New] Interviews with samples of relevant businesses about waste, water and energy use and management</p> <p>[Existing] Data on jobs from local government economic and agricultural departments; chamber of commerce; farmers organisations; economic development programmes</p> |
| Environmental sustainability | <p><b>Improve protection and management of ecosystems and environmental resources</b></p> | <p>Agro-ecological diversity is protected and promoted.</p> | <p><i>Agricultural practices:</i> The extent to which food production practices in the city region enhance and increase biodiversity, soil and ecosystem health</p> | <p>131. [Change in] Total i) area of agricultural land and ii) number of farms in the city region (rural and urban) for different identifiable production systems (eg organic, agro-ecological, conventional, intensive livestock, GM etc )</p> <p>132. [Increase in] Total number of farms in city region practicing</p>  | <p>SDG 2.4.1 Proportion of agricultural area under productive and sustainable agriculture</p> <p>SDG 2.5.1 Number of plant and animal genetic resources for food and agriculture secured in either medium or long-term conservation</p> | <p>[Existing] Data on different types of farming and land areas from certification/labelling third party organisations eg FairTrade/ Ecological movement/organic certification agencies/agro-forestry promotion/sustainable forestry/permaculture/low-input farming</p> <p>[Existing] Land use Information held by agricultural department, agricultural</p>  |

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|  |  |  |  | <p>agro-forestry (eg using crop rotation and on-farm composting/green manures/mulching to maintain soil and plant health and conserve water etc)</p> <p>133. [Increase in] Number of farms reducing livestock density numbers and reporting improved animal health</p> <p>134. [Increase in] Presence of regulations supporting biodiversity, soil and ecosystem health and/or regulating use of chemical inputs/sustainable farming practices</p> <p>135. [Decrease in] Number of health-related incidents/problems due to (excessive) use of pesticides, herbicides, fungicides</p> <p>136. [Change in] Number of types of crop varieties and livestock breeds.</p> <p>137. [Increase in] Number of systems for transparency and traceability providing information the consumer about the way food is grown, processed and sold; (e.g. environmental labelling schemes for food products).</p> | <p>facilities</p> <p>SDG 2.5.2 Proportion of local breeds classified as being at risk, not-at-risk or at unknown level of risk of extinction</p> <p>SDG 14.4.1 Proportion of fish stocks within biologically sustainable levels</p> <p>SDG 2.4.1 Percentage of agricultural area under sustainable agricultural practices</p> <p>SDG 2.4.2 Percentage of agricultural households using irrigation systems compared to all agricultural households</p> <p>SDG 2.4.3 Percentage of agricultural households using eco-friendly fertilizers compared to all agricultural households using fertilizers</p> | <p>support organisations and urban farm networks</p> <p>[Existing] General agricultural databases; programmes; earlier research from universities or colleges</p> <p>[Existing] Information on biodiversity and genetic resources conservation from organisations (international national and local) protecting rare breeds, indigenous species and seed promotion/seed banks</p> <p>[Existing] Data from regulation enforcement departments on agriculture-related pollution, contamination, health incidents</p> <p>[New] Interviews with the above types of organisations; with agricultural regulation enforcement officers in national or local government</p> <p>[New] Interviews with key environmental labelling schemes for food products or businesses with their own similar labels</p> <p>[New] Interviews with farmer organisations and networks; with vets</p> |
|  |  | Urban and natural ecosystems are well managed. | <i>Ecosystem management:</i> Extent to which natural resources in both rural | 138. [Increase in] Number of agricultural conservation  | SDG 11.4.1 Total expenditure (public and private) per capita spent  | <p>Data sources are similar to those listed above</p> <p>[Existing] International national and local</p>   |

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Table with 4 columns: empty, empty, 'and urban areas are valued, conserved and protected', and a list of indicators (139-144) with descriptions of land protection, ecosystem conservation, farm initiatives, and pollution reduction.

