

Routledge Studies in Food, Society and the Environment

SUSTAINABLE FOOD SYSTEM ASSESSMENT

LESSONS FROM GLOBAL PRACTICE

Edited by

Alison Blay-Palmer, Damien Conaré, Ken Meter,
Amanda Di Battista, and Carla Johnston



Sustainable Food System Assessment

Sustainable Food System Assessment provides both practical and theoretical insights about the growing interest in and response to measuring food system sustainability. Bringing together research from the Global North and South, this book shares lessons learned, explores intended and actual project outcomes, and highlights points of conceptual and methodological convergence.

Interest in assessing food system sustainability is growing, as evidenced by the Milan Urban Food Policy Pact and the importance food systems initiatives have taken in serving as a lever for attaining the UN Sustainable Development Goals. This book opens by looking at the conceptual considerations of food systems indicators, including the place-based dimensions of food systems indicators and how measurements are implicated in sense-making and visioning processes. Chapters in the second part cover operationalizing metrics, including the development of food systems indicator frameworks, degrees of indicator complexities, and practical constraints to assessment. The final part focuses on the outcomes of assessment projects, including impacts on food policy and communities involved, highlighting the importance of building connections between sustainable food systems initiatives.

The global coverage and multi-scalar perspectives, including both conceptual and practical aspects, make this a key resource for academics and practitioners across planning, geography, urban studies, food studies, and research methods. It will also be of interest to government officials and those working within NGOs.

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**To the memory of Marielle Dubbeling, RUA Foundation
co-founder, leading international expert in urban agriculture
and city region food systems, researcher, teacher and visionary.
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Part III

Impacts and outcomes of sustainable food system assessment



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8 Building the foundation to grow food policy

The development of a toolkit to measure advocacy capacity

Anne Palmer and Raychel Santo

Introduction

In order for social change to be effective and long lasting, change needs to occur at the political, social, and economic levels (Economos et al., 2001). Programmes and services directed at changing human behaviour can influence social norms, but those norms need to be reinforced by a supportive policy environment to achieve scale and sustainability (Stachowiak, 2013). Advocating for policy change helps to create a supportive policy environment for programmes to operate successfully (Huang et al., 2015). Ideally, programmes and policy mutually support one another, but in practice, this convergence is challenging (see also Chapters 2, 5, 6, & 11, this volume). Advocacy can help to overcome that challenge and is a critical tool for food policy councils (FPCs) to utilize.

Broadly defined, advocacy is any activity that aims to shape political, social, and economic outcomes in government and society (Reid, 2000, p. 6). Organizations use various methods to advocate for issues such as mobilizing and training community members, conducting public education, using mass and social media to change social norms, pressuring companies and corporations to enact socially responsible policies, registering voters, and conducting research. Lobbying is a form of advocacy that is directed at influencing policymakers or the public to support or oppose a specific piece of legislation (Harmon et al., 2011). Many FPCs are reluctant to lobby because of its inherent political nature, however, lobbying is an important tool for any group advocating for social change (Chen et al., 2019).

This chapter is specifically focused on how FPCs can build their capacity to advocate effectively for their issues (see also Chapters 2, 4, 5, 9, 10, & 11, this volume, for more on capacity building). They have opportunities to shape public policy, particularly at the local and state levels where relationships with policymakers may have a more immediate influence. FPCs are groups that engage diverse stakeholders to address food systems-related issues and needs within a specified jurisdiction, primarily through policy. Our definition of policy is broad and includes laws and ordinances;

how policies get administered, funded or implemented at local, state, tribal/First Nations, or federal levels of government; as well as changes in institutional (e.g., schools, hospitals, government agencies) practices. Policy work could include working directly to change these various policies, as well as educating or coordinating others who might be advocating for such policies. Other groups that have chosen a different name, such as food council, network, alliance, coalition, committee, collaborative, or partnership, may also fit this definition and benefit from the toolkit. We choose to refer to them as FPCs because that is the most commonly used term¹ to describe such a group in North America.

FPCs organize at the local (city or county), regional, state/provincial, or Native American/First Nations levels² to discuss, shape, and assess food system policies and programmes in their communities. While many exist as grass-roots coalitions independent of government, they may also be sanctioned by a local or state government body. Heterogeneous in structure, membership, and issue priorities, they share a collective desire to reform food system programmes and policies through strategic partnerships. While many FPCs aspire to influence policymakers, they may lack knowledge about how government works, whom to approach, and how to frame their issues, all of which hampers them from achieving their advocacy and policy goals. Others strategically decide to avoid policy work because of political realities in their communities.

Recognizing these common challenges, we created a comprehensive online self-assessment toolkit that helps stakeholder groups like FPCs reflect upon their capacities to influence local and state level³ food policy in order to identify how and where they can build upon them. The toolkit elicits responses to a number of indicators that reflect the specific activities or capacities that each FPC may have. It also provides a sequence of activities to help FPCs better understand the advocacy and policy process, evaluate their current advocacy capacity, or use the results to guide discussions about how to get started. While the toolkit was designed to assist FPCs embedded within the North American policy context, FPCs and similar entities in other industrialized countries (CLF, 2018b) may also benefit from employing it with their groups. With the exception of indicators on specific policy actions that groups may take – which local, regional or state governments in other countries may have different authorities over – the indicators on organizational leadership, decision-making, strategy, and communication are all integral to efficacious organizational operations even beyond advocacy.

This chapter discusses the development of the toolkit; its goals, objectives, and contents; and an example of how it has been used. In the following section, we describe how the toolkit was grounded in Kingdon's (1995) policy windows theory, an approach that encourages advocates to both create and take advantage of opportunities to promote their policy issues when certain conditions are met. In the subsequent sections, we describe the goals, development, and content of the toolkit, with specific attention

to equity and systems-thinking metrics. We then reflect on the experience of one FPC that used the toolkit to assess their readiness to advocate. We conclude by discussing how the process of creating this toolkit could inform other efforts aiming to measure the impact of local food initiatives on local food policies.

Theoretical foundation

Several theories of change exist that explore how policy change happens and the effectiveness of specific advocacy tactics, from the ‘Large Leaps’ (Baumgartner & Jones, 1993) and ‘Power Elites’ (Domhoff, 1990; Mills, 2000) theories at the global level to tactical theories around ‘Messaging and Frameworks’ (Tversky & Kahneman, 1981) or ‘Diffusion of Innovations’ (Rogers, 2003). Stachowiak (2013) presents a summary and comparison of ten different theories of change. By assuming a proposed policy strategy, one is selecting a theoretical approach that will undergird the design and implementation of advocacy efforts. We selected John Kingdon’s (1993, 1995) policy windows theory to inform the development of the toolkit because it accounts for the opportunistic nature of policy change, while not discounting the need for a strategy.

This theory suggests that certain conditions foster a ‘policy window’ to attract policymakers’ attention: (1) The issue needs to be identified by policymakers as a serious issue that warrants intervention; (2) Ideas need to be generated about potential solutions to the problem that are feasible, supported by the public, affordable, and reflect commonly held values among policymakers’ constituencies; and (3) Political factors such as who is in office, the current political climate, and the influence of the opposition are also considered. According to this theory, at least two of these conditions need to be in place in order to create a ‘policy window’ – that is, an appropriate and effective time to introduce a new policy.

First, a condition needs to be elevated to a level of concern to be considered actionable. Conditions may garner public attention because of publicized research findings, advocacy campaigns by alliances, or natural or human-caused disasters. Some conditions transition to problems when the public perceives the issue as contrary to public values and subsequent attention shifts towards solving the problem. Next, policymakers propose how they would approach policy discussions to address the problem. When the problem moves into the proposal phase, policymakers inquire about the feasibility and associated costs of the potential solution as well as the public’s perceptions of potential solutions. Policy proposals may be influenced by research, but researchers are not the only experts whose advice needs to be heeded. Finally, politics of the problem will be factored into whether or not a policy gets support. When the problem, proposal, and politics align, there is the strongest chance for policy change. According to Kingdon (1993), being positioned to respond to a policy window is more important for advancing

policy change than gathering substantial empirical evidence that may or may not influence policymakers.

Many FPCs follow a policy windows approach to their work, although they likely do not identify it as such. The genesis of FPCs' work clusters around food system themes including food access/security, economic development, environmental sustainability, health, food justice/equity, community foods infrastructure such as food production, food processing, food distribution, food procurement, and food recovery/waste. Members may have different perceptions of the problem(s) informed by their world views. Ideally, they gather to understand how solutions need to consider their various perspectives and positions, although it should be acknowledged that some are involved to protect their self-interests. In these early stages, their work may focus on building social and commercial networks, collecting and reviewing existing data, sharing knowledge of the issues, and conducting assessments of their current local or regional food system. This enhanced understanding can help all members appreciate the dimensions of the various issues and how to position those issues to attract support. Significant time, resources, and energy are needed to move a problem into a policy opportunity.

Most FPCs organize themselves into working groups divided by food system sector (e.g., food production, food waste/recovery), function (e.g., fundraising, communications), or both. Working groups assess problems and actions that are likely to have the most influence in their sector. Policy may be one of those actions. Regardless of what policy or policies they focus on, they undergo a process to determine the feasibility of success. Ideally, an FPC will have several options it is ready to propose, when and if the political conditions are deemed appropriate; hence, they will seek to open policy windows as opportunities arise.

One hallmark of most FPCs is diverse membership, with representation from actors across the supply chain and those influencing the sectors, such as government, civil society, and academia representatives. Many FPCs, even those that are not embedded within a government agency, include government staff (79 per cent of US FPCs) or elected officials (30 per cent of US FPCs) as part of their membership (CLF, 2018a). These partnerships with policy experts provide legitimacy and visibility for the FPC, as well as insights as to whether the political context is – or could be – supportive for policy change (Clayton et al., 2015). Those relationships are also vulnerable when political leadership changes. The most effective groups also spend significant time allowing members to develop relationships with each other. These internal relationships can help FPCs hone their policy agendas by providing a diversity of member opinions about the logistical and political feasibility and impacts of potential solutions (Clayton et al., 2015) and may help groups weather leadership changes. Members educate one another about respective challenges and reach consensus on which policies to move forward (see also Chapter 7, this volume). In practice, this process can

take years and leans heavily on visionary leadership, in-kind contributions, strong relationships with existing organizations and communities, and a strategy or plan as to how the group will move forward. Many FPCs also include (though not always successfully) citizens who are most impacted by food system challenges and potential solutions (McCullagh & Santo, 2014). Their on-the-ground experiences can provide meaningful ‘reality checks’ for FPCs as they are designing and implementing policy changes.

Goal of the toolkit

The Johns Hopkins Center for a Livable Future’s Food Policy Networks (FPN) project began in 2012 to build the capacity of local, state, regional, and tribal groups that seek to influence food policy in their jurisdictions. By hosting a listserv of nearly 1,500 members, the FPN project maintains a virtual network of individuals and organizations that shares resources, success stories, and challenges in order to support the greater community of practitioners. The FPN website also collates a database of 1,200 resources, compiles a directory of all the food policy groups in the US and Canada, and engages researchers via a research forum. Project staff provide in-person and virtual technical assistance to groups around the country. These engagement methods allow staff to gauge the struggles FPCs experience while working on policy and tailor FPN’s work to fit their needs. FPN’s annual census survey collects information on FPCs’ demographics, structure, funding, achievements, and challenges. Through this census, FPN has learned of numerous FPC policy accomplishments, ranging from mobile meat processing ordinances and farm-to-institution policies to acquiring funds for farmer trainings and anti-hunger programmes (CLF, 2018c). Notably, the longer a council has existed, the more they are likely to engage in a variety of policy activities, from submitting testimonies and providing policy recommendations to supporting or directing an advocacy campaign (CLF, 2018a). Groups also frequently mention that they are unsure of how to engage in advocacy work. In fact, policy training/guidance was listed among the top three technical assistance needs reported by FPCs from the 2013, 2014, and 2015 surveys (CLF, 2016). It was because of these findings that the Food Policy Networks project decided to create the ‘Get It Together: Assessing Your Food Council’s Ability to Do Policy’ toolkit (Palmer & Calancie, 2017).

The toolkit has a lot to offer FPCs and their members. Given the variety of sectors and experiences that FPC members represent, they may have little previous exposure to policy work. Thus, educating members on the advocacy and policy process is critical to optimizing their participation. Education can take many forms including informal conversations with other council members, presentations by local or state government staff on how policy changes are made, guided discussions on why advocacy and policy

are important, and opportunities for people to see first-hand what issues stakeholders are facing.

The short-term goal of the toolkit is to provide a foundation for FPCs to better engage in advocacy. This includes identifying who needs to be involved, suggesting steps to develop a strategy, demonstrating how to conduct and sustain advocacy efforts, and increasing FPCs' understanding of how policy is implemented. Using Qualtrics as its software platform, the toolkit's length and scope can be adapted to meet the needs of each FPC. Each section takes less than 15 minutes to complete and participants are provided a cumulative score at the end of each section based on their responses. Once the survey has been submitted, participants are emailed their scores with a corresponding set of resources to increase their capacity in specific areas of need. The scores provide a metric that FPCs can use to identify their strengths and weaknesses. By completing the assessment, groups improve their understanding of the policy process and their group's assets and challenges, thereby increasing their capacity to advocate for policy change. Over the long term, groups can use the toolkit to monitor their performance and assess progress in areas in which they have concentrated resources over several years. The FPN project will use the responses to track FPCs' evolution and capacity over time and as a data source for programming decisions.

Process of developing the toolkit

FPN staff began developing the toolkit by conducting an extensive search for other policy evaluation resources and tools that could be adapted for this purpose. The Alliance for Justice's (AFJ) Bolder Advocacy project, which provides expertise and information to non-profits and foundations to support their engagement in advocacy, was particularly impressive. They created the Advocacy Capacity Tool (ACT) as a guide for non-profits engaged in advocacy (Alliance for Justice, 2018). Also available online, the ACT guide provides real time scores that give a numerical measure of groups' advocacy capacity, and specifically, their readiness to engage in advocacy work.

In addition to using ACT, FPN partnered with Larissa Calancie, a Postdoctoral Fellow at the Center for Health Equity Research at the University of North Carolina Chapel Hill, who developed a self-assessment for FPCs as part of her dissertation (Calancie et al., 2017). We adapted her survey for the toolkit's first section on organizational assessment. We also reviewed tools and surveys specifically designed to measure equity and inclusion and adapted questions for our purpose (University of Virginia, 2010; Curren et al., 2016; Public Health Law Center, 2018). Finally, we had representatives from nine organizations – Greater Cincinnati Food Policy Council, Jefferson County (Colorado) Food Policy Council, Lehigh Valley Food Policy Council, Memphis Tilth, Omaha Food Policy Council, Prince George's County Food Equity Council, Public Health Law Center, United Way of New York City, Virginia Food System Council – pre-test the toolkit

and make recommendations for clarification and relevancy. Most of their suggestions were included in the final version.

Contents of the toolkit

The toolkit is divided into six sections: (1) organizational assessment; (2) advocacy goals, plans, and strategies; (3) conducting advocacy; (4) advocacy avenues; (5) organizational operations to sustain advocacy; and (6) policy implementation (see also Chapter 9, this volume, about the development of a City Region Food Systems toolkit). Below, we provide a brief description of each section of the toolkit, along with example indicators. Because some FPCs may also support other organizations' advocacy efforts, sections two through six offer a 'relies on partners' response option, which is not scored but noted. 'Relies on partners' means that the FPC has determined that they do not need to embark on this activity themselves and have identified partner organizations on which they can rely, or in some cases, support.

The toolkit can be completed by the organizational leader or facilitator, working group leaders, or by many members of the group or network. For example, it was rolled out among a network of FPCs in Michigan in fall 2018. The respondent's role(s) in the group is identified as part of the demographic information collected with each survey. As the name implies, the toolkit is a tool to gather different perspectives on the readiness of a group to engage in advocacy work; the diversity of those perspectives creates a profile of what members consider to be the group's strengths and weaknesses and can be used to guide a group discussion about next steps.

The first section of the toolkit, on organizational assessment, has three sub-sections: leadership; structure and membership; and networking and relationships. We use indicators such as receptivity to new ideas; decision-making processes; and creating an organizational climate that welcomes participation, provides leadership opportunities, and helps resolve conflict. The structure and membership indicators stress diverse membership and identify steps that enhance the functionality of the group such as by-laws and working groups. Networking indicators seek to determine the connectivity and perceived value of networking among members.

Section two concentrates on advocacy goals, plans, and strategies. It covers three topics related to this theme: preparedness; food policy agendas, plans, and strategies; and adaptability. Preparation acknowledges the need for the group to engage its members in creating a vision that is regularly communicated to all stakeholders. As part of those goals, FPCs should understand the potential policies, priorities, and environment in which they work. When they delve deeper into this process, they may conduct a policy scan or talk to other stakeholders, especially people affected by the issues. The final section includes indicators that consider knowledge of the power structures that influence the policy issue as well as monitoring schemes to assess progress.

The third section on conducting advocacy is the most robust section and explores what research the FPC uses, how they build the capacity of their members to conduct advocacy, whom they partner with to achieve their goals, and how they use communication activities to support their work. Research and analysis questions inquire about their data sources: from whom they get data, if they collect their own data and what methods they use, how they verify accuracy, and collaborative partners.

Section four assesses the FPC's administrative, institutional, and legislative advocacy skills, knowledge, and actions. Administrative advocacy (Alliance for Justice, n.d.) refers to actions related to rules, regulations, and other administrative actions that are not specific to legislation. Institutional advocacy refers to actions within government or a private institution. Legislative advocacy refers to actions that take place in legislative bodies such as a municipal council or state congress rather than other government bodies. The questions assess the extent to which the organization understands the processes involved in advancing these different types of policies; works on – or supports partners working on – the development of such policies; and serves as a resource for policymakers.

Section five reviews the organizational operations that support advocacy such as leadership's understanding of regulations about advocacy and lobbying, investment in training for members to do advocacy, and involvement in passing policies. Ability to fundraise for advocacy activities has been a challenge for many FPCs and this section also includes a number of metrics that assess relationships with funders, ability to obtain support for their work, and financial management practices.

Section six focuses on policy formulation, enactment, outputs, and outcomes. Indicators assess if members have organized community members to advocate, and whether they have provided testimony in support of or against any policies, met with policymakers, and developed monitoring mechanisms. In addition, this section asks about whether or not there has been an increase in awareness of food policy issues among various audiences, and whether or not the group is perceived as a resource for policymakers. A long list of possible food policy outputs is intended to expose participants to the variety of policies that groups can work on. Finally, we ask groups to speculate about how the policies they have worked on may have contributed to desirable outcomes in their communities.

Evaluating equity and inclusion

In addition to thematically organizing the toolkit into sections based on the steps of engaging in policy advocacy work, we integrated into all sections of the toolkit two themes that we believe should be central to the work of all FPCs: (1) equity and inclusion and (2) systems thinking. Table 8.1 highlights the metrics we selected for groups to determine if they are implementing their work with a lens on equity and inclusion. Equity was explored in terms

Table 8.1 Indicators assessed in each section of the toolkit

<i>Section</i>	<i>FPC features assessed</i>	<i>Equity and inclusion metrics</i>
Organizational assessment	<ul style="list-style-type: none"> • Leadership, group structure and functions, membership recruitment, engagement, networking 	<ul style="list-style-type: none"> • The organization promotes and supports diverse representation and participation on the council; provides opportunities for members to build leadership within the organization; and shares power in decision-making with the organization's members. • The organization adequately reflects the racial, economic, gender, and ethnic diversity of the community it represents.
Advocacy goals, plans, and strategies	<ul style="list-style-type: none"> • Clear, relevant agenda that defines food policy goals, prioritizes activities, and reflects community needs • Flexible plan to carry out policy priorities 	<ul style="list-style-type: none"> • The organization regularly provides opportunities to hear about food-related issues from community members who are not on the council. • The organization partners with community groups to increase and promote community engagement in local decision-making, particularly in low-income and historically marginalized neighbourhoods. • The organization has considered how the proposed policy agenda will impact socially disadvantaged and marginalized groups.
Conducting advocacy	<ul style="list-style-type: none"> • Organization researches policy issues and good practices • Capacity building of members to work on policy issues • Partners with other organizations and decision makers to advance policy goals • Communication strategy and media engagement 	<ul style="list-style-type: none"> • The organization uses surveys, focus groups, or other research methods to better understand community interests, needs, or concerns about a specific policy issue. • The organization identifies segments of the public to educate about its agenda. • The organization implements a plan as needed to expand the size and diversity of its membership to achieve policy objectives.
Advocacy avenues	<ul style="list-style-type: none"> • Organization's skills, knowledge, and actions related to administrative, institutional, and legislative advocacy 	<ul style="list-style-type: none"> • None specific to equity and inclusion.

(continued)

Table 8.1 (Cont.)

<i>Section</i>	<i>FPC features assessed</i>	<i>Equity and inclusion metrics</i>
Organizational operations to sustain advocacy	<ul style="list-style-type: none"> Organizational commitment, funding advocacy, and decision-making structure indicators 	<ul style="list-style-type: none"> The organization invests in building the capacity of its members to strengthen its advocacy work. The organization has increased its budget over time.
Policy implementation	<ul style="list-style-type: none"> Policy formulation and enactment 	<ul style="list-style-type: none"> The organization has mobilized community members to advocate on behalf of a priority policy issue. The organization engaged community members in forming policy statements. The organization has included community members to help with policy adoption, implementation, or evaluation processes.
	<ul style="list-style-type: none"> Policy outputs 	<ul style="list-style-type: none"> The organization has worked on policy changes that support living wages. The organization has worked on policy changes that improved labour conditions. The organization's actions have provided financing or credit for people who would otherwise not have access (for food-related enterprises). The organization has worked on or supported organizations that are working on policies that address economic or housing development and food access simultaneously.
	<ul style="list-style-type: none"> Policy outcomes (have contributed to an increase in ...) 	<ul style="list-style-type: none"> The wages of food systems workers (Improvement in) the state of working and living conditions for food or agriculture workers Jobs for people that have had employment challenges Access to credit or capital for people who would not have had access through traditional means Value-added processing facilities that provide economic opportunities to those who need them.

of how the group considers the effect of policies and programmes on communities of colour, people living in poverty, indigenous groups, rural communities, (im)migrants, and youth and how it elevates the power of those groups to participate in food system changes. As mentioned previously, the survey can be completed by group leaders or by many members, which elicits various perspectives in the organization's assessment.

Systems-thinking metrics

In addition to equity measures, we included metrics that would nudge groups towards systems thinking. Systems thinking can be defined as 'an enterprise aimed at seeing how things are connected to each other within some notion of a whole entity' (Peters, 2014). Complex issues such as those that affect the food system, are best understood when using systems thinking and systems approaches (Clancy, 2014b, see also Chapter 4, this volume). Systems thinking acknowledges that solutions will require engagement from more than one sector/organization; considers long-term, short-term and unintended consequences; identifies leverage points that could lead to change; and considers how things change over time and accounts for tracking changes. Many of these concepts are allied with the principles of FPCs, although members may articulate them differently. We hope that by making these concepts more explicit, groups will be more comfortable in the application of systems thinking throughout their work.

Even if and when FPCs apply systems thinking, it is worth acknowledging that they may encounter difficulties when attempting to tackle multidimensional food systems issues within conventional policy paradigms. Most food issues are typically addressed in silos within traditional policy sectors (e.g., production, economic development, health), which makes advocacy on systems issues more diffuse and complex.

Toolkit in action: a reflection on one FPC's experience

Since the toolkit was released in winter 2017/2018, at least 70 people from 30 FPCs have completed it. These numbers were too small to analyse the toolkit's impact on practitioners at a quantitative level. Thus, we decided to speak with three representatives from one of the toolkit's early adopters, the Lynchburg Area Food Council (Virginia), to provide some initial qualitative perspectives.

Background

The Lynchburg Area Food Council (LAFC) formed in 2012 with the goal of collaborating on tangible programmes that would support the community across several counties in central Virginia. Informant 1, a charter member and vice president of the LAFC, was involved in the council's early efforts, which

Table 8.2 Systems-thinking considerations

<i>Section</i>	<i>Systems-thinking considerations</i>
Organizational assessment	<ul style="list-style-type: none"> • The leadership is receptive to new ideas. • The organization promotes and supports diverse representation and participation on the council. • The organization adequately reflects all food system sectors (producers, policymakers, food businesses, public health, etc.). • Joining the organization has helped coordinate efforts among various organizations that other members belong to or represent.
Advocacy goals, plans, and strategies	<ul style="list-style-type: none"> • The organization understands the overall policy environment related to its priorities. • The organization gathers information and recommendations from constituents and other stakeholders in the development of its food policy agenda. • The organization has considered how the proposed policy agenda will impact socially disadvantaged and marginalized groups. • The organization has some monitoring mechanisms in place to help assess progress and make course corrections when necessary.
Conducting advocacy	<ul style="list-style-type: none"> • The organization seeks guidance from other organizations and stakeholders to understand their policy priorities. • The organization identifies stakeholders (outside of its membership) that have similar goals, including those with complementary knowledge/skills, with which it could collaborate on policy. • Outside of its membership, the organization seeks support from stakeholders who may not be traditional allies, but with whom it could partner on a specific policy issue.
Advocacy avenues	• N/A
Organizational operations to sustain advocacy	• N/A
Policy implementation	<ul style="list-style-type: none"> • The organization has monitoring mechanisms in place to know whether or how the policy is being implemented. • The organization's actions have led to an increase in awareness of food system issues among the FPC members, elected officials, or general public.

concentrated on food access and food security research to identify food deserts. In response to those efforts, Randolph College conducted a community food assessment with residents living in low-income neighbourhoods, and United Way played a facilitative role for the council. Over time, the LAFC has shifted to focus more on local food, small farmers, sustainable production, and agricultural extension activities and less on food access, primarily due to membership changes. For example, after the local health department received a grant to construct a garden, LAFC also began offering small garden grants to communities.

At one of their bi-monthly meetings, Informant 2, one of the council members, introduced the toolkit to the group as a way for them to gather information to decide what they should focus on next. The timing seemed fortuitous. Informant 1 and Informant 3, an employee of the Virginia Department of Health, noted the group's readiness and desire to move activities forward. Every member was encouraged to complete it (8 out of 10 of them did), so that the results would include a range of perspectives.

What they learned

Once LAFC completed the toolkit, Informant 2 discussed her realization that 'we have been limited only by the fact that we didn't know all that was possible. That's one benefit of completing the toolkit, it gave us ideas we may have not thought of before.' While they excluded the term 'policy' in their council's name, she recognized that they could still work on policy; they just needed to consider how they could manoeuvre into the policy arena. As a group of community members, the LAFC aspired to work with city council members. Answering the toolkit's questions helped them acknowledge that in order to do that, they needed to identify specific policy partners. The section that helped them review their tangible accomplishments would further build momentum to work on policy.

The toolkit also helped the LAFC members realize that they had not taken time to think about their current role in the community and what they would like that role to be. Completing the toolkit encouraged members to think about those issues and use the results as a discussion starter. The scan of potential food and agriculture policies that FPCs could work on also prompted them to think about the council's potential to serve as a resource to gather information to share with the public, and more specifically, how they might be more of an asset to the community. As Informant 3 shared,

we need to be creating knowledge and educating. We haven't been amassing a group of people who care about this work and what we do. Having a communications strategy would help us to communicate with the public. I don't think many people know we exist right now.

Informant 1 valued how the process of completing the toolkit gave members time to reflect on broader questions such as what the LAFC's overall goal is, what their individual roles as council members are, and how they make things happen. 'The toolkit asks good questions as to what your leadership looks like, what difference are you making in social change or policy? Have we done enough in our local city council to have a voice?' He also remarked that while they have made several attempts at short- and long-term planning, the toolkit experience highlighted how asking the right questions and listening to the answers may be more important.

The results illuminated points of convergence and divergence among members, such as whether or not the LAFC's representation reflects the diversity of the community they support. Some people thought it did, others not so much. As Informant 2 contemplated, 'Is it important for us to have agreement about these issues? How do we come together and answer those questions?' Where there were areas of discrepancy in the responses, they realized they would like to have a better idea of how to approach such differences in opinion. In its list of additional resources, the toolkit does include two documents that provide guidance on problem-solving and decision-making in groups (CLF, 2017).

The toolkit also revealed opportunities for enhancing the LAFC's organizational structure. Informant 3 described their group as relatively informal and embraced several suggestions about policies and procedures that they could work on to improve the group's operations. For instance, she noted that they have no orientation for new members and thought they could do more activities to build relationships among members. Such activities could help members learn from one another, 'We need to expand our horizons and group learning; members need to be educated about other [food] issues.'

As with many FPCs, the Lynchburg Area Food Council tries to balance its time and resources to meet community needs. Informant 1 described it as the tension between 'Are we about programs, or are we about systems change and advocacy and policy – the 30,000-foot view?' As Informant 3 reflected, the toolkit helped them assess where they are right now and where they might go in the future. 'We've got a lot of work to do, and a big future ahead and now we have a target line as to what we can be shooting for.'

Conclusion

We embarked on developing this toolkit as a way to provide FPCs with an easy means of assessing their current capacity to advocate on behalf of their food system issues. Time and again we found themes from the FPN trainings, listserv conversations, conferences, surveys, and research, which indicated that people were looking for a how-to guide to begin their advocacy work. By necessity, many groups spend a couple of years in development before they actually begin identifying a 'policy' issue that begs for

attention. Once they arrive at that place, their next steps are not always clear. The toolkit presents an opportunity for any group working on food system change to better understand the advocacy process and what needs to be in place to optimize their resources. This learning occurs at various scales. The people using the toolkit get feedback on their status and can periodically repeat the assessment to measure change over time. Groups can also use the results to make decisions about how their resources are allocated, who else needs to be engaged in the work, and what strategies they could employ to improve their outcomes. Simultaneously, FPN project staff use the data to determine what additional materials, webinars, or other activities can be offered to support groups. Moreover, aggregated results from the toolkit can be shared with other food policy groups working on food system change to transfer knowledge among groups at the local and state levels (Clancy, 2013). All of this feedback helps to avoid repetition of mistakes.

Another concept that is covered in the toolkit is governance: ‘managing, steering and guiding of public affairs by governing procedures and institutions in a democratic manner’ (Pisano et al., 2011, p. 3, as cited in Clancy, 2014a). Many FPCs structure themselves to influence public or institutional policy, sometimes both. By building relationships with actors in the various food sectors, identifying government departments that influence particular administrative actions, examining legislative options, and inviting institutions into that process, they encounter short- and long-term policy opportunities. As Informant 2 from Lynchburg noted, the toolkit ‘made me realize that we were limiting ourselves to what we thought we could do’.

When many FPC members from the same organization complete the assessment, the points of convergence and divergence among member perspectives become obvious. This heterogeneity reflects a feature of systems thinking (Clancy, 2014b). More important than any score, if facilitated effectively, these differences provide insights into various world views and a starting place for rich discussions.

When the group agrees to allocate time to using the toolkit, they may also want to consider how they will manage survey administration and interpretation of results. FPN has held phone consultations with a few groups as well as compiled the scores and shared the raw data, in the event they want to do any analysis. It may be appropriate to invite an outside facilitator to help the group process the results, particularly if dramatic differences emerge. Taking time to discuss those differences will test the trust among group members. Since most groups use consensus-based decision-making, these discussions can help members understand conflicting views and discuss promising places for policy change. How to form a specific policy position among a diversity of member perspectives is still a challenge that many FPC leaders face, but maintaining a place to have those conversations is the first step to overcoming such divergences (Santo & Moragues-Faus, 2018; see also Chapter 6, this volume).

The final step, which is never really final, is deciding what's next. It would be easy to get overwhelmed by the volume of questions and subsequent scores. Given the paucity of resources for most groups, prudence in moving forward is highly recommended. FPN created the list of resources for precisely that reason – to give people a limited amount of information that they can choose to use if they want to improve their ability to work on a particular issue. When possible, each question was considered a discrete metric and a companion resource was identified for that metric. Most of these resources already existed in the FPN resource database. Some groups may not search the resources to answer their questions, instead using the process of doing the toolkit as a starting place to collectively answer the question, 'what's next?' Deciding to explore further, with resources in hand, can improve the efficacy of any group's work.

The toolkit can help FPCs pause and reflect, a process that is difficult for individuals, let alone when one is part of a group. A group may decide to use it annually, as a way to measure any change. Or they may only focus on one section with the goal of improving their performance in a particular area. The goal is to provide a starting point for all the members to think about broader goals and objectives. Reflecting on their work forces them to think and rethink about how they are adding value to the greater good of creating a healthy, sustainable, and fair food system. Many groups hesitate to explicitly state that they work on policy (Schiff, 2008, p. 211; Santo & Moragues-Faus, 2018, p. 10), but they might be underestimating their ability to work on policy issues. Policy is just a way to change standard operating procedures, whether they exist in legislation, within government administrative actions, or in private institutions. FPCs are more frequently mentioned as a means of mobilizing at various levels to affect food system change, however, that recognition has not attracted commensurate resources to match the interest. With diverse partnerships, adequate resources, and training, their capacity to actively engage in advocacy and policy can increase substantially. FPN aspires to use the results from the toolkit to improve the content, expand the indicators on systems to a more sophisticated level and, if groups choose to use it on a regular basis, compare their change over time. These metrics shape our understanding of how policy can be driven by food policy groups.

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Notes

- 1 Of those that have responded to an annual census of food policy groups in the US and Canada, 28 per cent of the ‘active’ groups in 2018 had names that included the term ‘food policy council’, 21 per cent used ‘food council’, 9 per cent used ‘network’, 8 per cent used ‘alliance’, 8 per cent used ‘coalition’, 5 per cent used ‘committee’, and 21 per cent used other terms (CLF, 2018a).
- 2 Seventy-one per cent of FPCs in the US and Canada operate at the local level, 20 per cent operate at regional (e.g., multi-county, multi-state), 8 per cent at state/provincial, and 1 per cent at Native American/First Nations levels (CLF, 2018a).
- 3 It is worth noting that many local and state-level policies are often constrained by national (e.g., Farm Bill) or international (e.g., trade agreements) policies over which local FPCs do not often have significant capacity to influence individually (Clancy, 2012, 2014a). Some FPCs do engage in public education about such policies, and a few are very active in the national policy scene. In theory, local groups could also collectively advocate around higher-level policies, though such activity has been limited thus far (Santo & Moragues-Faus, 2018).

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9 Tools for food system change

City Region Food System assessment, planning, and policy

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Introduction

While linked to other concepts such as foodsheds, bioregions, short food-supply chains, and territorial food systems, in recent years, the City Region Food System (CRFS) approach has emerged as a way to connect typically divided urban and rural spaces (see also Chapters 2 & 4, this volume). In addition to spatial integration, the CRFS approach also emphasizes coherence across food-chain dimensions, taking into account environmental and socio-economic aspects as part of fostering more resilient and sustainable food systems (for a more detailed analysis please refer to Blay-Palmer et al., 2018 or Blay-Palmer & Renting, 2015). To realize these goals, city regions can apply a large number of strategies and tools, such as the promotion of (peri)urban agriculture; preservation of agricultural land areas and watersheds through land-use planning and zoning; development of food distribution and social protection programmes; support for short supply chains and local procurement of food; and promotion of food waste prevention, reduction, and management. Developing a resilient CRFS, however, requires political will – integrating available policy and planning instruments (e.g. infrastructure, investment, logistics, public procurement, land-use planning); involvement of various government departments and jurisdictions (local and provincial); and inclusive organizational structures at multiple scales (municipal and district among others). Improved CRFSs offer the opportunity to help achieve better economic, social, and environmental conditions in both urban and surrounding rural areas by activating new or reinforcing existing concrete policy and investment opportunities.

In 2015, FAO and RUAF Foundation, in collaboration with the Laurier Centre for Sustainable Food Systems (LCSFS), and with the financial support of the German Federal Ministry of Food and Agriculture, the Daniel and Nina Carasso Foundation, and the CGIAR Water Land and Ecosystems Programme led by IWMI, embarked on a collaborative programme with regional partners to operationalize the CRFS approach. The goal was to assess and plan increasingly sustainable city region food systems in seven city regions around the world with an emphasis on the Global South.

The pilot cities are: Colombo (Sri Lanka), Lusaka and Kitwe (Zambia), Medellin (Colombia), Quito (Ecuador), Toronto (Canada), and Utrecht (the Netherlands) (FAO & RUAF, 2015; Dubbeling et al., 2017).

The CRFS approach builds on a formalized process of identifying and engaging all relevant stakeholders from the start of the assessment process through to policy review and formulation (see Chapters 2 & 7, this volume). This means that a CRFS process can result in revised or new urban food policies, strategies, and projects, and also in the creation of new – or revitalized – networks for food governance and policy development, such as urban food policy councils and new institutional food programmes and policies (Blay-Palmer et al., 2018).

Following the CRFS research, the approach was translated into a toolkit that provides guidance on how to assess a CRFS and then helps to build a more sustainable city region food system (the methodology is available at <http://www.fao.org/in-action/food-for-cities-programme/toolkit/introduction/en/>). The toolkit was developed out of, and is supported by, three phases of research that produced synthetic reports covering each pilot project. These phases involved data identification and consolidation from existing sources, and then the generation of new data followed by policy assessment and recommendations. The toolkit is available online (<http://www.fao.org/in-action/food-for-cities-programme/toolkit/en/>) as a set of linked documents that guide users through an iterative, non-linear process, including non-sequential phases to establish multi-stakeholder task forces, develop a vision, collect data, identify areas for improved food system sustainability, and work towards policy coherence. The toolkit includes more than 40 tools and resources – such as meeting guidelines and policy examples – developed and identified during the pilot phase. These examples from the cities offer an overview of why and how each city region implemented their changes and what outcomes each achieved. It is meant to be a resource for policymakers, researchers, and other key stakeholders who want to better understand their own CRFS and plan for improvements. In this way the examples and tools provide valuable experiences, expert guidance, and lessons that may accelerate the development of similar initiatives in other city regions that wish to apply, customize, or scale up similar practices.

This chapter provides an overview of the research results from the pilot cities that inform the CRFS toolkit as well as concrete examples that illustrate how pilot city regions adopted and adapted their strengths and peculiarities of their own contexts to generate and share evidence that led to policy outcomes. In particular, the chapter delves into the experiences of the pilot city regions that include Colombo (Sri Lanka), Lusaka and Kitwe (Zambia), and Medellin (Colombia). We also include brief overviews of the work in Toronto and Quito.