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|  |  | <p>Greenhouse gas (GHG) emissions in the food system are reduced.</p> | <p><i>GHG emissions: Extent to which food system actors, including producers, businesses, etc are reducing their own greenhouse gas emissions</i></p> | <p>145. [Increase in] Number of GHG emission assessments undertaken of the various components of the food system (including different food production systems and transport to the city region)</p> <p>146. [Increase in] Number of GHG emission reduction support initiatives related to the food system (e.g. land-use change, agricultural practices, refrigeration and cold-chains, transport, energy use in processing and agro-industries, packaging, cooking/preparation, waste disposal etc)</p> <p>147. [Increase in] Number and types of food businesses receiving guidance on how to reduce their GHG emissions</p> <p>148. [Increase in] Number of food and types of businesses actively working to reduce their own GHG emissions</p> <p>149. [Increase in] in renewable energy and energy efficiency measures across the food system</p> <p>150. [Increase in] Presence of policies, action plans, incentive schemes and practical initiatives to</p> | <p>ecosystems</p> <p>(SDG 8.4.1 Material footprint, material footprint per capita, and material footprint per GDP)</p> <p>(8.4.2 Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP)</p> | <p><i>The global food system is responsible for around a third of global GHG emissions through production practices causing direct loss from soils, the manufacturing and use of fossil-fuel based farm inputs like fertilizers, livestock methane, deforestation and animal feed production, processing, storage and transportation and food waste. This area of work is therefore crucial but also very difficult to measure so the starting point is to find out what kind of activity is happening and if there is any supportive policy or strategy in relation to the city region food system.</i></p> <p>[Existing] Research assessments and reports by government, academic institutions</p> <p>[Existing] Information from NGO's and environmental support programmes concerned with GHG reduction</p> <p>[Existing] Business sector research and development/innovation programmes</p> <p>[New] Interviews with the above organisations and farming support programmes or networks</p> <p>[New] Surveys with farms, food businesses and public sector institutions</p> |
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|  |  |  |  | <p>encourage 'low emission' food systems</p> <p>151. [Increase in] Number and type of Initiatives that promote carbon sequestration eg reforestation, grassland conservation etc</p>  |   |  |
|  | <p>Food loss and waste is reduced (or re-used) throughout the food system.</p> | <p><i>Food loss and waste:</i> Extent to which the drivers of food loss and waste generation are understood, quantified and solutions are identified and implemented to actively prevent and reduce in all sections of the food system</p> | <p>152. [Decrease in] Total volume, economic value and percentage of food lost &amp; wasted along the food chain in the city region</p> <p>153. [Decrease in] Volumes of total on-farm food losses (e.g. due to lack of adequate storage, lack of labour etc.)</p> <p>154. [Decrease in] Annual volume of total urban food waste sent for disposal</p> <p>155. [Decrease in] Annual volume and proportion of total food waste produced by specific food businesses (by type of business)</p> <p>156. [Decrease in] Annual volume and proportion of total food waste produced by households in the city region</p> <p>157. [Increase in] Annual volume of total urban safe and nutritious food recovered and redistributed for direct human consumption</p> <p>158. [Increase in] Annual volume of food waste recycled in</p> | <p>SDG 11.6.1 Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities</p> <p>SDG 12.3.1 Global food loss index</p> <p>SDG 12.5.1 National recycling rate, tons of material recycled</p> | <p><i>Agenda 2030 Sustainable Development Goal (SDG) 12 "ensure sustainable consumption and production patterns" has target 12.3 "by 2030, halve the per capita global *food waste at the retail and consumer level, and reduce *food losses along production and supply chains including post-harvest losses". Measurement of food waste and food loss is a key component of any reduction intervention. The *hierarchy of food waste prevention is a useful framework to use for both collection and analysis of data.</i></p> <p>[Existing] National food and agricultural data from *FAOSTAT</p> <p>[Existing] Data relating to the new *Global Food Loss Index (GFLI) or actual index measurements</p> <p>[Existing] National policy and data on food loss and waste from NGO's, government and business sector</p> <p>[Existing] Food waste policy and data from local government waste collection contract holders</p> <p>[New] Surveys with farms, food businesses and public sector institutions</p> |  |