The CRFS process in the Colombo region triggered policy discussions beyond the local level that are spreading into provincial (regional) and national levels. It created the basis to start visualizing the importance of

a territorial approach to food systems and the actions needed to offset the impacts of natural resource management challenges, climate change, and shocks on city regions. It shed light on food safety, nutrient safety, value chain management, and food waste and losses in relation to urban spaces (FAO, 2018). In the two Zambia regions, the CRFS approach raised awareness and political momentum to reinforce the role of horticulture to promote diversified food production and sustainable consumption through joint planning specifically as proposed for the Urban and Regional Planning Act and could also be formative for the ongoing National Urbanization Policy. In the Medellin case, the CRFS approach enabled key policymakers, planners, and practitioners to move from a singular focus on urban food security and nutrition to a more integrated food systems vision that was applied across the region. This facilitated the identification and formulation of territorial planning strategies that strengthen more sustainable and resilient food chains from production to consumption. In turn, this enabled cooperation and coordination of the actors, including new forms of integration and collaboration between producers, agents, and markets, for example, the construction of a closer and more equitable relationship between rural and urban areas, which was designed to meet the needs of the urban and rural areas, producers, and consumers.

The CRFS toolkit and approach

Building from the experiences in the pilot cities, the toolkit was developed to include different considerations typically needed to support a CRFS assessment and planning approach (A diagram of the City Region Food System Approach is available at: <http://www.fao.org/in-action/food-for-cities-programme/toolkit/introduction/en/>).

The phases in the CRFS process are iterative and not intended to be linear. Consistent with other place-based research, the entry points should be defined based on the local contexts including available evidence and information, capacity, stakeholder engagement, and existing policy agendas (Sonnino et al., 2016). In some contexts, setting the policy agenda could be the starting point and an assessment may be used to explore and assess the policy priorities identified moving back and forth between data gathering and policy development. A city may enter at any point in the process suitable to its local context.

To begin, the CRFS team needs to: engage a multi-stakeholder task force, including researchers, policymakers, and food system participants; establish goals and objectives; and then determine what data and information exist. Typically, this initial phase produces outputs including terms of reference for the project as well as a workplan and timeline. Once the task team has been established, the approach develops based on the needs of the specific city region and would include some or all of the following elements:

- **Defining the nature and boundaries of the CRFS:** A key activity in the defining stage will be to conduct a participatory mapping exercise with a wide range of stakeholders to define the nature and boundaries of the local city region and the city region food system. In many cases these boundaries are based on either available data and/or political boundaries and other administrative considerations. In some cases, boundaries were set based on food-flow considerations as, for example, in Medellin.
- **Characterizing the CRFS – the CRFS scan:** The toolkit provides guidelines about how to map and describe the local city region food system. This includes questions such as: who feeds the city region, where is the food processed, how is it marketed, what do people eat and what is their food security and nutrition status, how is food waste managed and who are the government and institutional actors involved in the food system?
- **Visioning:** The toolkit outlines how to build a shared common vision for a sustainable and resilient CRFS. The vision underpins the different parts of the entire CRFS assessment and planning process. The aim is to build a vision that transcends the given project and can eventually grow into a more refined, consolidated – and political – set of priorities that is agreed upon by all stakeholders involved as the project progresses. The vision gives direction to the implementation of the CRFS assessment and planning.
- **Analysis of the CRFS:** The toolkit suggests ways to analyse current food system performance with regards to different sustainability dimensions, food system vulnerabilities, assets, threats, and weaknesses. The analysis also allows for the identification of opportunities to strengthen the CRFS.
- **Policy planning:** The toolkit provides recommendations for concrete policy and planning interventions in the CRFS and identification of stakeholder roles, (new) institutional frameworks, proposal writing, programmes, and action plans. This may also include the identification of lobbying opportunities and elaboration of specific advocacy materials. The policy support and planning could involve further policy analysis, policy formulation and revision, policy integration, and planning of further action. Continued engagement of policymakers across multiple scales and other stakeholders can be key to ensuring policy uptake and effective implementation.
- **Governance and multi-stakeholder dialogue process:** From a governance perspective, the toolkit presents a CRFS approach that aims to be highly participatory and promotes local ownership of the process through multi-stakeholder, multi-scale engagement as it seeks to foster inclusive dialogue among all the relevant stakeholders involved in the CRFS. The goal is to support local governments and multi-stakeholder bodies in taking informed decisions on food planning and capacity building, recognizing the added value in the consultation–participative processes,

and knowledge sharing. In some cases, the CRFS process has improved food system governance by consistently applying a multi-stakeholder participatory approach and process throughout the various steps of CRFS assessment and planning. This, in turn, can lead to strengthened existing, and the creation of new, networks and/or food governance structures, the improvement of government and stakeholder capacity in implementing a CRFS process, and the promotion of food policy design and monitoring.

The tools, material and examples provided on the toolkit website need to be adapted to the specific circumstances and interests of a city region through the creation of a local CRFS team that can use the toolkit according to local concerns and capacities. Examples of this are provided later in the chapter through case-study work. A sound CRFS process takes into account existing and specific agronomic, economic, and institutional-political conditions; the variety, interests, and expertise of the different involved stakeholders; available resources, existing data and information; and specific set goals in the local context (see Chapter 8, this volume, for other examples of toolkits leading to change).

Outcomes of the CRFS assessment and planning process in pilot city regions

Considering that each city region has its own context, the toolkit is not meant to represent a guideline that fits all. Instead, it has been designed to be a flexible instrument and to adapt to the characteristics and needs of each context. In that respect, the seven pilot city regions have adapted the approach, building on their specific contexts.

As discussed below, in each of the pilot cities the CRFS process has built more awareness and information exchange about the characteristics and functioning of the CRFS and has created the basis for a common and shared vision of a sustainable CRFS. In each city, the CRFS process has led to a set of key policy proposals and recommendations. In some cities this has resulted in policy or project activity, including new governance structures. In other cities, processes will be carried forward by local stakeholders or under new projects.

Case study 1: Two regions in Zambia – The role of the CRFS approach in raising awareness and political momentum to promote diversified food production and sustainable consumption

Zambia is a landlocked country located in south-central Africa. Forty-one per cent of its population lives in urban areas (urbanization rate in Africa: 38 per cent), mostly gathered in two regions (World Bank, 2016); Lusaka, the capital city (1.7 million inhabitants, Lusaka Statistical Office 2010) and

surrounding districts; and the Copperbelt Province, including the city of Kitwe (468,682 inhabitants). With the repetition of droughts and rapid urbanization patterns, both regions face diverse challenges to ensure food security and nutrition for all, while providing decent livelihoods to farmers and making efficient use of natural resources.

In addition, the existing food system in Zambia, built on large-scale mono-cropping of maize, is eroding ecosystems and crop diversity and reducing diversity in consumption and diets. Today, the Zambian diet is mainly composed of cereals, predominantly maize, starchy roots and, to a lesser extent, fruits and vegetables. Cereals provide almost two-thirds of the dietary energy supply. According to the National Food and Nutrition Commission (NFNC), one of the major causes of a high rate of malnutrition in Zambia is the mono-diet practice. The culture of mono-diet is born from mono-cropping food production, which is heavily slanted towards maize (Lusaka Central Statistical Office, 2010; Lusaka Government, 2015; Biriwasha, 2017).

In both city regions, prior to the CRFS pilot project, very little had been done to either analyse or plan the food system. As a result, few data and studies were available, and looking at food through a system and multi-stakeholder lens was still at a very preliminary stage. Despite the existence of a Ministry for Local Governments, food supply and distribution is still mainly handled by the Ministry of Agriculture. Both city councils showed interest in taking up this approach providing the needed political buy-in to initiate the process.

In both city regions, a multi-stakeholder group was formed including: producers, supermarkets, marketeers, processors, cooperatives, ministries, NGOs, municipalities, and consumers associations. The city regions were defined based on administrative boundaries and food flows (i.e. the sources of most of the food items consumed in the city) (FAO). (The map for Lusaka is available at: <http://www.fao.org/in-action/food-for-cities-programme/pilotcities/lusaka/en/>; the map for Kitwe is available at: <http://www.fao.org/in-action/food-for-cities-programme/pilotcities/kitwe/en/>.)

Based on the approach and goals defined through each CRFS process, each of the defined city regions has the longer-term aim to make its CRFS more sustainable and resilient, and to improve the livelihoods of rural and urban dwellers in the city region, with special attention to the challenges of: (a) how to improve access to adequate food for the vulnerable and poor urban population; and (b) how to improve market access for the small-holder farmers in urban, peri-urban, and rural areas in the city regions. This connective approach to assessment examined current and future constraints affecting the local and regional food value chain. It used local knowledge to help analyse and prioritize these constraints and explore new ideas to strengthen the sustainability and performance of the food system.

Since very few data were available, an important focus was made on collecting primary data, unlike in the other project pilot cities. Data were

collected around the main priorities identified by multi-stakeholder groups to enable solid locally owned strategies and advocacy towards the key local institutions. The multi-stakeholder group was mobilized through a series of workshops to discuss, validate the assessment and identify key strategies to be implemented, and define associated action plans, including timeframe, funding needs and sources, as well as actors to be involved.

The CRFS assessment and planning process played a crucial role in contributing to identifying gaps and bottlenecks to create more resilient and inclusive food systems within specific city regions. In particular, as maize occupies a central position in Zambia's agricultural political economy, the CRFS process highlighted the importance of crop diversification and, specifically, the role of horticultural production and the value chain in feeding the urban population and contributing to healthy nutrition.

As a result of this process, there has been an increased awareness of the importance of joint planning between the two cities and their surrounding districts for the implementation of each CRFS. Joint planning is proposed in the Urban and Regional Planning Act, but guidelines and standards are not available yet. This would provide a policy and institutional framework to anchor implementation processes (FAO-RUAF, n.d.).

In addition, there has been renewed interest and policy discussions at institutional levels. In particular, this process has built bridges of communication among institutions to introduce a more integrated and territorial perspective in planning sustainable food systems. For instance, the CRFS project facilitated dialogue between the Ministry of Agriculture and the Ministry of Local Government on the importance of mainstreaming food and agriculture in the process to decentralize authority from the national level. In each city region, the whole process heightened awareness about the importance of going beyond the sectoral approach when looking at food, and the need to integrate all actors in the discussion.

In the framework of the decentralization process in Zambia, the CRFS assessment and planning process, together with its findings and recommendations, were part of the basis to contribute to the ongoing formulation of the National Urbanization Policy (NUP). The NUP aims to provide an overarching coordinating framework to address urban challenges and to maximize the benefits of urbanization, while mitigating potential adverse externalities. The CRFS assessment and planning process will be essential for providing key inputs to ensure that food security and nutrition, as well as food system dimensions, are part of the policy. In addition, the CRFS process highlighted the challenges that arose as a result of the current fragmented governing bodies for food systems that do not normally work in collaboration; a multi-stakeholder and interinstitutional mechanism or body responsible to define food strategies and policies would be key to reinforce the food system, in order to ensure food and nutrition security, including food safety (Hemmati, 2012; Vervoort et al., 2014). Furthermore, the decentralization policy offers a good platform for setting up a food council as it

is linked to certain national government functions such as policy and programme responsibilities for agriculture and health being devolved to local government. This means the local authority, Ministry of Agriculture and Ministry of Health are already working hand in hand but also highlights the other stakeholders that can be included to create well-adjusted strategies and policies, in order to, for example in Lusaka, reinforce the food system.

Case study 2: Colombo, Sri Lanka – from poverty and health focuses to (food) system thinking

Colombo District has more than 2.3 million inhabitants, with a population density of more than 3,300 people/km² and increasing. To meet the needs of this growing population, food is sourced from many parts of the country. However, owing to inefficiencies in the wholesale market system, food prices are high, resulting in high levels of food insecurity. There is also concern for food safety, as pesticide use is not well controlled.

Based on a scan of existing institutions and their connectivity as part of the CRFS assessment, it is clear that at the institutional level there is significant fragmentation in regard to food as there is no specific authority in charge of urban food security, agriculture, or rural–urban food supply. As documented in the pilot city synthesis report, there is a considerable number of relevant government departments and authorities at national, provincial, and municipal levels that oversee the system, especially focusing on food supply, prices, and consumer protection (FAO et al., 2018). Potentially adding to the urban–rural divide, the Sri Lankan government has recently set up the Ministry of Megapolis and Western Development (MoMWD), a dedicated ministry to implement Megapolis, a large-scale, multibillion-dollar urban development initiative in Western Province where Colombo is located.

The Colombo city region food system (CRFS) was defined based on: (a) built-up areas and population density (less dense areas of the region could act as suppliers to Colombo city); (b) jurisdictional and administrative boundaries (governing units that take policy decisions); and, (c) supply areas of macro- and micro-nutrients to the Colombo city region (for more information about boundary setting see Blay-Palmer et al., 2018). From a geographical viewpoint, the Colombo city region has been defined as the Colombo Municipal Council (CMC) and district areas. (The map of the Colombo City Region Food System is available at: <http://www.fao.org/in-action/food-for-cities-programme/pilotcities/activitiescolombo/en/>.)

When the CRFS process was launched, Colombo did not yet have a clear policy commitment and objective to design a more comprehensive and integrated food system agenda involving the rural areas where food is sourced. Nevertheless, at the municipal level, food was already among the priorities of the municipal government in terms of food safety (public health), food waste (waste management), and with attention to food price increases

along the value chain (poverty and food insecurity) in the context of wholesale market system inefficiencies (Tacoli, 2006). At the provincial level, food was prioritized through the promotion of urban and peri-urban agriculture strategies and activities. Nevertheless, food was not analysed or planned in a systemic and integrated manner; current policies and programmes on food systems are fragmented and sectoral, while attempts to achieve macro-level improvements are mostly disconnected and in isolation (FAO et al., in press).

Public health, food security, poverty, and waste issues have been the entry points to initiate a comprehensive and integrated assessment of the food system and were instrumental in fostering stakeholder dialogue and building a common understanding on the interdependence of these issues and their relevance in a broad vision of the Colombo city region food system. This eventually determined further political and stakeholder interest and commitment. In that respect, the CRFS process, while targeting the local-level policy context, allowed initiating the policy discussions and processes at local, provincial (regional), and national levels. In addition, it also contributed to increased attention about the importance of integrated regional food system approaches at provincial and national levels. At the municipal level, the CRFS process has helped the Colombo Municipal Council (CMC) and other institutions to understand the Colombo food system in its complexity and has created the basis to build a common vision on a more sustainable and resilient city region food system. The process has allowed identifying the opportunities, challenges, and needs to be addressed. It was indeed instrumental in understanding the importance of how the urban food system and its regional supply chains and flows across the urban–rural spectrum are interlinked with other high-priority policy objectives. As tangible policy outcomes with the potential for a more coherent regional food systems approach, the CMC agreed to introduce local-level by-laws to promote and regulate Reduction, Reuse, and Recycling (RRR) of food waste at the CMC level. As well, they will introduce a separate division dedicated to food safety within the health department and concentrate more on RRR from food waste.

At the regional level, the Western Province population is growing quickly and the regional Government will have the responsibility to ensure appropriate levels of food security and nutrition in a sustainable manner. While this requires long-term, integrated, and holistic food policies and strategies that include all actors involved in the food system, food continues to be excluded in urban and regional planning. Although a territorial approach is mostly beyond the control of local level authorities, the regional level authority (Western provincial council) has started to recognize the importance of the territorial approach in food systems. In addition, the MoMWD has realized the importance of including the CRFS concept and has made a request for support to build on the findings of the CRFS initiative in integrating prioritized areas of food systems into Western Megapolis urban and regional planning (FAO et al., in press).

At the national level it emerged that existing food policies needed to be evaluated and adjusted. This was well taken by the national authorities, and initial policy discussions to integrate the results of the CRFS assessment into the National Agricultural Policy, the National Nutrition Policy, and the Food Act have begun. However, concrete measures to align local, provincial, and national strategies and action plans are still needed.

Overall, the CRFS process has shed light on food safety, nutrient safety, value chain management, and food waste and losses in relation to urban spaces. Using the CRFS framing triggered policy discussions beyond the local level to provincial (regional) and national levels (Blay-Palmer et al., 2018). It has created the basis for starting to visualize the importance of a territorial approach to the food systems and actions needed to offset the impacts of natural resource management, climate change, and shocks on city regions.

Case study 3: Medellín's approach to city region food systems and enhancing rural–urban linkages

The Municipality of Medellín is the second largest city in Colombia after the capital city of Bogotá, with close to 2.5 million inhabitants. The department of Antioquia, where Medellín is located, is made up of 125 municipalities grouped into nine sub-regions. The definition of the city region was based on the social, economic, and political dynamics around the food system associated with Medellín and its Metropolitan Area (a region called Valle de Aburrá) that is constituted by ten municipalities, in which 59 per cent of the population of Antioquia resides.

The Medellín city region was defined using five different criteria: (a) food supply: the municipalities contributing more than 1 per cent of the food consumed through the supply centres; (b) production including those municipalities contributing 1 per cent or more of the total food produced in the Department of Antioquia; (c) proximity with those territories within the Aburrá Valley that currently have agricultural production; (d) potential for agricultural expansion based on food-flow analysis by volume (weight in tons); and finally (e) political participation to consider municipalities important to governance even though they do not participate significantly in the production or supply of agricultural products for Medellín (Dubbeling et al., 2017; FAO-RUAF, 2018). (The map for the Medellín City Region Food System is available at: <http://www.fao.org/in-action/food-for-cities-programme/pilotcities/medellin/en/>.)

The city of Medellín is a pioneer in its approach to urbanization by ensuring the well-being of its citizens through food. For example, food security and nutrition issues have received growing interest from decision makers over the years, which has now spread to the public and media of the city and the Antioquia region. In 2009, Medellín became the first city in Colombia with a dedicated Food and Nutrition Security unit. The role of the municipal authorities in public policy on food and nutritional security

has been growing – the government of Antioquia also institutionalized the issue of food security and nutrition as public policy in 2003 through the Management of Food Security and Nutrition (MANA) programme (Hackett et al., 2008).

Accordingly, these food-flow and programme initiatives were the entry points to initiate the CRFS process that started with a solid urban food policy agenda as a basis to promote a city region food system perspective. The process focused on the policy phase to ensure that a CRFS approach was embedded in new political programmes and agendas. Once support was ensured, the CRFS approach continued with the assessment, while work on policy processes proceeded in parallel.

The CRFS assessment and related processes highlighted the strong interdependence of the city with surrounding territories and the need to address issues of fragmentation and the inefficiency of the supply system as well as the significant social and economic territorial inequalities between urban, peri-urban, and rural areas. There are limited direct relationships between rural and urban spaces, with a lack of interaction among producers, marketers, and consumers. As a consequence the food provisioning systems in and around the city of Medellín are quite inefficient, resulting in considerable food loss and waste and limited market regulation for prices, due to the hegemonic role of a limited number of actors involved in food logistics and commercialization that act as an oligopoly without real control on price generation. This points to opportunities to strengthen food production in the peri-urban areas of cities in the Medellín city region, as well as to improve linkages between urban food demand (especially from lower-income neighbourhoods) and cooperatives of small agricultural producers in the city region (Blay-Palmer et al., 2018). Considering interventions in other food systems, public administrations could focus particularly on improving the logistical infrastructure of publicly supported markets and possibly creating ‘food hubs’ for local food to enter and be distributed throughout the city (Blay-Palmer et al., 2013; O’Connell and Kiparisov, 2018). Local leaders could enable this through inclusive food governance mechanisms that address the complexity of the food system in the city region of Medellín to generate political, administrative, and economic synergies that facilitate the implementation of actions in the city region.

The CRFS process facilitated institutional integration between the regional government of Antioquia, the Medellín Mayor’s Office, and the Metropolitan Area of the Valley of Aburrá. Advances have been made in starting the creation of a new governance structure and institutional platform in which the three public authorities collaborate. This tripartite platform on territorial food policy issues, called the ‘Alianza por el Buen Vivir’ (the ‘Alliance for Good Living’), serves as a forum and mechanism for coordination, knowledge sharing, and articulation of the collective development and implementation of policy and project interventions from a territorial governance perspective in the Medellín food system. Some examples of

this tri-partite collaboration are: (a) The commissioning of a study to further assess possibilities for the production and commercialization of food products from the region's rural villages; (b) A proposal has been developed to renovate the *Campo Valdes* urban food market into a regional food logistics centre or 'food hub' within the city to make it more accessible for producer associations in the rural areas around Medellin; (c) The platform is also exploring strategies for the regulation of intermediaries to allow these fresh products to reach consumers at much more accessible prices (Dubbeling & Santini, 2018).

Policy outcomes in other city regions

Other city regions participated in the CRFS pilot project, including Toronto, Canada and Quito, Ecuador. In the example of Toronto and the surrounding Greater Golden Horseshoe region, while the CRFS work was only one minor contributor to food policy considerations at multiple scales, pre-CRFS work helped to shape other food policy initiatives either directly or indirectly. In Toronto, complex, long-term, and strong food-related ties between food and governance have existed for many years. For example, the Toronto Food Policy Council was established 30 years ago within the Public Health department of the City of Toronto. This deep history enabled the CRFS process and the coherence of the work by the CRFS Task Force. The multi-stakeholder Task Force included municipal officials from: Toronto Food Policy Council, and Toronto Food Strategy as part of the City of Toronto Public Health as well as City of Toronto Food and Beverage Sector; the provincial Ministry of Agriculture Food and Rural Affairs; a representative from the Golden Horseshoe Food and Farming Alliance; and academic experts in food policy, food security and nutrition, and sustainable food production and food systems. Through the CRFS Task Force review, these key food system actors who normally attended to specific, narrower responsibilities and related policies and programmes were able to come together to identify common issues and cross-cutting solutions to recommend systemic policy changes. The CRFS project contributed to increased awareness about regional food opportunities and concerns, a growing awareness of multi-scaled policy interactions starting with the Toronto Food Policy Council and opportunities to build synergies through, for example, a food–energy–water nexus (Miller and Blay-Palmer, 2018).

In Quito, Ecuador, participatory governance in the territorial food system is recognized as a way to guarantee the achievements of the set goals and outcomes of the food strategy (Dubbeling et al., 2017). These contribute to initiatives across the sustainability spectrum, including the Right to Food, promoting sustainable diets, improving urban–rural linkages and ensuring participation of small producers and local authorities in the city region. The CRFS research in Quito helped to advance this work by supporting network capacity building. Through a consultative process, Quito has designed

an appropriate food system governance structure that takes the form of a food policy council, seeking involvement of local, provincial, and national government actors, the private sector, and civil society. This has helped to further reinforce the regional food system and provide a platform for more robust urban/peri-urban/rural networks.

Conclusions

The CRFS approach confirms that each city region food system is unique. Each has its own peculiarities, challenges, and solutions (Marsden, 2013; Sonnino et al., 2016; see also Chapters 2, 3, 4, 6, & 7, this volume). The CRFS process in the different pilot city regions has generated a broad variety of policy results and has faced several challenges that have limited the impacts as documented in the toolkit.

Overall, the assessment process as part of the CRFS pilot projects allowed multiple stakeholders in the city regions to understand how urban and surrounding rural areas are fed and what their food dependencies are and to identify weaknesses and potential pressure points. This raised general awareness and enabled the basis for policy transformation and the implementation of more sustainable and resilient CRFS through targeted strategies to improve their food systems. With the current pressures from climate change and related disasters, the CRFS approach could offer a way to mitigate, adapt to, and prepare for these changes, creating more resilient regions by providing a method to define place-based challenges, identify solutions, and build capacity (Blay-Palmer et al., 2018).

The assessments helped city stakeholders to recognize the interconnections between food and agriculture and several other sectors, such as transport (as a large part of city transport is food-related), health (malnutrition, obesity, school feeding), education (awareness on sustainable diets through curricula), land-use planning for agricultural and food (land allocation for food and green infrastructure, food market relocation), community development and revitalization, employment generation (in food production, processing and retail, food waste management), and waste management (productive use of waste and waste water, management of food waste) (Tacoli, 2006). In addition, a CRFS approach helped cities such as Medellin and Quito to understand the potential and opportunity to shorten the supply and value chains of key foods by localizing production and reinforcing existing local initiatives. The process also helped evaluate the extent to which urban food security is dependent on rural production areas and how the food system impacts both urban and rural populations in the city region. This understanding helps city governments to start seeing food as a driver for other sustainable urbanization policies (Dubbeling & Santini, 2018).

The process also encountered significant challenges and obstacles in operationalizing the CRFS concepts. Some of the hurdles were common in most of the city regions and can be summarized as: (a) limited data availability;

(b) challenges in building political buy-in and stakeholder engagement; and (c) limited governance and regulatory instruments for food planning at the city region level. The CRFS assessment illustrated the significant challenges arising from the scarcity of data and empirical information at the subnational level on food systems. In some cases where data were available, information at the city region level did not match jurisdictional boundaries. In addition, some data were sensitive or subject to copyright. To tackle these challenges, a combination of secondary and primary research, coupled with expert knowledge, was used to complement missing data (Miller & Blay-Palmer, 2018). Addressing data gaps requires identifying innovative and efficient methods to combine secondary information, primary data, and expert opinions and analyse this data in systematic and consistent ways to produce the information required for local decision-making.

As with other approaches, multi-stakeholder dialogue is a crucial element in the process to enable transparent and inclusive participation. Through this, decision makers and organizational representatives have the opportunity to guide implementation and discuss findings and implications for local strategies (Hemmati, 2012). However, any multi-stakeholder dialogue process comes at the cost of a high degree of engagement across as many sectors and stakeholders as possible. Engagement requires time and resources that can be challenging for many stakeholders to commit. In many cases, engaging with key stakeholders may be difficult due to other reasons – for example, lack of institutional versus individual engagement, conflicting agendas, no history of collaboration, and/or no clear outputs from the start of the process. The identification of a political champion (a recognized and respected policymaker from a key institution involved in the CRFS) from the very beginning of the process can be a successful driver to ensure the engagement of key stakeholders and political buy-in (Bagdonis et al., 2009; Kania & Kramer, 2015). The involvement of key stakeholders throughout the process can also ensure ownership and commitment as the policy or action plan will be shaped – as much as possible – according to the needs, demands, and contributions of all the stakeholders involved (Vervoort et al., 2014).

In most of the city regions involved in the pilot programme, appropriate governance structures and regulatory instruments often do not exist that allow for multidimensional and multi-sector food systems planning or facilitate the realization of policies and investments to reinforce the CRFS. In most cases, food policy, if it does exist, is segmented by particular areas of interest, for example public health or farming, and does not have a strong cross-sectoral mandate (Jenning et al., 2015). As revealed in the CRFS pilot process, and consistent with other multi-stakeholder initiatives (Rivera-Lirio & Muñoz-Torres, 2010; de Zeeuw & Dreschel, 2015), governance arrangements are the key to promoting and operationalizing the CRFS concepts – putting the right structures in place to drive and facilitate the creation of new kinds of rural–urban linkages. Accordingly, a critical challenge is creating more inclusive territorial governance structures in

which cities, regions, and other levels of government can work constructively together towards complementary, beneficial outcomes (Jenning et al., 2015). Interaction, coordination, and joint planning are necessary between different institutions and levels of governments involved in the CRFS (urban and rural entities, larger and smaller cities in the city region, city and provincial/national government). While there is value in integrating across different sites of food production to include rural, peri-urban, and urban agriculture in a more linked up manner (Neilson & Rickards, 2017; Clancy & Ruhf, 2018) typically, such institutions, urban and rural authorities, or city level versus provincial authorities, do not often have the institutional capacity for engaging in joint policy and planning, due to the limitation of their jurisdictional mandate or when different political orientations are at play. As elaborated in the toolkit, task forces and institutional focal points were key enablers to realizing improved linkages and more effective policy and programmes. This, in turn, can foster more sustainable, resilient food systems. This applies to all city region food systems – ones that exist, are being revitalized or are in their beginnings. Building resilient and sustainable CRFS requires opening space for democratic participation from all spheres of society, fostering a multi-stakeholder dialogue process so that citizens can play a stronger role in the policy development process. In future work, it will be essential to include medium and smaller cities and their regions as this is where the most people in the world live and so would have the most potential for impact (Berdegué et al., 2015) and to broaden the scope of the toolkit to include considerations such as climate resilience and migration issues. Using the toolkit's CRFS approach, five pilot communities were able to gain new insights, but also discover important limitations. The toolkit provides a suite of tools from visioning, assessment, and policy creation so that city regions can activate to enable sustainable food system change.

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10 Assessing responsible food consumption in three Ecuadorian city regions

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Introduction

Most examinations of sustainability of agrifood flows in Latin America have tended to focus on production, distribution, and consumption as separate processes (Gustafson et al., 2016). Such a disarticulated view inhibits the understanding of complex phenomena related to agrifood systems, such as the nutritional transition and the epidemic of obesity in Latin American countries. A more holistic vision of food consumption requires identifying patterns in which the origin of foods, demands of food consumers, and the ways in which provisioning occur are all woven together (Blay-Palmer, 2006; Sonnino, 2009; Csutora & Vetőné, 2014; see also Chapters 3, 4, 6, 9, & 11, this volume).

Social, economic, and political pressures reinforce industrialized food systems (Dixon, 2009; Guthman, 2014). On the other hand, food environment characteristics, such as the availability of agroecological spaces, can influence food consumption practices (Brug, 2008). Further, consumers are not homogeneous, either because of limitations in resources or because of active choices. Some individuals, households, and organized groups search out lifestyles and provisioning approaches which are more sustainable, based on differing values and meanings (Stern & Dietz, 1994; Ozçaglar-Toulouse, 2009; Inglehart, 2015). They go beyond simple market transactions towards concerns about health (Gould, 1988; Moorman & Matulich, 1993), ecology and environment (Kinneer et al., 1974; Zimmer et al., 1994), corporate social responsibility (Ottman & Reilly, 1998; Pivato et al., 2008; Feldman & Reficco, 2015; Tsai et al., 2015; Frynas & Yamahaki, 2016), ethics (Newholm & Shaw, 2007; Linders, 2014), and individual social responsibility (Berkowitz & Lutterman, 1968; Anderson & Cunningham, 1972). They engage in what we denote here as ‘responsible consumption’ (Webster, 1975; Antil, 1984; Dueñas Ocampo et al., 2014).

Although qualitative approaches have been used to understand the motivations of individuals or household members in making decisions to be responsible consumers (see, for instance, Guerrón-Montero & Moreno-Black, 2001; Piñeiro & Díaz, 2012; López et al., 2017), limited quantitative research has characterized the extent to which entire populations engage in responsible consumption. Key questions remain: how can one define and measure responsible food consumption among consumers in city region agri-food systems? (see also Chapters 2 and 9, this volume.), and what relationships might consumption have with healthy eating practices? (see Chapter 7, this volume).

This chapter starts with the context in which we worked, the conceptualization of dimensions of responsible food consumption, and the empirical approach that we took to assessment. We then share our initial results of measurement of the dimensions and the overall Responsible Consumption Index (RCI) and its relation to healthy eating indicators. We discuss the implications of our work and conclude with potential directions for research and application.

Context

In Ecuador, 62 per cent of the population between 19 and 60 years of age are overweight or obese (Freire et al., 2014). Closely related is the burden of chronic diseases (GBD, 2017), which in Ecuador have been estimated to cost society €1.5 billion annually (MIES et al., 2017), approximately 1.5 per cent of GDP. While these chronic diseases are often denoted as non-communicable, they can nevertheless be socially transmitted conditions, being shared among populations and fostered by industrialized agrifood systems that promote highly processed foods (Allen & Feigl, 2017).

Ecuador has great potential for resolving both obesity and chronic diseases, as the vast majority of foods consumed are produced in the country, and 60 per cent of these are produced on diversified, family farms (MAGAP, 2016). However, market chains usually involve multiple intermediaries, leaving farm families with insufficient recompense for their production efforts, pushing them to expand the production area devoted to more marketable crops and reduce the area for vegetables, fruits, pulses, and oilseeds for home consumption (Carrión & Herrera, 2012). Further, diets are predominantly composed of tubers and grains, with low intakes of vegetables and fruits (Freire et al., 2013). In 2008, the government of Ecuador included food sovereignty in its constitution, as one way to reduce or eliminate undernutrition and malnutrition. Its mandate was to promote nutritious food, with a preference for agroecological and organic production, which comes from micro-, small-, and middle-sized peasant production and artisanal fisheries, as well as to foster popular economic organizations (Government of Ecuador, 2010).

The Ekomer research team, a multidisciplinary team of Ecuadorian and international universities and civil society organizations, arose out of both a

concern for chronic diseases and a recognition of the potential that Ecuador offers for addressing this problem. The team has carried out research to understand the conditions in which social movement campaigns promote responsible consumption and public policies that support it. One challenge was to develop and implement a method to elucidate different ‘responsible (food) consumption’ patterns in three counties (*cantones*) centred in city regions (including urban and rural areas) where a citizen campaign for responsible consumption has been particularly active: Ibarra, Quito, and Riobamba in the provinces of Imbabura, Pichincha, and Chimborazo respectively, all in the central Sierra of Ecuador.

Quito’s population of 2.2 million is ten times that of Riobamba and twelve times that of Ibarra (INEC, 2010). Of the three provinces, the prevalence of undernutrition, as assessed by stunting (low height for age in 0–5-year-olds), is greatest in Chimborazo (49 per cent), followed by Imbabura (35 per cent) and Pichincha (29 per cent) – national average is 25.3 per cent (ENSANUT-ECU, 2012). On the other hand, overweight ($25 \leq \text{BMI}^1 < 30$) and obesity ($\text{BMI} \geq 30$) prevalence among adults 20–59 years of age is highest in Imbabura (62 per cent), followed by Pichincha (55 per cent) and Chimborazo (53 per cent), whereas the national average is 62.8 per cent (ENSANUT-ECU, 2012). Among adolescents, a study that included Quito found that the condition of being overweight was associated with inactivity due to >28 hours weekly watching television and high consumption of processed foods (Yépez et al., 2008).

In a national survey of household incomes and expenses (ENIGHUR-INEC, 2013), neighbourhood stores were the most common location for food purchases but the least common location for purchase of less processed foods. In contrast, fairs (open air markets), where the greatest purchase of non- or minimally processed foods occurred (Muzo et al., 2017, p. 28), were the second most common location for food purchases. At the same time, in the three study counties, the majority of agricultural production is dedicated to consumption within the country, rather than export (INEC-ESPAC, 2017), opening up the possibility of greater self-sufficiency in food production in the food-sheds of the selected counties.

Dimensions of responsible consumption

Dueñas Ocampo and colleagues (2014) reviewed the history of socially responsible consumption as a concept, from a personal psychological attribute to a collective behaviour that encompasses environmental, ethical, and social concerns linked with purchasing considerations beyond price. They defined a socially responsible consumer as ‘one who sees in their consumption the opportunity to conserve the environment and the quality of life in society in a particular, local context’ (p. 289). They noted that most studies are strongly influenced by an economic perspective, centred on demand and terms of exchange in the purchasing of products and services.

In taking a more social perspective on consumption, we have adapted our responsible food consumption concept from Alan Warde's (2005) definition of consumption. Thus, responsible food consumers consciously appreciate and appropriate patterns of production, distribution, use, and recycling of food goods and services, which they render more sustainable. Such responsible consumers are interested in knowing where food comes from, the way in which it was produced, the working relationships involved, and the political and environmental implications of their form of consumption in society at large (Antil, 1984; Newholm & Shaw, 2007; Dueñas et al., 2014). Here, we add the efforts of consumers to self-organize around ethical values and morals of consumption, and to exert political influence at any stage of the process. Such is the notion of 'co-producer', 'a consumer who knows and understands problems of food production' (Carlos Petrini in Beccaria, 2016).

Focusing on responsible consumption in food systems, Heinisch (2016) emphasizes the importance of considering sustainability in the entire set of relationships across the life cycle of food. A food system consists of all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, disposal of food waste, and the outcomes of these activities, namely nutrition and health status, socio-economic growth, and equity and environmental sustainability (HLPE, 2014). Research on responsible food consumption is scarce, but 'responsible' is often used interchangeably with 'sustainable' when studying food consumption from this perspective. Sustainable diets, as they have been defined and studied, mainly explore the relationships between eating behaviours, health, and environmental impact indicators (Mertens et al., 2016). In normative terms, sustainable diets are protective and respectful of biodiversity and ecosystems; culturally acceptable and accessible; economically fair and affordable; nutritionally adequate, safe, and healthy; while optimizing use of natural and human resources (Burlingame & Dernini, 2012). Agroecological production refers to limited use of external inputs, natural resources conservation, equity and social justice, limited geographic distances (local), appropriate to seasonal availability, and healthy for people and ecosystems (Blay-Palmer, 2006; FAO, 2010, 2018; Lang & Heasman, 2015). Responsible consumption should be oriented towards the broader goal of satisfying the food needs of the entire population of a region in an equitable way, one which maintains the ecological integrity of agroecosystems and the health of the population (Fraňková & Haas, 2017).

The complexity of the concept of responsible consumption has meant that different researchers have included different dimensions in quantitative instruments. In practice, any one approach to measurement cannot capture all relevant aspects of responsible consumption (Lecompte, 2005), rather there should be efforts to adapt them to particular contexts and needs. In the geographic and cultural context of Ecuador, and according to exploratory

ethnographic studies with families in Quito (Maas, 2017), we decided to include three dimensions:

- 1) Direct purchase from producers, as an indicator of contribution to the local community and to smallholder farmers' economy.
- 2) Preference for agroecological products, as an indicator of a preference for more sustainable ways of food production.
- 3) Consumption of Andean grains, as an indicator of appreciation of local gastronomic culture.

Dimension One: direct purchase from producers

For the direct purchase from producers, we consider the locations and forms of procuring foods. As smallholder farmers are the most common type of farmers in Ecuador and they primarily produce diverse products for national consumption (MAGAP, 2016), responsible food consumption must consider the sustainability of their livelihoods. Unfortunately, large chains of intermediaries impact smallholders' livelihoods (Chauveau & Taipei, 2012), hence direct purchase from producers demonstrates a sense of co-responsibility for smallholders' well-being among consumers. Face-to-face meeting of producers and consumers generates a greater sense of solidarity, based on fair prices, increasing the incomes of smallholder producers. Acquiring foods directly promotes virtuous spirals of relationships that have been well documented as short circuits of food commercialization (González et al., 2012; CEPAL, 2014; Craviotti & Soleno Wilches, 2015; Contreras et al., 2018), alternative circuits of commercialization (Chauveau & Taipei, 2012), or local agrifood systems (Cerdán, 2014). Hence, various forms of consumer food procurement can bolster community economies: through direct purchase from farmers, at farmers' markets or fairs; through food baskets, as in community supported agriculture; or via meals in restaurants which buy directly from smallholder producers.

Dimension Two: preference for agroecological products

Dimension Two reflects concern about the way foods are produced. In Ecuador, agrarian reform and agricultural modernization efforts in the 1970s undermined existing knowledge and diverse production practices through the intense promotion of mechanization and synthetic agrochemical inputs and fewer crop varieties (Suquilanda, 2006) leading to erosion, declines in soil quality, and adverse human health impacts (Cole et al., 2007; Sherwood, 2009; Paredes, 2010). To address these challenges, more ecological production practices have been promoted (Fundación Heifer, 2014), including agroecology. Agroecology is based on ecological principles such as the conservation of spatial and temporal biodiversity, sustainable management of soils, recycling of nutrients, use of sustainable energy inputs,

and biological control of pest populations (Altieri, 1999; Gliessman, 2007; Sarandón & Flores, 2014). Purchase of agroecological foods fosters both sustainable agrifood systems and environmental balance (FAO, 2018). Hence, consumer purchases of agroecological products is valued in this dimension.