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|                 |   |  |   | <p>feed, compost, energy recovery, etc. – as context allows</p> <p>159. Presence of policy or strategy that appropriately addresses practical issues of i) food loss and waste prevention, ii) reduction and iii) recycling</p> <p>160. [Increase in] Number of local/regional policies and programmes that adhere to national food loss and waste programmes and guidelines</p>  |   | <p>[New] Interviews with local government officers; waste collection contract holders; researchers; relevant NGO's; local food waste action networks</p>   |
| Food governance | <p><b>Improve horizontal and vertical governance and planning</b></p> | <p>Food system policies, legislation, and strategies exist and are integrated into other policies, planning processes and programmes</p> | <p><i>Coordination and integration: Degree to which city regional food system planning and recognition of rural-urban linkages is happening and becoming embedded in wider local and national governance and planning</i></p> | <p>161. [Improvements to] Presence of local structures responsible for food and nutrition security, agricultural production, food business etc.</p> <p>162. [Increase in] Number of (new) regulations, incentives, municipal budget allocations, task forces and committees, programmes and pilots on city region food system activities and local food</p> <p>163. [Improvements to] Presence of an interdepartmental government body for decision making on food policy and programmes</p> <p>164. [Improvements to] Presence of and investments in a food policy or strategy</p> | <p>SDG 17.17.1 Amount of [United States dollars] committed to public-private and civil society partnerships</p> | <p><i>Most of this more qualitative information required here will most likely only be found through interviews with key people unless there is existing work on this area with related reports or information platforms. For example there may be reports on food insecurity or food waste, or infrastructure needs that relate to other aspects of this assessment, but which also call for coordination and integration or even have resulted in such initiatives.</i></p> <p>[Existing] Reports, information platforms held by local government (public health, economic development, environment, planning), academics, NGO's, local networks, social protection agencies and programmes</p> <p>[New] Interviews with key people from the above about policy and supporting initiatives, programmes, partnerships</p> |

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### Assessing and planning sustainable city region food systems

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|  |  |   |  | <p>165. [Increase in] Number of regional and local development framework documents and plans reflecting sustainable food system concerns and values</p> <p>166. [Increase in] Number of rural-urban linkages that feature in city region food policies, structures and plans</p> <p>167. [Increase in] Investment in rural-urban infrastructure (e.g. storage facilities, food hubs, transport facilities, wholesale markets etc.)</p> <p>168. [Improvements to] Presence of and adherence to land use and development planning policy consideration of the food system within the city region</p> <p>169. [Increase in] level of coherence of policies and plans that at national level ensure the linkages with the local food system policies</p> <p>170. [Increase in] Frequency and new forms of cross-sectoral and cross-jurisdictional collaboration in food systems policies and programmes</p> |  | <p>[New] Interviews with local government planning department about food system infrastructure and land use</p> <p>[New] Interviews with food producers about the impact of coordinated urban-rural link initiatives</p> <p>[Existing] Information from food partnerships or relevant governance structures</p> <p>[New] Interviews with municipal and provincial budget holders</p> |
|  |  | <p>Participatory governance structures are cross-jurisdictional, cross-</p> | <p><i>Participation: Extent to which participation in food governance involves a wide diversity of</i></p> | <p>171. [Increase in] Presence and type of multi-stakeholder food policy and planning structures (e.g. food policy</p>  | <p>SDG 11.3.2 Proportion of cities with a direct participation structure of civil society in urban</p> | <p><i>As above, much of this information may be collected in interviews with key people but with a focus on diversity and inclusion.</i></p>   |

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|  | sectorial and multi-stakeholder   | stakeholders  | <p>councils; food partnerships; food boards; food coalitions)</p> <p>172. [Increase in] Form and frequency of cross-jurisdictional and cross-sectoral collaboration (between various tiers and departments of local governments, towns and cities) in food plans, policies, programmes and structures</p> <p>173. [Increase in] Diversity of citizen composition in multi-stakeholder groups</p> <p>174. [Increase in] Percentage of municipal/ provincial and institutional budget allocated to (joint) food plans, structures and mechanisms</p> <p>175. [Increase in] Number of i) women and ii) young people participating in governance structures</p> | <p>planning and management that operate regularly and democratically</p> |   |
|  | Participatory governance structures enhance increased knowledge, transparency, ownership, collaboration and co-investment | Impact: Extent to which food governance structures are understood, trusted and supported, and therefore effective | <p>176. [Increase in] Presence of wider communication and public awareness campaigns about collective action on food system changes</p> <p>177. [Increase in] Levels of activity and effectiveness of multi-stakeholder participation in city region food system policy and planning</p> <p>178. [Increase in] Levels of participation and support for plans and strategies (e.g.</p>   |  | <p><i>As above, much of this information may be collected in interviews with key people but with a focus on impact and what has changed as a result of new food governance structures, increased participation and wider inclusion.</i></p> |