Dimension Three: consumption of Andean grains

Dimension Three is represented by an indicator of consumption of three highly nutritious Andean grains: quinoa (*Chenopodium quinoa*), amaranth (*Amaranthus caudatus*), and chocho (*Lupinus mutabilis*). These three crops have been cultivated for millennia in the Andes with several varieties adapted to zones with depleted soils and limited water availability (Peralta et al., 2012). Quinoa and amaranth have higher protein and lower carbohydrate content than grains such as rice and wheat, which have become more common in the Ecuadorian diet (Jacobsen & Sherwood, 2002; Freire et al., 2013). Chocho provides essential fatty acids, approximately 22 per cent by dry weight (Villacrés et al., 2010). Hence, all three grains can contribute to healthy diets and address both under- and over-nutrition in the Ecuadorian population, support production by smallholder farm families, avoid their disappearance in local production, and promote cultural heritage and traditional cuisine (Unigarro Solarte, 2010; Ministerio de Cultura y Patrimonio, 2013).

Empirical approach

Questionnaire design and surveying

We designed a household questionnaire to capture the different dimensions of responsible consumption described above. Exploratory ethnographic work provided an opportunity to adapt the questions to the understandings and context of households in Quito (Maas, 2017; see also Chapter 7, this volume). The questionnaire as a whole consisted of 78 questions, which also addressed topics other than responsible consumption: ten questions about general household characteristics, 22 questions about household food acquisition practices, and 36 questions about individual dietary practices and knowledge. Interviewers were trained by the lead authors in two-day workshops, followed by one day of practice interviews. The training included how to select the respondents within the selected households, how to ask each question, and how to record the data on Android tablets. For all data collection, interviewers used Android tablets with a pre-coded interview guide that was constructed using ODK (<https://opendatakit.org/>). The latter obviates a separate data entry step and permits daily monitoring of incoming data as soon as data are uploaded to a cloud-based server.

In each of the three study counties, a two-staged, random sample of households was selected to represent both urban (64–74 per cent) and rural (26–36 per cent) populations. First, census sectors, subdivisions of counties defined by the Ecuadorian National Institute of Statistics and Censuses (INEC), were selected randomly. Within each *manzana* (roughly translates to ‘neighbourhood’) of the chosen census sector, ten dwellings were chosen randomly. As necessary in multi-household dwellings, one household was chosen randomly within that dwelling. Within each household, we explained the project objectives, sought written consent (authorized by the Bioethics Committee of the San Francisco University of Quito), and interviewed two people: a principal adult respondent who answered questions on food provision in the household, and a second adult respondent of the opposite sex. When there was more than one eligible principal or second adult, we randomized by selecting the one with the most recent birthday. Response proportions were high: Ibarra (1282/1475, 87 per cent), Quito (775/860, 90 per cent), Riobamba (858/896, 96 per cent).

For surveys in agroecological locations, the same team of interviewers visited agroecological fairs, markets, stores, and food basket distribution points. Interviewers approached shoppers as they were exiting after their purchases. They explained the study and, when consent was obtained, conducted the interview immediately, except for a few cases where arrangements were made to visit the shopper later in their homes. After the completion of a survey, the interviewers would repeat the process, approaching the next shopper who had completed shopping. The number of agroecological locations was greater in Quito (37) and Riobamba (11) than in Ibarra (6), resulting in larger numbers of respondents in the first two counties (551, 299, and 48 respectively).

Variable and index construction

For each variable, more points are indicative of responses more positively reflective of that dimension (see Table 10.1).

For each household, the scores for each dimension’s variable were reduced to the same range of 0 to 3. The variables that make up the dimensions are on an ordinal scale, going from the absence of the characteristic to a significant presence (for example, zero consumption of Andean grains, to at least seven times per month). The determination of scales from 0 to 3 was carried out through a validation in an expert consultation (consensual validity) (Kaplan et al., 1976; Roberts et al., 2006). Developing a common four-point scale across the three dimensions allowed us to standardize the value of the indicators and compare the dimensions for each population subgroup directly (as recommended by Sarandón & Flores, 2014).

The three dimensions were combined into the RCI with different weightings. Our assignment of weights was guided by both the Ecuadorian Andean context and prevalence observed in our surveyed population. As

Table 10.1 Component dimensions of the Responsible Consumption Index (RCI): variables and scoring system

<i>Dimension</i>	<i>Variable</i>	<i>Responses considered part of Responsible Consumption</i>	<i>Scoring system</i>	
			<i>Options</i>	<i>Score</i>
1. Direct purchase from producers	Places of food procurement	Direct purchase from producer, purchase at farmers' market, fair, or food basket, grows own, or purchases at agroecological restaurant	If these procurement options are: Important moderate minor rarely or never	3 2 1 0
2. Preference for agroecological produce	Production approach for foods procured	Procured foods produced using agroecological methods	If the procured foods were produced using agroecology methods: Important moderate minor rarely or never	3 2 1 0
3. Consumption of Andean grains	Consumption of Andean grains	Consumption of each of quinoa, amaranth, and chocho	Times per month ≥7 5–6 2–4 ≤1	3 2 1 0

smallholder family farms provide the majority of national production, but links between urban and rural areas need strengthening in order to promote both food security and access to healthier foods, we allocated the greatest weight to Dimension One (42 per cent). Given the impact of agroecological food production on the environment, as well as on human health, we assigned the second largest weight to Dimension Two (33 per cent). Only 19 per cent of respondents consumed Andean grains more than three times per month, so we assigned a lower weight of 25 per cent for Dimension Three. A household's RCI was then calculated as:

$$\text{RCI} = \text{Dimension 1 score} \times 0.42 + \text{Dimension 2 score} \times 0.33 + \text{Dimension 3 score} \times 0.25$$

Given skewed distributions, rank correlations were calculated among dimensions and the RCI.

RCI relationships with nutrition relevant practice indicators

Fruit and vegetable consumption was dichotomized into daily versus not. For active control of table salt in the diet, a score was constructed by allocating one point to each control strategy among: (1) minimize consumption of processed foods; (2) and (3) examine food labels for table salt; (4) do not add salt at the table; (5) and (6) buy foods low in table salt; (7) and (8) add little/no salt when cooking; (9) use other spices instead of salt when cooking; and (10) avoid eating away from home. Summed, the salt control practices score could range between 0 and 10.

Comparisons of measures of central tendency of the RCI and of these nutrition-relevant practice indicators were carried out across samples and counties using non-parametric tests of inference: Wilcoxon-Mann-Whitney test for the dichotomous fruit and vegetable consumption; and Spearman correlations for RCI and salt control.

Results

Dimension distribution across different counties and samples

The descriptive statistics on the dimensions are set out in Table 10.2. Direct purchase from producers (Dimension One) and preference for agroecological produce (Dimension Two) have significantly higher scores for consumers from agroecological fairs than in the general population. For both dimensions, Quito has the highest score among consumers of agroecological fairs, while Riobamba has the highest score among consumers of the general population.

For each dimension and for RCI: lower case superscripts with same letter indicate equivalence across the three counties, within the same sample type (random sample of households and fair sample); UPPER CASE superscripts with same letter indicate equivalence across sample type (random sample of households and fair sample), within the same canton.

For consumption of Andean grains (Dimension Three), the population attending agroecological fairs also had a higher average consumption of traditional Andean foods than the randomly selected general population. Quito had the highest score among consumers of agroecological fairs, while Ibarra had the highest score among consumers of the general population.

Table 10.3 presents the rank correlations between the RCI and the three dimensions that make up the index, differentiated by sample. All correlations are significant ($p < .0001$) with the exception of Dimension One (D1) versus Dimension Three (D3) in the fairs sample ($p = 0.51$). This is expected since Dimension Two (D2), purchases in agroecological fairs, is usually linked to direct purchasing from farmers (D1), while Andean grain consumption (D3) is not necessarily conditioned on direct or agroecological purchases.

Table 10.2 Descriptive statistics of three dimensions* and overall RCI, by sample type and county

Dimension		Random			Agroecological Fairs		
		Ibarra (n=1284)	Quito (n=769)	Riobamba (n=861)	Ibarra (n=48)	Quito (n=551)	Riobamba (n=299)
1– Direct purchase from producers	Mean (SD)	1.26 (0.17) ^{aA}	1.08 (0.19) ^{bA}	1.27 (0.28) ^{cA}	1.42 (0.21) ^{aB}	1.52 (0.29) ^{bB}	1.42 (0.20) ^{aB}
	Median	1.24	1.06	1.29	1.47	1.53	1.41
	(Min–Max)	(0.65–1.76)	(0.47–2.06)	(0.35–2.18)	(1.06–2.12)	(0.82–2.53)	(0.76–2.00)
2 – Preference for agroecological produce	Mean (SD)	0.13 (0.46) ^{aA}	0.18 (0.60) ^{aA}	0.30 (0.81) ^{bA}	1.81 (1.02) ^{aB}	2.34 (0.86) ^{bB}	2.24 (0.92) ^{bB}
	Median	0.00	0.00	0.00	2.00	3.00	2.00
	(Min–Max)	(0.00–3.00)	(0.00–3.00)	(0.00–3.00)	(0.00–3.00)	(0.00–3.00)	(0.00–3.00)
3 – Consumption of Andean grains	Mean (SD)	0.70 (0.50) ^{aA}	0.55 (0.45) ^{bA}	0.47 (0.29) ^{cA}	0.86 (0.57) ^{aB}	1.15 (0.73) ^{bB}	0.57 (0.28) ^{cB}
	Median	0.75	0.50	0.50	0.75	1.00	0.50
	(Min–Max)	(0.00–2.75)	(0.00–2.75)	(0.00–2.00)	(0.25–3.00)	(0.00–3.00)	(0.00–2.25)
Responsible Consumption Index (RCI)	Mean (SD)	0.75 (0.22) ^{aA}	0.65 (0.28) ^{bA}	0.75 (0.33) ^{cA}	1.41 (0.42) ^{aB}	1.70 (0.46) ^{bB}	1.48 (0.33) ^{aB}
	Median	0.71	0.58	0.67	1.41	1.78	1.56
	(Min–Max)	(0.37–2.03)	(0.25–2.01)	(0.17–1.94)	(0.59–2.38)	(0.43–2.53)	(0.51–2.12)

*standardized across different dimensions to a range of 0 (low) to 3 (high), but not according to sampling weights.

Table 10.3 The Rank correlation between the RCI and the three dimensions that make up the index

<i>Spearman correlation coefficients</i>				
	<i>RCI</i>	<i>D1</i>	<i>D2</i>	<i>D3</i>
<i>RCI</i>		0.67	0.80	0.59
<i>D1 (Direct purchase)</i>	0.61		0.44	0.16
<i>D2 (Agroecological preference)</i>	0.52	0.15		0.25
<i>D3 (Andean grains)</i>	0.63	0.01	0.075	

Note: The values above the diagonal are for the random household sample (n=2914). The values below the diagonal are for the sample recruited at agroecological fairs (n=898). All correlations are significant ($p < .0001$) with the exception of D1 vs D3 in the fairs sample ($p = 0.51$).

Given the correlations, a similar pattern was observed, with distributions in all three cities further to the right (higher) among those attending agroecological fairs than the general population (see Figure 10.1).

RCI relationships with nutrition relevant practices

Marked heterogeneity was observed in fruit and vegetable consumption across counties and samples (see column cell percentages in Table 10.4). Those buying food at agroecological fairs on average were more likely to report daily consumption of fruits and vegetables compared to the randomly selected population (higher column percentages in lower row). Although generally those households reporting daily fruit and vegetable consumption had higher RCI scores, exceptions occurred (e.g. Ibarra agroecological fairs' sample). (Within each column † versus ‡ indicates different values across Fruit & Vegetable strata (No vs Yes, within columns). Within each Fruit & Vegetable strata (No row and Yes row): lower case superscripts with same letter indicate equivalence across the three counties, within the same sample type (random sample of households and fair sample); UPPER CASE superscripts with same letter indicate equivalence across sample type (random sample of households and fair sample), within the same canton. All comparisons were made with the non-parametric Wilcoxon-Mann-Whitney test.)

All counties and samples presented very low mean and median scores (less than 1 out of 10) on active control of table salt in the diet. While there were some significant differences (see Table 10.5), the scores were very low in both random and fair samples. The correlation between regular active control over table salt with the RCI scores was also low (from 0.07 to 0.19). The scores for actively control table salt in the diet are between 0 to 10 according to control strategies: (1) minimize consumption of processed

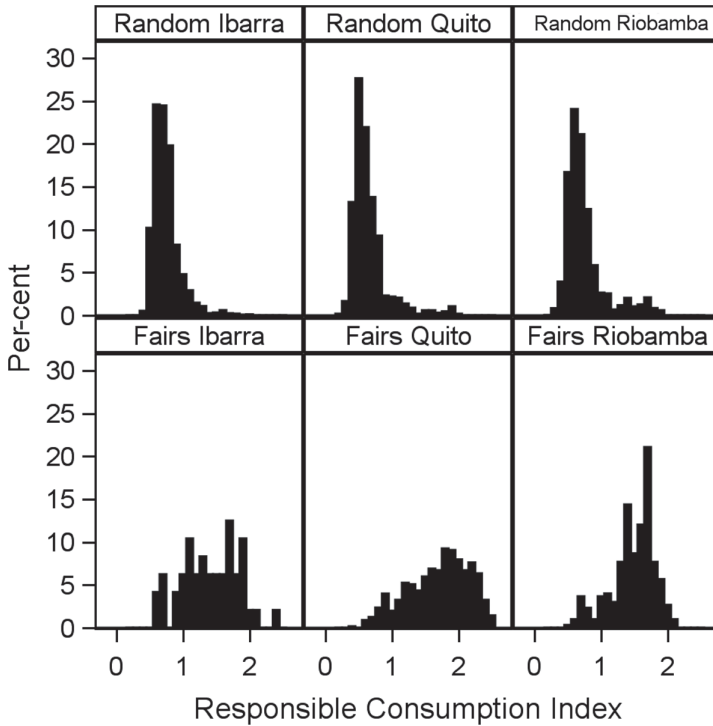


Figure 10.1 Distributions* of RCI by sample type (rows) and county (columns).
 * Per cent of sample used to take into account weighting for random samples of households.

foods, (2) and (3) examine food labels for salt/sodium, (4) do not add salt at the table, (5) and (6) buy foods low in salt/sodium, (7) and (8) add little/no salt when cooking, (9) use other spices instead of salt when cooking, (10) avoid eating away from home. (Within the same sample type (random sample of households or fair sample) lower case superscripts with same letter indicate equivalence across the three counties; UPPER CASE superscripts with same letter indicate equivalence across sample type (random sample of households and fair sample), within the same county. All comparisons were made with the non-parametric Wilcoxon-Mann-Whitney test.)

Discussion and implications

Overall, the results show that food environments of each county have influenced engagement in responsible consumption and decisions on healthy

Table 10.4 RCI distributions* by fruit and vegetable consumption category, sample and county

		<i>Random</i>			<i>Agroecological Fairs</i>			
		<i>Ibarra</i> (n=1284)	<i>Quito</i> (n=769)	<i>Riobamba</i> (n=861)	<i>Ibarra</i> (n=48)	<i>Quito</i> (n=551)	<i>Riobamba</i> (n=299)	
<i>Fruit & Vegetables Daily</i>	No	Mean (SD)	0.72 (0.20) ^{aA†}	0.61 (0.24) ^{bA†}	0.73 (0.32) ^{cA†}	1.54 (0.38) ^{aB†}	1.62 (0.47) ^{aB†}	1.48 (0.31) ^{abB†}
		Median	0.68	0.57	0.66	1.61	1.71	1.56
		(Min-Max)	(0.37–1.91)	(0.25–1.92)	(0.17–1.94)	(0.74–2.07)	(0.66–2.43)	(0.51–2.08)
		% of column	56.5	46.7	83.8	37.5	22.1	80.6
Yes		Mean (SD)	0.79 (0.29) ^{aA†}	0.69 (0.30) ^{bA†}	0.87 (0.63) ^{aA†}	1.34 (0.43) ^{aB†}	1.72 (0.45) ^{bb†}	1.49 (0.39) ^{aB†}
		Median	0.74	0.61	0.78	1.25	1.80	1.56
		(Min-Max)	(0.40–2.03)	(0.25–2.01)	(0.42–1.85)	(0.59–2.38)	(0.43–2.53)	(0.71–2.12)
		% of column	43.5	53.3	16.2	62.5	77.9	19.4

* adjusted according to sampling weights.

Table 10.5 Summary statistics* of table salt control practice scores by sample and county, and correlations between table salt scores and RCI

	<i>Random</i>			<i>Agroecological fairs</i>		
	<i>Ibarra</i>	<i>Quito</i>	<i>Riobamba</i>	<i>Ibarra</i>	<i>Quito</i>	<i>Riobamba</i>
Salt control practices						
Mean (Std)	0.32 (0.62) ^{aA}	0.68 (0.91) ^{bA}	0.59 (1.23) ^{aA}	0.46 (0.65) ^{aA}	0.74 (0.98) ^{aA}	0.87 (1.40) ^{aB}
Median	0.00	0.00	0.00	0.00	0.00	0.00
(Min–Max)	(0–3)	(0–6)	(0–6)	(0–2)	(0–5)	(0–6)
Correlation between salt control practices and RCI						
Spearman correlation	0.07	0.15	0.07	0.13	0.14	0.19
p	0.008	<.0001	0.04	0.39	0.001	0.001
n	1284	769	861	48	551	299

*adjusted according to sampling weights.

food among their population. Here we explore some of the potential reasons for this heterogeneity across counties.

The higher RCI scores for households in Riobamba were driven by the higher scores for Dimensions One (direct purchase from producers) and Two (preference for agroecological produce). The higher value for Dimension Two in Riobamba is consistent with the higher proportion of open markets per capita in Riobamba, where there is 1 open market space per 5,641 families, compared to 1 per 8,111 in Ibarra, and 1 per 19,417 in Quito (Ekomer, 2017).

However, in the group sampled at agroecological fairs, Quito had the highest value for the three dimensions. This likely reflects the strong awareness-raising process of the ‘250 thousand families’, a citizens’ campaign (www.quericoes.org) which promotes practices of responsible food consumption, focussing on populations involved in agroecological production and direct markets. This might also explain why a higher percentage of consumers in fairs in Quito also consume fruits and vegetables.

Some of the differences observed between the random sample and the fairs sample are due to the nature of the variables considered for Dimensions One and Two. Indeed, as direct and agroecological purchasing sites are often the same, it is expected that consumers sampled in agroecological fairs would obtain a higher score for these dimensions and that they should be more highly correlated. That this is the case is partial validation of the dimensions and RCI.

For Dimension Three, on Andean grains, the Ibarra random sample had a higher score than the other counties. This finding is consistent with Ibarra being a centre of quinoa (Subsecretaría de Agricultura, 2015) and chocho (Peralta, 2016) production, likely influencing consumption among the general population. Nevertheless, agroecological fairs seem to be an effective way of influencing Andean grains consumption, as shown by the high score found in the Quito fairs sample.

Practices aimed at regularly and actively controlling table salt in the diet were uncommon in all counties and both samples, making this potential link between responsible consumption and a nutritionally relevant practice hard to make (with low rank correlations). The positive association between responsible food consumption and (some aspects of) the quality of the diet (that is, fruit and vegetable consumption, but not salt control) is intriguing. Does practising responsible consumption lead to greater fruit and vegetable consumption (perhaps by directing the shoppers to markets where fruits and vegetables are sold)? Or do health concerns increase the pursuit of fruit and vegetables and lead consumers to agroecological markets, which increases the RCI? Whatever the nature of the relationship, it may be expected that if food consumption in Ecuador becomes more ‘responsible’, it would also become consistent with public health promotion of fruit and vegetable consumption.

Conclusions and further research

The RCI represents a valuable tool for characterizing different city region populations and their food procurement and consumption patterns (see also Chapters 9 & 11, this volume). The RCI was also useful for establishing a concrete relationship between a more general consumption pattern and some specific behaviour in another domain, such as the consumption of fruits and vegetables. From a methodological perspective, despite the limitations of the RCI, its potential to compare patterns of food consumption with other environmental, economic, social, health, demographic, or other variables opens up a range of possibilities for the study of responsible consumption. The RCI represents both a relatively quick assessment tool and a starting point for further quantitative and qualitative research.

On the other hand, the nature of the quantitative data did not tap into consumer's intentions behind their responsible consumption practices. It may be that a consumer intends to consume responsibly, but does not demonstrate practices that contribute to a sustainable food system. Several barriers (e.g. physical, economic, temporal or cognitive) can explain this gap between intentions and behaviours, including the role of accepted sets of practices, termed by Lahlou (2018) as 'installations'. Conversely, a consumer who contributes to a sustainable food system through his practices may not necessarily be intentional, where the concept of responsible consumption implies a certain awareness, and active choices. Food consumption patterns are motivated by multiple factors and the intention to consume responsibly may not be the one that has motivated a practice that contributes to a sustainable food system. It may be because of the organoleptic qualities of food, the proximity of markets, the incentives of a given public policy, or other reasons. Studies evaluating consumer intentions or combining questions about intentions with observations on actual practices would help to inform the conceptualization and operationalization of responsible food consumption.

The RCI could be useful for testing how the food environment influences food consumption patterns. Shoppers at agroecological fairs tended to have higher responsible consumption indexes. In terms of public policy, this suggests that agroecological markets should be promoted and supported to give more consumers the opportunity to choose responsibly for their food system. Citizens can influence their food environment through campaigns and organizations that promote the creation of neighbourhood, open and agroecological markets, as was shown by the data on Quito. Further applications of the RCI in different contexts may elucidate other patterns and explore different opportunities to understand responsible consumption's contribution to sustainable food systems and better health.

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Note

- 1 BMI, Body Mass Index, is calculated as weight (in kg) divided by the square of height (in m). A BMI of 25 to 30 is considered overweight, and a BMI over 30 is considered obese. Available at: <http://www.who.int/en/news-room/fact-sheets/detail/obesity-and-overweight>. Accessed 22 October 2018.

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11 Integrating upstream determinants and downstream food metrics

Nevin Cohen

Introduction

Planners acknowledge that urban food systems should be measured and managed as complex, adaptive systems, interconnected sets of dynamic social, physical, economic, and cultural phenomena (Meter, 2010; see also Chapters 1, 4, & 12, this volume). A recent review identified 260 distinct food system indicators included in the food strategies and plans of five North American cities: New York, Philadelphia, Los Angeles, Chicago, and Toronto (Coppo et al., 2017; Ilieva, 2017). NGOs and governments have also developed multidimensional indicators to track food system governance, diet-related public health outcomes, and the environmental impacts of urban food systems (Prosperi et al., 2015; Milan Urban Food Policy Pact, 2017; see also Chapter 7, this volume). Despite efforts to incorporate food metrics that measure the root causes of downstream food system outcomes in food plans, such as poverty and discrimination, development pressures, or labour exploitation, these remain exceptions, not the norm. More typically, cities collect a narrower range of metrics to manage their food systems that are oriented to downstream outcomes. Variables like food infrastructure (e.g., the distribution of food retailers), programme outputs (e.g., participation in public feeding programmes), population dietary practices (e.g., fruit and vegetable consumption and obesity prevalence), agency adherence to food policies (e.g., compliance with nutritional standards) are commonly tracked.

The disconnect between upstream determinants of the food system and downstream policies and programmes is certainly not unique to food policy. In the field of public health, for example, practitioners typically design interventions to change individual behaviours rather than addressing the upstream social determinants of those behaviours, like poverty, housing affordability, education, or environmental conditions (Freudenberg et al., 2015). The obstacles to integrating the upstream and downstream in food planning are conceptual, pragmatic, and political. The causal links between upstream determinants and downstream outcomes of the food system are long and complex, involving multiple intervening and interacting

factors, making indicator development difficult (Braveman et al., 2011). Emphasizing the complexities of the food system can make it seem more difficult to frame solutions, and thus harder to rally support behind new initiatives, though Meter (Chapter 4, this volume) argues that taking complexity into account can actually facilitate consensus. The lack of adequate resources is a pragmatic constraint that prevents cities from tracking data on the social and economic variables that affect the food system, especially if there is only a modest budget for food systems planning and no mandate for city agencies to track these metrics. Other pragmatic factors include: professional traditions in fields like health and planning that focus staff on downstream interventions; the demand for short-term, measurable changes by administrations that favour quick results; silos among government officials, advocates, researchers, and funders that make data sharing difficult; and what Libman (2015) describes as a ‘local trap’ that emphasizes interventions within smaller rather than larger geographies. City officials may also be reluctant to draw attention to the politically fraught, ‘wicked’ problems (Rittel & Webber, 1973) of racial, class, or gender oppression, preferring to measure more discrete intervention outcomes, preferably those that demonstrate success, not failure. Finally, though food can be an effective way to teach about and address systemic inequities (Reynolds & Cohen, 2016), NGOs grappling with issues like immigrant rights, housing access, or fair labour practices may not recognize the potential benefits of framing their political strategies in the context of food.

Failing to integrate upstream determinants of food systems in the indicators used to manage urban food systems can affect food planning and policy development in several ways. As socially constructed representations of reality, metrics drive decision-making by their ability to frame problems, privilege certain analytical methods, and thus exclude potential solutions (Barrett, 2010; Sébastien & Bauler, 2013). They shape policies by reinforcing or contradicting established positions, suggesting positive or negative trends, and motivating or discouraging stakeholder involvement in policymaking (Hezri & Dovers, 2006). The process of identifying appropriate metrics and analysing their meanings can therefore facilitate shared understandings of problems and desired changes by engaging different actors, or present a limited or distorted view of reality, thus excluding stakeholders by constraining measurement to specific outcomes (Innes, 1990). Omitting upstream indicators like poverty or discrimination from food planning also elevates the importance of measured downstream interventions, like supermarket density, potentially diverting attention from, and quelling demands for, more radical social and political reforms like raising the minimum wage or capping commercial rents (Rosenberg & Cohen, 2017). Tracking only the downstream outputs of food programmes, like the number and productivity of urban farms, can mask the roles such programmes play in addressing upstream issues like governance within the food system, and by doing so minimize their transformative potential and dampen political and financial

support for these projects (Reynolds & Cohen, 2016). Documenting food policy outcomes that address upstream determinants, like poverty reduction or increased social cohesion, can strengthen the case for such policies.

This chapter discusses the benefits of integrating upstream and downstream food metrics by illustrating how integration can focus policy-making on the root causes of three politically salient food policy problems in New York City: food insecurity among immigrants, unhealthy neighbourhood food environments, and poor labour conditions faced by food workers. Following a brief review of food metrics development in New York City, the chapter discusses how measuring upstream determinants of each issue can facilitate the design of more effective food policies and better equip food advocates with an understanding of the structural problems they need to solve. The chapter concludes with strategies that planners can use to more effectively and efficiently collect upstream metrics and integrate them into food planning (see Chapter 12, this volume).

The emergence of NYC food metrics

Cities in the Global North have collected data on food production and distribution since their founding, but surveillance of the food system, from adulteration and safety to food distribution infrastructure mapping, increased with the emergence of municipal planning and public health departments at the turn of the last century (Vitiello & Brinkley, 2014). But until the past few decades, and the proliferation of distinct food system plans, municipal agencies had not developed and collected urban food metrics systematically (Coppo et al., 2017; Ilieva, 2017). In New York City, for example, food metrics had not been aggregated and presented cohesively until the start of annual food metrics reporting in 2011 (Freudenberg et al., 2018). City agencies in charge of Health, Sanitation, Parks, Economic Development, and other agencies had published data for many years about the food programmes under their jurisdictions, such as the quantity of discarded organic material disposed of by the Sanitation Department, yet those metrics had never been compiled as food system indicators until food gained recognition as an urban system in need of planning, measuring, and managing.

The New York City Council's 2010 release of *FoodWorks*, a comprehensive food systems strategy, provided the impetus for tracking food metrics, as it was followed by the enactment of three local laws to require the city to collect and report food system data (Cohen, 2011). The metrics mandated by the City Council reflected food planning objectives of different advocates. One bill required the agency in charge of city property to publish a list of all city-owned vacant parcels with an assessment of their suitability to grow food, responding to urban agriculture proponents who wanted to expand food production.¹ Advocates for using the city's food purchasing power to support regional agriculture enabled enactment of a second bill requiring an annual report of New York State-produced food procured by city agencies.²

The third food metrics bill was designed to measure progress towards multiple objectives in the City Council's FoodWorks plan, requiring reporting of 37 indicators (subsequently amended to add food insecurity metrics) of food-related activities under the jurisdiction of different city agencies (New York City Council, 2013).³ In determining the scope of the food metrics legislation, the Administration and City Council negotiated which data was deemed useful for food planning and feasible for existing staff to collect without significant additional resources (Campbell, 2016). The Office of Food Policy compiles metrics from different agencies and publishes them in an annual report.

The food metrics mostly (21 of 37 metrics) measure nutritional health, which was the focus of the Bloomberg administration and an area fully within the purview of the Department of Health and Mental Hygiene (DOHMH). The remaining metrics report on food insecurity (n=4), food-related economic development (n=3), food system environmental impacts (n=8), and the number of food workers trained by the city (n=1) (Freudenberg et al., 2018). An analysis of the values of each metric between the first food metrics report issued in 2012 and the report issued in 2017 showed varied changes in indicator outcomes. Between 2012 and 2017, 19 indicators showed improvements, 15 showed declines, one didn't change, and two were not able to be assessed. For example, the percentage of New York City residents reporting food insecurity fell by 14 per cent during this period, while the number of permits for Green Cart vendors who sell produce from mobile carts in low-income neighbourhoods declined by 37 per cent (Freudenberg et al., 2018; Freudenberg et al., 2018a).

In addition to the metrics published in the city's annual food metrics reports, many other New York City agencies collect and report data on the food system that are relevant to their missions, but these are disseminated through multiple agency websites and documents. For example, the DOHMH tracks prevalence of non-communicable diet-related diseases and publishes the results of restaurant and school cafeteria inspections. The Human Resources Administration estimates the percentage of those eligible who participate in the federal Supplemental Nutrition Assistance Program (SNAP), which provides supplemental money to buy food. The Department of Sanitation collects and reports on food waste management. Still other agencies that address land use (e.g., Department of City Planning), economic development (e.g., Economic Development Corporation), and neighbourhood redevelopment (e.g., Housing Preservation and Development) monitor and prepare reports on food distribution, manufacturing, and retail.

Moving upstream

The data presented in the city's annual food metrics report, along with the additional food system metrics compiled by independent agencies, address downstream outcomes of the food system, like dietary changes or

programme results such as the value of New York food products procured by city agencies. Integrating upstream and downstream factors can provide a more complete picture of the factors influencing food policies and their outcomes, as illustrated by three examples from New York City: the effects of federal immigration policies on participation in SNAP within immigrant communities; real estate development pressures and neighbourhood food environments; and labour policies that affect the well-being of food workers.

Food insecurity among immigrant communities

To track progress in addressing food insecurity, New York City reports the number of people who indicate that in the previous year they faced insufficient access to food for an active, healthy life. In 2016, 1.22 million New Yorkers, 14.4 per cent of the population, reported being food insecure. The city also reports a related metric, an estimated annual ‘meal gap’ that indicates the number of meals foregone by households because of insufficient income. In 2016, New York City residents missed 207.7 million meals due to their inability to afford adequate food (New York City Mayor’s Office of Food Policy, 2018). Reducing the percentage of city residents reporting food insecurity and the size of the meal gap are important policy goals. One strategy is ensuring that eligible New Yorkers participate in SNAP. The number of people participating in SNAP is an indicator of both the need for food assistance due to poverty and the help that New Yorkers receive through the programme to feed their households. The food metrics report presents the number of SNAP participants for the city, by Borough, and among older adults (New York City Mayor’s Office of Food Policy, 2018).

Between 2012 and 2016, the annual SNAP participation rate declined by 7.3 per cent, although nearly 20 per cent of the city’s population still receive SNAP benefits (Hunger Free America & CUNY Urban Food Policy Institute, 2018). The overall decline is primarily correlated with the city’s economic recovery from the Great Recession of 2007–2008 and a reduction in poverty and unemployment, but also reflects decisions by those eligible for SNAP not to apply or to leave the programme. In addition to understanding the upstream factors that cause a large percentage of New York City’s population to be poor enough to qualify for SNAP, understanding the factors that inhibit or encourage people to apply for SNAP is key to designing interventions that increase participation and thus improve food security among those in need of supplemental financial support.

A study of SNAP caseload data during this period of decreasing participation found significant variation in total and per capita SNAP participation from neighbourhood to neighbourhood, with participation in some communities dropping by 28 per cent and others growing by 8 per cent (Hunger Free America & CUNY Urban Food Policy Institute, 2018). These differences indicated the need for closer scrutiny of the upstream determinants that may

influence participation at the neighbourhood scale. Such factors may include the effects of forces like gentrification on the number of eligible residents in a neighbourhood, or demographic changes like an increased population of immigrants that can influence whether residents of a community choose to participate in SNAP even if their low income enables them to qualify.

Currently an estimated 220,000 New York City residents who are not citizens but who are here legally are receiving SNAP benefits, cash assistance, or both, yet a survey of 50 frontline staff of community-based organizations that serve food-insecure people found significant deterrents to SNAP participation among some immigrant communities. One potential obstacle was the language barriers faced by some of the approximately 17 per cent of New Yorkers who speak languages other than the nine the city translates for informational material and application forms (Vignola et al., 2018). A more complex upstream barrier to SNAP participation is fear of deportation due to recent federal immigration policies. Survey respondents reported that current and proposed federal policies, along with political rhetoric from elected officials, have stoked fears of deportation and have had a chilling effect, not only on applications for federal programmes like SNAP, but also on inquiries about food benefits among immigrants with whom they have interacted (Vignola et al., 2018). Some immigrants seeking US residency believe, incorrectly for now, that participation in SNAP will designate them a ‘public charge’, which could be used as a basis for deportation. A recently proposed rule that would broaden the definition of a public charge to include those receiving SNAP and other benefits has only intensified fears of participating in the programme, even among eligible immigrants (Health Affairs Blog, 2018).

Data on upstream determinants of participation in food benefit programmes such as language barriers (e.g., the percentage of those eligible for SNAP who speak languages other than those on government forms) and deportation fears (e.g., the percentage of eligible immigrants who fear that SNAP participation will put them at risk) would help cities isolate the causes of changing rates of participation within specific neighbourhoods and suggest methods to increase participation. While quantitative data on the prevalence and effects of the factors identified above may not affect anti-immigrant political positions, metrics tracking the experiences of immigrants applying for and participating in SNAP, including qualitative data on their perceptions of and responses to federal policies, could enhance arguments for political change and also facilitate the design of more effective interventions targeting specific immigrant populations. Metrics would also enable planners to anticipate the effects of future shifts in immigration policy on SNAP participation and develop alternatives to prevent hunger and malnourishment in immigrant communities. Surveying recent immigrants in the current anti-immigrant climate is a significant challenge for public agencies, even with supportive local governments, but it may be easier if agencies partner with non-profits who have the trust of immigrant communities.

Table 11.1 Marginal effects of federal food benefits on NYC poverty rate, in % change, 2012–2016

<i>Program</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>
SNAP	-3.7	-4.0	-3.6	-3.2	-3.3
School Meals	-0.5	-0.6	-0.5	-0.7	-0.6
WIC	-0.3	-0.2	-0.2	-0.2	-0.3

Source: NYC Mayor's Office of Operations, 2018.

In addition to measuring the effects of upstream factors on SNAP participation and resulting downstream effects like reduced malnourishment and diet-related diseases, food planners can also track the upstream impacts to strengthen the case for the programme. For example, the New York City Mayor's Office of Operations analyses the effects of SNAP and two other federal food programmes (school meals and the Women, Infants, and Children programme), on the New York City poverty rate (NYC Mayor's Office of Operations, 2018). The most recent study shows that SNAP benefits reduce the poverty rate by more than 3 per cent, as Table 11.1 illustrates (NYC Mayor's Office of Operations, 2018). Tracking participation in SNAP not only as a way to address malnourishment but also as a tool for poverty alleviation provides evidence of the broader value of SNAP and illustrates the value of collaboration between advocates for health and food justice and anti-poverty advocacy groups.

Development and local food environments

A neighbourhood's spatial configuration, such as the availability of transit, neighbourhood services, and civic spaces for social interaction have long been viewed as important upstream determinants of health (Braveman et al., 2011). In recent years, researchers have focused on the local food environment, defined as the prevalence and configuration of food establishments, as factors in population nutrition and health (Malambo et al., 2016). Typically, food environments are measured based on the mix and location of food retailers, with the availability of convenience stores, corner stores, bodegas, and fast food restaurants proxies for unhealthy food environments and supermarkets as indicators of healthy food access (Lytle & Sokol, 2017; Rosenberg & Cohen, 2018). Researchers have also measured access to food in adjacent neighbourhoods and travel patterns to understand how food environments shape decisions about shopping, diets, and malnourishment (Lytle & Sokol, 2017). Upstream determinants of these patterns, such as development pressures and zoning decisions, are not typically measured as food metrics.

New York City's Food Metrics Reports track results of several policies to increase physical access to healthier food: the number of retailers participating in a programme called *Shop Healthy*, which helps bodegas and independent grocers sell healthier food; the number of Green Carts (mobile produce vendors selling in neighbourhoods underserved by supermarkets); and the number of new and expanded supermarkets supported by the Food Retail Expansion to Support Health (FRESH) policy, which offers incentives to increase grocery square footage in underserved neighbourhoods (New York City Mayor's Office of Food Policy, 2018). The metrics show that 36 FRESH supermarkets have received incentives to open or expand, but since 2011, 273 additional supermarkets opened without FRESH subsidies (New York City Mayor's Office of Food Policy, 2018). The number of Green Cart permits has declined to 286 (New York City Mayor's Office of Food Policy, 2018), though there has been no analysis of why there are so few Green Carts when 1,000 permits are available.

Incorporating upstream factors that determine the mix of food retailers in a community can more thoroughly explain changes in local food environments. Many variables determine retail development, from the health of the economy to the structure of retail sectors. At the community scale, zoning is an important determinant of real estate development potential. Zoning can restrict or induce commercial and residential development by changing the allowable uses, size, density, or configuration of buildings. Zoning changes determine food retailer locations and can spur displacement of existing food businesses by making other land uses more profitable (Cohen, 2018). Rezoning can also have secondary effects on food environments by stimulating overall real estate development, increasing population density, and attracting new, more affluent residents to a neighbourhood, potentially reducing the ratio of food retail per capita and encouraging retailers to market to the new higher income residents (Cohen, 2018). When zoning attracts wealthier residents to a low-income neighbourhood it can also lead to gentrification and displacement of existing residents.