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|  |  |  |  | urban food strategy or action plan; city-wide initiatives)<br>179. [Increase in] Cross-sectoral policies that at national level ensure the linkages with the local food system policies   |  |
|  |  |  | <i>Monitoring:</i> Extent to which information systems are developed and used for food policy development and accountability by enhancing the availability, quality, quantity, coverage and management and exchange of data related to city region food systems, including both formal data collection and data generated by civil society and other partners. | 180. [Increase in] food system data collection, analysis and use (on production, food price monitoring, consumption etc.)<br>181. [Improvement in] Presence of goals and targets for city region food system activities and impacts<br>182. [Improvement in] Presence of a monitoring and evaluation mechanism for food policies/food security and nutrition policies<br>183. [Improve in] Information available about financial and human resources dedicated to food programmes | <i>As above, much of this information may be collected in interviews with key people, or it may become apparent as part of the data collection process. The important point is i) whether and to what extent monitoring actually takes place, and ii) leads to further action.</i>   |
|  |  | Food policies enhance social inclusion and reduce inequalities | <i>Social inclusion &amp; reduced inequalities:</i> Extent to which food policy addresses and improves i) social inclusion (gender, income, educational and cultural background, age, etc); and ii) reduces inequalities experienced by more vulnerable groups   | 184. [Increase in] Presence of food policies, targets and programmes with a specific focus on socially vulnerable groups (including women)<br>185. [Increase in] Access of different vulnerable groups (and specifically women/ low income groups) to food system resources and support   | <i>As above, much of this information will need to be collected in interviews with key people – in this case organisations specifically concerned with policy impacts on increasing social inclusion and reducing inequalities. Within the local government this will include the social protection programmes, women’s support initiatives, food security and economic development.</i> |

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|  |  |   |  | <p>186. [Increase in] Availability and accessibility to emergency food supply for those in crisis</p> <p>187. [Increase in] Funded initiatives that help to reduce the inequalities experienced by vulnerable groups (eg investment in fresh food retail; improvements to housing and kitchens; household fuel bill support; school feeding programmes etc)</p> <p>188. [Increase in] Presence of disaggregated data collection and analysis for different social and income groups in the city region</p> |  |   |
|  |  | <p>Food policies enhance environmental sustainability</p> | <p><i>Environmental sustainability: Extent to which food policy addresses and improves protection and enhancement of natural resources</i></p> | <p>189. [Increase in] Presence of food policies, targets and programmes with a specific focus on environmental sustainability eg sustainable public sector procurement that supports reduction in use of harmful agricultural chemicals, sustainable fishing etc</p> <p>190. [Increase in] Economic value of energy production (including biogas) from organic and food waste in city region</p> <p>191. [Increase in] Number of public campaigns on reducing or recycling of packaging</p>                | <p>SDG 14.4.1 Proportion of fish stocks within biologically sustainable levels</p> <p>SDG 14.5.1 Coverage of protected areas in relation to marine areas</p> <p>SDG 14.6.1 Progress by countries in the degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing</p> | <p><i>As above, much of this information will need to be collected in interviews with key people. The focus here is to explore the extent to which any food policy relates back to environmental sustainability of the food system and is making a difference. This could be related to any part of the food system. There will very likely be some overlap with the environment section.</i></p> |