Despite these direct and indirect effects of zoning on local food environments, cities rarely treat zoning changes as food system interventions and seldom analyse their potential consequences when they conduct public reviews. Because these effects on food are rarely documented in land-use review processes, they are infrequently raised by local advocates in public hearings. In New York City's environmental review process, for example, secondary or induced displacement of food retailers as a result of new commercial activity is not typically analysed, based on the assumption that commercial food establishments will open to meet any increased market demand. If environmental impact statements do not measure the adverse impacts of proposals on food access, they will not be identified and public reviews will likely overlook them.

An analysis of the effects of rezoning on the food environment of East Harlem, a historically low-income community of colour in upper Manhattan facing gentrification pressure, shows that upstream determinants of food environments like zoning-induced development pressures have changed the types of food retailers in the community and thus have affected access to healthy, affordable food. East Harlem has been rezoned numerous times since the late 1990s to stimulate economic development and in response to pressure from the real estate industry. The rezoning and subsequent development has had three principal effects on East Harlem's food environment: supermarket displacement; the creation of new sites for big box food retailers; and the expansion of both healthy and unhealthy food retail as the neighbourhood has gentrified (Cohen, 2018).

Rezoning Harlem's historic 125th Street made higher-density mixed-use development feasible and increased real estate values along this major commercial corridor. The increased land value enabled a local community development corporation to sell property it had previously acquired from the city at a below market price, with the purpose of developing an affordable supermarket called Pathmark (Cohen & Freudenberg, 2016). The company that purchased the Pathmark site now plans to build two 32-story residential towers on the land, yet has not committed to replacing Pathmark with another supermarket, despite demands from local elected officials and community leaders (Cohen & Freudenberg, 2016). A second example is the rezoning of an abandoned industrial site in East Harlem into a regional shopping centre designed to house big box food retailers that currently include Costco, Target, and Aldi. The environmental assessment's analysis of alternatives considered but rejected a conventional neighbourhood-serving supermarket and smaller commercial spaces as unfeasible (Cohen, 2018). A third example is the extensive rezoning of East Harlem to increase the scale of development sites to boost land value and development potential. Such rezoning throughout East Harlem has attracted residential development occupied by higher-income residents, increasing the value of residential and commercial real estate (Cohen, 2018). The influx of higher-income people has led to residential and commercial gentrification, including displacement of low-cost food retailers (Busà, 2014).

Considering the effects of zoning and other aspects of land development on the spatial configuration of food retailers would help planners anticipate and address the potential for new development to spur food gentrification, the process by which higher-income residents contribute to the displacement of affordable food establishments by higher-priced grocers and restaurants, or induce changes in the products offered by existing retailers, effectively displacing existing residents from the neighbourhood food environment by making them feel that the remaining food retail establishments are not offering the foods they desire and can afford (Pearsall & Anguelovski, 2016; Cohen, 2018). Treating data on real estate development trends (e.g., changes in commercial rents and commercial vacancies) and zoning proposals (e.g.,

square feet of additional commercial space permitted in a community) as food metrics can enable planners to anticipate the effects of these upstream factors on food retail and suggest strategies to prevent food gentrification. Strategies might include city financial support for existing food businesses, policies to prevent property owners from warehousing vacant commercial spaces, or the use of zoning incentives to attract affordable grocers and restaurants. Discussions about the determinants of food retail could be extended to include other upstream factors such as poverty or housing affordability, which affect the kinds of commercial activities that a community can support. Modifying the public review procedures that produce data-rich analyses of proposed developments, like environmental assessments and land-use review documents, so that they estimate the direct and secondary displacement of food retailers, would provide advocates with data on potential impacts and thus empower them to support land-use changes that enhance food access.

Good jobs for food workers

The workplace and working conditions are important upstream determinants of health. However, much of the occupational health and safety field has focused on the physical effects of work and environmental hazards in the workplace, rather than on the nature of employment, from the wages paid to workplace rules, that significantly affect a worker's economic status and emotional and physical health. In addition to salaries, workplace benefits (e.g., health insurance and paid leave) determine whether workers can afford healthier living conditions, including healthy, adequate food, yet those in low-wage jobs often earn too little to cover basic household needs. Low-wage jobs also prevent workers from having much control over their work processes, leading to irregular work schedules, insecure employment, and limited decision-making capacity that can create stress and other psychosocial impacts associated with the increased likelihood of injury, morbidity, and mortality, including diet-related chronic diseases (Lowden et al., 2010).

The conditions of food workers are particularly important to measure. The food sector has grown significantly over the past decade (Freudenberg et al., 2016). However, most of the food jobs that have been created in the United States since the Great Recession of 2007–2008 have been non-union, insecure, hourly labour in food services and food retail. In New York City, for example, the food sector is one of the largest and fastest growing job sectors, with 63,000 grocery store workers and 320,000 food service and drinking establishment employees, yet these jobs pay among the lowest wages of any employment sector (Freudenberg et al., 2016).

Over the past decade, New York City has adopted policies to address two important upstream determinants of nutritional health. One set of policies has increased wages for workers, and by doing so has increased incomes for low-wage food workers. A second set of policies has improved

working conditions for the lowest-wage workers, which in New York City are concentrated in the food sector.

Higher wages

In 2012, the city enacted the Fair Wages for New Yorkers Act (Local Law 37 of 2012), which increased the living wage that businesses getting financial benefits from New York City have to pay their workers. Two years later, Mayor de Blasio signed an executive order expanding the coverage of this law to additional categories of workers and indexed the amount of the required living wage to the Consumer Price Index, raising the amount that the jobs covered by this law pay to approximately \$15 per hour by 2019. The executive order covers an estimated 18,000 additional workers, 4,100 of which are in minimum wage jobs in the retail and fast-food sectors.

Over the past few years there has been a growing movement to raise the minimum wage, particularly for fast-food workers, buoyed by the national *Fight for Fifteen* movement, which calls for fast-food employers to provide at least a \$15 hourly wage. Support by the Mayor and Governor led the New York State Wage Board on 20 May 2015 to raise the fast-food minimum wage to \$15. The mayor also approved an increase to a \$15 minimum wage, by the end of 2018 for all city employees and non-profit human services contractors. Raising the city's minimum wage means higher incomes for approximately 25 per cent of minimum wage earners and their families, affecting approximately 1.46 million workers throughout New York State.

Improved working conditions

In 2014, the city enacted legislation to expand mandatory paid sick leave to smaller businesses and added categories of family members (e.g., sibling, grandchild, and grandparent) for whom sick leave can be taken. These expansions in the new law extended sick leave coverage to an estimated 350,000 additional workers. Sick leave is particularly beneficial for low-wage workers, many of whom lack savings and thus face extreme hardships if they lose pay from being sick. This is particularly true of food service workers, a low-wage sector in which fewer than half of all workers had sick leave benefits before the law took effect (Rankin, 2012). Guaranteeing paid sick leave not only ensures that food workers and other low-wage employees are able to attend to their health without losing wages, but it also enables workers not to report to their workplaces ill, reducing health risks to co-workers and customers, especially important for people who handle food.

Another issue unique to restaurant workers is tipped wage theft. In November 2015 the city enacted Local Law 104 of 2015, which created an Office of Labor Standards to address this and other labour laws. The Office is required to educate employers; create public education campaigns

regarding worker rights; collect and analyse statistics on violations; research and promote programmes about worker protections, education and safety; and conduct investigations, serve subpoenas, and impose civil penalties on businesses that do not comply with NYC's labour standards.

In 2017, New York City enacted several local laws to improve the work life of shift workers, a category that includes many fast food workers, by regulating the way their work schedules are set. Fast-food employers must provide work schedules two weeks in advance, pay premiums for changes made to work schedules, and offer open shifts to existing fast food employees. The laws also ban schedules that require workers to both close the business at night and reopen it first thing in the morning, and require employers to provide their employees with 72 hours advance notice of their work schedules.

To prevent prospective employers from discriminating against those who have a criminal record, Local Law 63 of 2015 prohibits any employer from inquiring about a job applicant's criminal history until after the employer makes the applicant a conditional offer of employment. This law is particularly important to address discrimination in arrests and sentencing, which has resulted in a disproportionate level of incarceration among African-American men, limiting their economic opportunity (Martin et al., 2015).

Transitions within the food retail sector prompted New York City to adopt Local Law 11 of 2016, which is designed to protect workers when a supermarket is sold to another company. The law requires grocery store owners that purchase existing grocery stores to retain the previous owner's employees for a period of 90 days after the business is purchased. After the 90-day transition period, the new employer must evaluate these employees and consider continuing their employment.

Metrics documenting compliance with some of these labour policies tracked by the Department of Consumer Affairs illustrate the challenges faced by low-wage workers. Food or drink service employees report being paid below the minimum wage at nearly three times the rate of retail employees (17.5 per cent vs. 6.7 per cent) (New York City Department of Consumer Affairs, 2017). A large percentage of low-wage workers in New York City report that they have experienced workplace violations in the previous week, including: 54 per cent with at least one pay-related violation; 69 per cent who were asked to do 'off-the-clock' work; 77 per cent with violations of overtime pay; and 21 per cent with minimum wage violations (New York City Department of Consumer Affairs, 2017). Low-wage immigrant workers in New York City, a particularly vulnerable group, experience minimum wage violations at more than twice the rate of non-immigrant low-wage workers (25 per cent vs. 12 per cent) (New York City Department of Consumer Affairs, 2017).

Treating labour data, particularly metrics on labour violations among low-wage workers, as relevant to the large food labour force, and integrating these data with metrics on malnourishment and diet-related health outcomes, could help to design interventions in the workplace that would

improve compliance with labour laws and improve the health of low-income workers. Integrating labour and food metrics would also help to re-focus economic development policies from those that attract undifferentiated food sector jobs to those that aim to create food jobs that pay living wages and engage workers in businesses that produce and distribute healthier food (Freudenberg et al., 2016). It would also encourage needed research on the diet-related health impacts of stressful, unstable working conditions, an emerging area of public health scholarship (Laraia et al., 2017).

Strategies for integrating upstream and downstream food metrics

As the previous examples illustrate, it is difficult to transform the food system without connecting upstream variables that have substantial effects on downstream food system outcomes like food security and diet-related health. The notion that social determinants, like income, affect diets and health has become part of the common discourse on food policy, as public testimony from New York City Human Resources Administration Commissioner Steven Banks (2014) illustrates: ‘The long-term solutions are clear. When New Yorkers can earn a living wage and find affordable housing, they will have the ability to obtain the food they need to prevent hunger...’. Given the complexity of measuring upstream variables, however, a key question is how food policymakers, planners, and advocates, can integrate them into the more commonly measured metrics of food policy outcomes. The examples above suggest three strategies: (1) aggregating, organizing, and analysing seemingly disparate data collected by different agencies as food metrics; (2) using innovative methods to collect relevant upstream data efficiently and cost-effectively, including using big data and crowd-sourcing techniques; and (3) including social, economic, and spatial indicators in food planning processes. Each of these is addressed below.

Using diverse datasets

Cities create troves of metrics prepared by the public and private sectors. Within city government, municipal agencies track the progress of their own programmes, monitoring public health, economic development, environmental characteristics, and many other dimensions of city life. Agencies record performance data on their activities, from inspections to licensing, that often involve the food system. Many existing public metrics like those on poverty, discrimination, educational attainment, housing affordability, or access to parks and active transportation are important upstream determinants of food and nutrition outcomes. These data can be used to answer important food systems questions, like how policies making the

city more or less affordable for low-wage workers affects food security and hunger, the degree to which workplace or environmental stressors related to unhealthy diets disproportionately affect particular racial or socio-economic groups, and whether processes like gentrification and displacement affect neighbourhood food access.

Some of these data are published on agency websites, some are made available through data portals that an increasing number of cities have created (e.g., Open Data New York City), while others are collected for internal agency use and are not as easily accessed. Creating an inventory of food system-related metrics already available across agencies and other branches of city government, as well as relevant data collected by state and federal agencies, is the first step towards identifying relevant metrics and demonstrating ways to use them in food planning. In addition to aggregating available data, cities can change the requirements of existing assessment processes to require food system data to be collected and included in those analyses. Environmental impact assessments are one opportunity to collect relevant data on the relationship between zoning and development proposals and food environments, but cities are also required to collect and report social, economic, and infrastructure data to various federal agencies, from Housing and Urban Development to the Department of Transportation, that could be aggregated and analysed to better understand downstream food system outcomes. Ensuring that an expanded collection of food-related metrics is used requires alliances between food system advocates and groups that work on upstream issues like poverty, racial discrimination, immigrants' rights, affordable housing, and other social justice concerns. Academic institutions can support this collaborative work by showing how seemingly disparate data can be organized, analysed, and used for advocacy.

Big food data

A second strategy is to use innovative methods to collect relevant upstream data efficiently and cost-effectively. This includes using big data to measure behaviours at the population scale. For example, anonymized GPS data from mobile phone apps can be analysed to better understand how populations make choices about shopping and dining, and how daily activity patterns vary by demographic group, helping planners target programmes, like supermarket incentives, more effectively (see Athey et al., 2018). Aggregated purchasing data can be used to better understand how various social and economic characteristics influence what people buy and eat. Geospatial data like Google Street View can be analysed to better understand the environmental factors that influence activities like shopping in communities and can track commercial and residential changes over time that affect local food environments (Bader et al., 2017).

Food planning

A third strategy is to adopt a more expansive notion of food system planning that addresses the root causes of food system inequities: siting food production and distribution infrastructure to reduce poverty as well as improve efficiency; focusing economic development plans on sectors of the food industry that offer pathways to higher-wage jobs; protecting food businesses that cater to low-income residents as neighbourhoods are rezoned; and changing planning processes to more effectively involve community stakeholders with knowledge of social determinants and hard-to-reach demographic groups, like recent immigrants. Integrating upstream determinants of health into the types of issues that food planners address requires interdisciplinarity, and successful planning processes can break down barriers among administrative agencies and advocacy groups and foster interdisciplinary approaches to problem-solving (Corburn, 2009).

Moving beyond the food metrics typically tracked to monitor progress in addressing the health, social, economic, and environmental impacts of the food system requires identifying the root causes of downstream outcomes and figuring out ways to aggregate, organize, and analyse this information so it is useful to various stakeholders and city government. This can seem daunting to food planners with neither the resources nor the power to aggregate, organize, and analyse such data. Fortunately, integrating upstream and downstream metrics can be carried out iteratively, by starting with existing relevant data, using lessons from other big data projects, and engaging in a food system planning process that brings multiple stakeholders together to track a broader range of food metrics, spanning issues from poverty to social wages (housing, healthcare, education) to economic and environmental trends.

Notes

- 1 City of New York. Local Law 48 of 2011.
- 2 City of New York. Local Law 50 of 2011.
- 3 City of New York. Local Law 52 of 2011.

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12 The view from here

A critical consideration of sustainable food system assessments

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Ken Meter, and Amanda Di Battista*

Introduction

This final chapter pulls together the perspectives that framed this book by considering the academic literature in light of the three overarching themes from the Toronto workshop. As elaborated in Chapter 1, the three themes are:

1. Conceptual foundations;
2. Operationalizing metrics;
3. Outcomes and goals for assessment projects.

These dimensions and their interconnections are captured in Figure 12.1, which provides a summary framework for *Sustainable Food Systems Assessment: Global Approaches to Practice*. As is expanded in the conclusion of this chapter, several key points emerge. First, the imperative to give voice to and/or reinforce socio-political processes founded in social movements and the evolving relationship between policymakers, practitioners, civil society, and academics. We also discuss what defines ‘assessment’, including the importance of stories, trust, and the social (including the social economy) as we link and identify indicators as nested, linked, *and* relational. The opportunity to render the invisible visible is a part of how assessment can bring challenges to the surface and transform solutions through understanding, transparency, and building on food system complexity.

The research reported in this book points to assessments as not only providing information but also about how the process, when done right, can help build capacity within communities, provoke food systems thinking, connect people across scales, and even lead to policy coherence. The authors also highlight how assessment processes make successes and areas for improvement more apparent. Finally, the insights from *Sustainable Food Systems Assessments: Lessons from Global Practice* add more heft to important questions about whose voices are raised through assessment processes and what discourses are reinforced, foregrounded, overlooked, or ignored. In the following sections, we tease apart the challenges and opportunities in

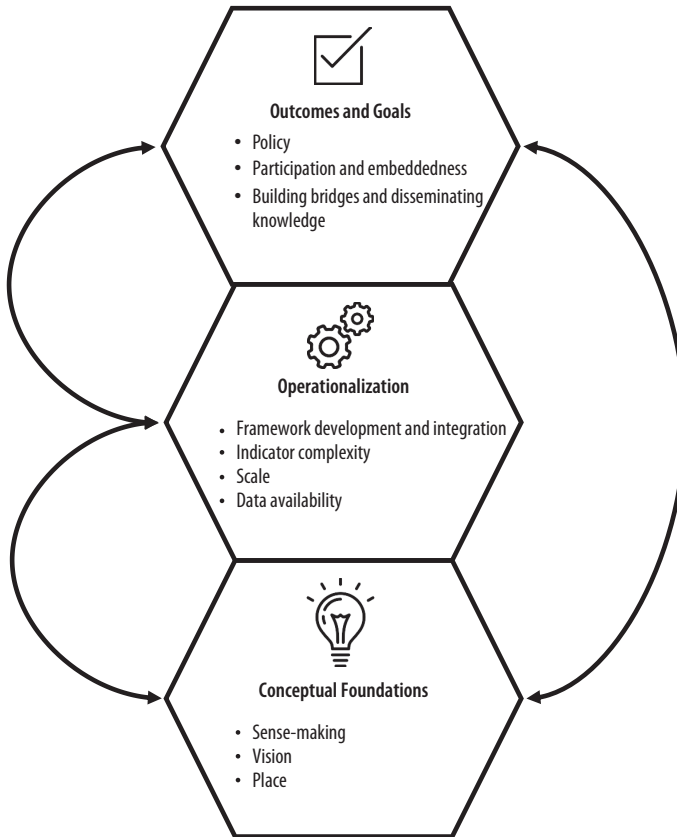


Figure 12.1 Iterative Sustainable Food System Assessment dimensions.
Note: Interaction occurs between and within: Outcomes and Goals, Operationalization, and Conceptual Foundations.

applying these dimensions to sustainable food system assessment (SFSA), drawing heavily from the research in the previous chapters.

Conceptual considerations: sense-making, vision, and place

The conceptual considerations identified during the workshop focused on the process and outcomes of sense-making and vision as well as the need to recognize place-based dimensions (Sonnino et al., 2016). The sense-making used to develop indicators and the lenses used to frame them determine what is included or left out of an analysis. In selecting metrics, Maye and Duncan (2017, p. 268) ask us to broaden ‘visibility fields’ to question what is visible and why and how this decision-making process unfolds. This also

allows us to capture multiple dimensions of performance. It is important to consider ‘visibility’ as,

we must be particularly sensitive to aspects which are hidden from our view by the focus on the process of embedding sustainability in the supply chain, and conversely seek to understand how and why our attention is being directed to other areas by the actors concerned and the field of visibility associated with the embedding sustainability in decision-making tool.