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|                              |  |   |   | <p>materials targeting food business and consumers</p> <p>192. [Increase in] Number and type of food business promoting minimal use of packaging or using recyclable or bio-degradable packaging materials</p>   |  |  |
|                              |  |   |   |  |  |  |
| Vulnerability and resilience | <p><b>Reduce vulnerability and increase resilience</b></p> | <p>There is increased capacity to deal with shocks that impact on the food system (climate change, disasters)</p> | <p><i>Capacity: Extent to which the food system is being included in future city region disaster and resilience assessments and response plans.</i></p> | <p>193. [Improvements to] Existence of vulnerability assessment of all city region food system infrastructure to climate and disaster risks (including households)</p> <p>194. [Improvements to] Existence of a food supply disaster risk reduction management plan in the city region</p> <p>195. [Increase in] Number of presence of disaster risk reduction, climate change and emergency plans that include food system concerns</p> <p>196. [Increase in] Number of specific risk reduction and climate adaptation/resilience measures for food production, storage, transport and distribution that are in place/being developed</p> <p>197. [Decrease in] Number and direct economic loss of food production and distribution</p> | <p>SDG 11.b.1 Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030</p> <p>SDG 11.b.2 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies</p> <p>SDG 11.5.2 Direct economic loss in relation to global GDP, damage to critical infrastructure and number of disruptions to basic services, attributed to disasters</p> | <p><i>As above, much of this information will need to be collected in interviews with key people and assessment of existing policies or strategies will be required.</i></p> |

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|  |  |  |   | facilities affected by climate disruptions or disasters  |  |   |
|  |  | The agricultural resource base is protected and lessens dependence on distant food supply sources. | <i>Self-sufficiency: Extent to which the city region food system resources are safeguarded and enhanced in order to maximise degree of self-sufficiency</i> | <p>198. [Change in] product volumes and diversity of food imported (from outside the city region) compared with food produced within the city region</p> <p>199. [Increase in] Self-reliance targets for the city region consumption of food (by weight for specific product/healthy food basket/total nutritional requirements or total consumption)</p> <p>200. [Improvements to] Access to land and secure ownership /tenure arrangements for food production in the city region for various types of producers</p> <p>201. [Increase in] Availability of and access to urban agriculture gardens for residents in the city region (per location or income group)</p> <p>202. [Increase in] Number of farms with closed loop input systems &amp; lower external input requirements</p> <p>203. [Increase in] Number of new climate change adaptation plans and approaches on farms (e.g. new crops, new</p> |  | <p><i>As above, much of this information will need to be collected in interviews with key people. Calculations relating to self-sufficiency will be needed using data on city region food production, imports and food security (collected for other sections of this assessment).</i></p> <p>[Existing] Documents and reports from local government planning and land management departments.</p> <p>[Existing] Reports on land access and tenure from local networks, farmers unions, NGO's</p> <p>[New] Interviews with land owners and tenants about land tenure issues</p> <p>[New] Interviews with urban agriculture networks</p> <p>[New] Interviews or surveys with farmer networks</p> <p>[New] Interviews with agricultural support organisations; relevant academics; key businesses eg animal feed manufacturers; machinery suppliers; market operators</p> |

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|  |   |  |   | <p>lower input production systems, no till, low till, precision irrigation &amp; sowing, mob grazing etc.)</p> <p>204. [Increase in] Percentage of required livestock feed (fodder, recycled waste) in city region production coming from within the city region</p> <p>205. [Increase in] Number of successful and viable food import substitution initiatives</p> <p>206. [Increase in] Number of types of food distribution channels</p> <p>207. [Increase in] Level of local food supply infrastructure e.g. number of processing and market opportunities for city region food producers; distribution hubs and storage provision</p> |   |  |
|  | Urban planning processes include food security and resilience | <p><i>Food &amp; planning: Extent to which the urban planners are aware of and actively seek to ensure food system security and resilience with regard to land use and future city region development plans.</i></p> | <p>208. [Increase in] Existence and types of policies, regulations and support for preservation of agricultural land; use of open space/ zoning etc. relevant for the city region in both rural and urban areas</p> <p>209. [Increase in] Presence and number of codes/regulations that allow/promote urban and peri-urban/city region food production</p> <p>210. [Improvements to] Existence of land use, housing and development planning policy</p> | <p>SDG 11.3.1 Ratio of land consumption rate to population growth rate</p> <p>SDG 11.a.1 Proportion of population living in cities that implement urban and regional development plans integrating population projections and resource needs, by size of city</p>  | <p><i>As above, assessment of existing policies or strategies will be required, supported by interviews with key people dealing with urban planning and city development.</i></p> |  |

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|  |  |  |  | consideration of the food system within the city region. |  |  |
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