(Spence & Rinaldi, 2014, p. 438)

The idea of visibility points to the importance of considering what an indicator represents. As Garnett (2014) points out, using one-dimensional indicators alone, such as efficiency and demand restraint, can be one-sided and oversimplify the context, missing key components that need to be included in sustainability assessment. Frequently, the efficiency perspective promotes the use of technology to meet increasing demand through more production, more efficient chemical use, and waste reduction – reinforcing the technocratic fix and often contributing to a top-down approach. This line of thinking is problematic as it overlooks issues related to food access and quality, including the current reality that there is enough food produced to feed everyone in the world a healthy diet, yet more than 800 million people are food insecure and more than 1 billion people are overweight or obese (FAO, 2017). The second perspective – the demand-driven focus – views solutions as being consumer-led and tackles food challenges from the influence eaters have over the supply chain. In many cases, the focus is on reducing meat-based diets or decreasing food miles to improve both environmental conditions and health. However, this is also too simplistic since indicators that support reduced meat consumption may overlook local sustainable meat production practices that can help sequester GHG and provide a regionally appropriate protein source (D’Silva & Webster, 2017). Alternatively, using a food system transformation lens draws upon the interdependence of production and consumption networks to recognize that sustainable food systems require integrated structural change and that these changes are interrelated and complex (see Chapter 4, this volume). A focus on transformation includes social justice and equity issues and offers a more robust and complete picture of challenges and possible solutions (Garnett, 2014). This integrated vision for fostering a sustainable food system is applied throughout this book. Chapters by Prosperi et al. (Chapter 7), Battersby (Chapter 5), Valette et al. (Chapter 2), Palmer and Santo (Chapter 8), Paredes et al. (Chapter 10), and Cohen (Chapter 11) all make the case for integrating social justice indicators into SFSA analyses. The Spring et al. (Chapter 3) and Meter (Chapter 4) chapters weave social justice into the assessment process itself by elevating the insights of those who had been marginalized as indicators are framed.

As the sustainable food system movement works to transform the industrial food system, it is important to direct the focus away from bottom line, high technology-centred solutions, as well as industry- and export-driven policy to practices focused on social justice, food and nutrition security for all, agroecology, and local circular economies (Anderson, 2019). Food sovereignty is one way to do this as it explicitly values culture, food democracy, the sacredness of food, and the Right to Food (FIAN, 2016; Levkoe & Blay-Palmer, 2018). FIAN's (Food First Information and Access Network) project, People's Monitoring of the Right to Food and Nutrition (RTFN) has the vision that

Food Sovereignty and RTFN monitoring is consistently used by actors at all levels to result in positive changes in the realization of the RTFN and for the identification of strategic paths to a new society where all human rights are fully realized.

(FIAN, 2016, n.p.)

This project emerged from a desire to collect and report data that includes input from front-line people in civil society organizations (CSOs) and reflects resistance to a technocratic approach. Through this process, food sovereignty and RTFN monitoring information is not only used and reclaimed, but also produced, interpreted, and transformed into action by people and their representatives through different approaches to food, including agroecology, community-based co-operatives, and direct farmer to consumer sales. Food sovereignty and RTFN approaches have been used in a number of contexts, including in recent writing and policy focused on sustainable food system assessment (Levkoe & Blay-Palmer, 2018). While none of the chapters in this volume adopt an explicitly rights-based approach, many contributors to this book advocate for more inclusive processes that work to give agency to marginalized communities (in particular Chapters 3, 4, 5, 6, 8, 10, and 11).

At their best, place-based considerations account for local needs and ground the SFSA process to capture relevant information and point the way to impactful sustainable food system change (Sonnino et al., 2016). For example, by applying an ecosystem-assessment perspective, positing specific foodsheds helps us understand food systems as embedded in broader ecosystems instead of existing exclusively within political boundaries. Such an approach brings an ecosystem viewpoint to the analysis of SFSA based on place through the lens of food (e.g. Kloppenberg, 1996; Mullinix et al., 2016). Place-specific indicators, as well as inclusive and participatory indicator identification and development, are necessary for transformative SFSA processes. Noting the disconnect between indicators at the global and national scale with community initiatives, in particular with needs and goals across scales, Prosperi et al. (2015, drawing from Cassar et al., 2013) observe the importance of developing indicators that include place-based considerations such as the geographical, socio-economic, and cultural context where these tools are implemented. As a result, they stress

that, ‘a strong and active involvement of the local/community stakeholders is key to design a set of metrics that will be useful to measure real progress and gaps towards the sustainability of the urban food systems’ (2015, p. 30). Prosperi’s work applying a Delphi method to capture expert insights for the Mediterranean region reported in this book shows that consensus can be used to develop shared indicators (Chapter 7). Meter (Chapter 4) brings this work to a community level, engaging residents in defining linked indicators that cut across issue areas, and express systems levers that can be moved in each context (also City Region Food Systems, Chapter 9).

Place-based assessment can be pivotal for rural and urban authorities who have a chance to facilitate the institutionalization of innovative food system approaches. Research in Marin County, California, makes it clear that using a place-based approach is important. In that case, the analysis focused primarily on food access and food security challenges for low-income households as these factors were identified as having the most relevance in their jurisdiction and were seen as the best levers for change at that time in that place (Marin County, 2012). The URBAL project described in Chapter 2 recognizes the need for both place-based flexibility and robust widespread usability of research tools as it develops an impact-pathway mapping tool to capture sustainable urban food system innovation. Testing this tool in eight cities through 12 innovation labs will help to meet project goals of reach and relevance and enable the maps to capture the place-based vision for each innovation. The Sustainable Cities project in the UK is another excellent example of the importance of considering place throughout the development and implementation of indicators (Chapter 6). The overall goals of this project were: (1) To work with grassroots organizations and local practitioners to define success in cities; and (2) To develop an indicator toolbox to support municipal governments and communities as they work to change the food system. Following a literature review on sustainability and food security indicators, the researchers held four workshops to co-develop a vision with associated metrics across health, economics, and the environment. This information was assembled into an indicator toolbox that was tested in pilot communities. Crossing boundaries, this data is relevant for agencies with respect to the environment, climate change, and economic development. As the project was driven by the needs of the people in each place, there are no standardized objectives or pathways to change since each city is different and so all had different entry points. The Delphi survey used by Prosperi et al. in Chapter 7 developed indicators focused specifically on the Mediterranean region, while Battersby’s chapter points to data gaps based on decisions specific to Cape Town.

As part of the work of imagining a sustainable food system, a shared sense of why indicators are being developed, and related goals is important at all steps from analysis and interpretation, through to policy development so that an indicator framework realizes its potential to become a sense-making process. These examples from our book and elsewhere point to ways visions

and sense-making as well as place-based considerations enhance the relevance of SFSA. With these visions to guide indicator selection, a related consideration is how to then operationalize indicators. Engaging stakeholders in assessments also transforms the process from place-based sense-making to place-making.

Operationalizing assessment tools

Operationalizing assessment tools relies on several resources including how frameworks are developed and feed into the assessment process, the relative complexity or simplicity of indicators, considerations about scale, and the availability of data.

Frameworks

As discussed in the previous section on conceptual foundations including visioning, a shared framework can capture common goals and lead to a consistent analysis over a broader context by including considerations outside of the narrow project scope (Riley et al., 1999). In addition, the process of sharing/developing common framework(s) can connect and facilitate work towards aspirational goals, such as a common framework with multiple, varied indicators. When selecting metrics, Maye and Duncan (2017) ask us to pay attention to the frameworks we use so that we engage meaningfully with key sustainability challenges (Lakoff, 2010). Morin (2008) recommends a paradigm of complexity that frames more self-reflective assessment work. While Lakoff (2010) refers specifically to the environment, this idea applies equally to enacting sustainable food systems and the crossover with other areas that are, ‘... intimately tied up with other issue areas: economics, energy, food, health, trade, and security. In these overlap areas, our citizens as well as our leaders, policymakers, and journalists simply lack frames that capture the reality of the situation’ (p. 76). At the same time, trends can be identified in the use of assessment tools for more inclusive places. Freedgood et al. (2011) identified several types of community assessments used particularly in the US and Canadian contexts: foodsheds, comprehensive food systems, community food security, food asset mapping, food deserts, land inventories, and food industries. These point to the multi-scale nature of ‘place’ and how place can be a layered consideration. Frameworks such as the Sustainable Livelihoods Framework (SLF) have been used to ground the work in household and community needs. In Chapter 3, Spring et al. use this framework in a wide range of circumstances including in First Nation communities in the Northwest Territories, Canada, where links were made between climate change, food security, and traditional systems. In particular, political capital was identified as a key community resource. Applying a common framework can enable comparisons across research and community initiatives (Blay-Palmer et al., 2015).

Complexity

There are several challenges that can be considered under the heading of complexity. On the one hand, there is the tension between the need to capture all facets of sustainable food systems dimensions and, at the same time, be simple enough so that indicators are functional. Indicators that are static can misrepresent the bigger picture. The FAO State of Food Insecurity report and the Prevalence of Undernourishment (PoU) indicator referred to in Chapter 1 are cases in point (FAO, 2017). The City Region Food Systems (CRFS) project described in Chapter 9 grappled with these challenges. In that case, researchers looked to develop an approach that was complex and applicable everywhere despite different place-specific issues, capacities, and missions in the pilot cities. The URBAL project (Chapter 2) is aiming to develop a mapping methodology that can be applied across sustainable food system innovations. In these cases, flexibility and multiple options is key so that the approach is relevant across a range of cases. Meter's Chapter 4 also reflects on these SFS challenges, proposing a complex adaptive systems approach as valuable based on its capacity to reflect actual community needs and levers for systemic change. Complex indicators that address multiple co-benefits are also important in order to reflect complexity through, for example, agro-ecological approaches, so that indicators capture change in more than one dimension and can help to connect knowledge silos.

Scale considerations

It is important to consider how frameworks and indicators can or cannot be translated across scales, ranging from the individual and household to the municipal, regional, and sub-global. Considerations include the way indicators are nested, connected, and/or contradictory. Chapter 1 provides a discussion of the Millennium Development Goals (MDGs), the Sustainable Development Goals (SDGs), and related challenges, including the lack of engagement with community voices, the privileging of scientific knowledge, the disregard for traditional knowledge, and the technocratization of sustainability assessment (Death & Gabay, 2015; Fukuda-Parr & McNeill, 2019). Several authors in this book address these and other challenges related to scale issues. Battersby (Chapter 5) illustrates how data expectations at one scale miss data needs at another scale. The analysis of the food system and food security study commissioned by the City of Cape Town illustrates these disconnects through either the lack of appropriately disaggregated data and/or no data or data requirements by international projects that miss the mark locally. The chapter by Prosperi et al. on the Mediterranean region provides an example of how to address assessment challenges and opportunities at the sub-national level. The chapter describes the consensus-building process developed based on the Delphi survey method to identify and agree on a suite of indicators for food and nutrition security in the context of SFS. The

CRFS project presented in Chapter 9 documents place-specific sustainability dimensions of food flows in the Global South and North. This work relied on either existing or creating multi-scaled, multi-actor networks. These networks were used to enhance urban–rural linkages and improve various dimensions of the food system including food access for low-income families, waste management, improving incomes for rural and urban producers, and by creating food policy (Forster et al., 2015; Dubbeling et al., 2017). As Forster and colleagues explain, ‘[s]trengthening urban-rural linkages by focusing on improving the holistic performance of food systems at a city region level can contribute to the broader sustainable urbanization agenda. The improvement of city region food systems has significant implications for spatial planning’ (Forster et al., 2015, pp. 3–4). Toolkits include indicators that support SFS capacity building and food policy advocacy (Chapters 8 and 9). Paredes et al.’s chapter (Chapter 10) tests indicators at the intersection of sustainable food production and access in three regions in Ecuador. This project emerged from a desire to collect and report data that included and reflected input from front-line people in civil society organizations and demonstrates their resistance to a technocratic approach that would not have represented community priorities. Cohen’s chapter (Chapter 11) assesses downstream outcomes around food access in New York City and links them with upstream federal policies around immigration and food, and makes the existing and potential iterative relationships between the two scales clear. Chapter 2 by Valette et al. explores mapping methodologies to support urban and surrounding regional sustainable food system analysis and offers new tools for data analysis. Meter (Chapter 4) discusses the merits of using an adaptive complexity approach within regions as the basis for indicators that are integrative across sectors and scales through both qualitative and quantitative data to highlight core system dynamics. His chapter also informs the city region food-planning approach by identifying the extractive economic structures that place cities in a more powerful position than rural areas. Research focused on assessment at these regional scales can enable more comprehensive and coherent pathways to address food system challenges.

At the city scale, SFSAs typically link food assessment with a range of city goals. As previously discussed, the Milan Urban Food Policy Pact, with its six sustainability categories (production, health and well-being, governance, waste, biodiversity, and social inclusion), provides the basis for urban sustainability assessment and potentially for comparative work across the more than 200 signatory cities. In these cases, comparisons, network, and capacity building can be indirect outcomes of the data collection process. This work is consistent with the chapter by Moragues-Faus (Chapter 6) who assesses the co-production and reflexive processes that occur as indicators are developed during Action Research sustainable food futures projects in the UK.

All of the chapters in this book point to the challenges of interpreting national data at smaller scales as solutions are overly generalized. This points

to the relevance of community-based research that leads to the creation of relevant indicators. Based on the work in this book, regional and smaller scales appear to provide the most useful information for policymaking and action, while national and global approaches may add important comparative overarching perspectives through a broader context.

Data availability

Collecting data is expensive and time-consuming and the extent data is or is not available limits and constrains the capacity to support visions. As Battersby (Chapter 5) points out in her chapter, available data is gathered in the context of existing politics. In the case of Cape Town, this has led to data gaps for food system assessment stemming from a misarticulation of data boundaries and the kind of data that was (or was not) available. Pointing to the disconnect between food and landscapes, Spring et al. (Chapter 3) discuss the lack of data covering remote northern communities and the gaps that need to be filled to link traditional food systems with the health of the land as a key source of regional food and boreal ecosystem health. The question of data availability is critical in communities closely tied to the land for their food as the climate continues to change. Paredes et al. (Chapter 10), Moragues-Faus (Chapter 6), Valette et al. (Chapter 2), and Palmer and Santo (Chapter 8) also address the question of data availability, in these cases through participatory processes as part of the development for SFSA.

When data is available or is being collected for the first time, it is important to be able to compare indicators over time and build on that work to keep it relevant, identify trends, and share it out as well as identifying data gaps. The Food Counts report card for Canada is a good example of this challenge. As a key part of the analysis, Levkoe & Blay-Palmer (2018) identified the need for new metrics. For example, there was no existing way to measure ‘food is sacred’ as one facet of the Canadian SFSA. Identifying data needs emerged as an important contribution of that work. In Maryland, an intuitive, accessible metric was developed to capture the siltation of a river (Flora, 2018). The goal was to make the water quality problem visible to local residents who lived upstream so they would be motivated to make a difference. To make the problem clear, the mayor put on white tennis shoes and walked out into the bay to see where he lost sight of his feet, recalling that people used to be up to their necks and still see their feet. Every year at the same time he would walk to the point where he could still see his feet and this measure would be posted on a bulletin board. As the siltation decreased over time, in part though work with farmers up and down the watershed, people celebrated enthusiastically as results were reported widely throughout the state. This was a very simple, inexpensive but visible indicator of turbidity that could be linked directly to soil run-off, making the remediation challenge and the progress clear for local communities.

Outcomes and goals

Outcomes and goals for sustainable food system assessment are clearly context dependent. In many cases they include policy generation, which is fostered by, and helps to enhance, the engagement and inclusion of participants and communities, builds connections between initiatives, embeds change in communities and allows for widespread knowledge dissemination.

Policy generation

Several questions emerged from the Toronto workshop around policy as an outcome of data gathering based on research projects. These questions focused on: (1) The conditions needed for policy to emerge from SFSA work; and (2) Whether there is a common process or trajectory that all/most places follow as they work towards SFS. Key informants at the workshops also identified power dynamics on how/whether policy is implemented as an important consideration. The extent to which subsidiarity applies is also key as it reflects the extent of empowerment of local actors and the extent to which power and agency are devolved as close to the community scale as possible. The IPES-Food 2017 report provides insights into necessary conditions for policy formulation at the city scale. Drawing on in-depth interviews and literature scans, the report identifies the policies and conditions needed to create and maintain sustainable food systems in cities including: (1) The need for robust inter-sector actor networks as channels for policy influence and the basis for partnerships; (2) The importance of partnerships between municipal departments and external organizations to allow for co-governance. This requires supportive resources and capacity for implementation; (3) The determination of formal governance and terms of reference so all actors know what is expected and are accountable; (4) Conducting research and monitoring impacts to demonstrate efficacy, and to identify and remedy unexpected impacts; and (5) Focusing on areas of local government control and influence seeking synergies with the national level where possible (IPES-Food, 2017).

The SFSA processes described in *Sustainable Food Systems Assessment: Global Approaches to Practice* support and build from the insights captured in the IPES findings to help address food systems challenges. In some of the research reported in this book, conflicts emerge between different levels of government (Chapter 11). In other cases, data is mis/realigned across departments, sectors, or scales, as in the findings reported by Battersby (Chapter 5) and Moragues-Faus (Chapter 6). As reported, indicators can help deal with these tensions as they can enable the identification of which policy levels should be addressed – in some cases national policies are needed to provide an overarching context, in other cases local zoning may need to be changed (Chapter 8). This type of policy alignment is ongoing as circumstances evolve. A related set of questions revolves around whether the

assessment uses universal indicators or not. And, whether researchers want to identify indicators that will help decide which policy level is the best for intervention. To help answer these questions, there is an ongoing exploration about whether international initiatives can be leveraged to shift from technical to more policy approaches. For example, in their policy-directed assessment, Perez-Escamilla et al. (2017) evaluate the usefulness of national and global food security indicators to make the case for indicators that facilitate evidence-based policymaking. Using SMART (specific, measurable, achievable/attainable, relevant, and time-bound) criteria they assess the usefulness of commonly used indicators (Dietary Diversity Measures; Measures Based on Participatory Adaptation; Prevalence of Undernourishment; Global Hunger Index; Global Food Security Index; Dietary Record; 24-hour recall; Food Frequency Questionnaires; Food Consumption Score; Household Dietary Diversity Score; Coping Strategies Index; Experience-based food insecurity scales; Anthropometry) for policymakers and classify indicators for usability. Battersby's chapter raises these important points from a community and local perspective providing insights into how indicators are shaped by the existing hegemony and where there may be entry points for change (Chapter 5). In Chapter 8, Palmer and Santo offer insights into the advocacy process through their work on food policy councils. Their extensive survey of existing food policy initiatives points to ways that advocacy may be improved. And, as Prosperi et al. reiterate, the ways in which assessment results get translated, packaged, and mobilized are important factors in how change occurs (or does not occur) in food systems at all levels (Chapter 7). If policymakers do not understand interactions and dynamics that are inherent to SFS then assessment results can be misinterpreted and policy and programmes will be ineffective or even counter-productive to the goals policymakers and communities establish (Chapter 11).

Participatory approaches and embeddedness

When working in communities, comparing and talking about developing or replicating a process can help to identify relevant indicators, build networks, and embed learnings. All of the chapters in this book support the importance of communities as they need to determine their own values and related visions and what they want to work towards based on their goals, needs, and resources. As discussed, international project goals can be set at the global scale with indicators identified for specific national or local concerns. The SDGs are an interesting example of this approach; while there was consultation with member states, intergovernmental organizations, non-governmental organizations, business sector, and other major groups, there was very little public consultation. Some of these concerns include the need for continuity between the process that established the SDGs and their implementation (Palmer, 2015), issues around land rights (Wise, 2015), and the technocratization of the process to the exclusion of smallholder farmers and others (IPES-Food, 2015). Participatory research by Sanye-Mengual et al.

(2018) in Bologna, Italy, into the interconnections between local urban food production (UFP) and global sustainability initiatives, in particular the SDGs, identified the need to consider sustainability transversally and through a participatory approach. Enhancing the chance of success and uptake,

[t]his bottom-up approach unveiled a comprehensive vision of sustainable UFP, the relevance of certain sustainability elements and key aspects to take into consideration for the implementation of UFP, the design of effective policy-making and the development of research studies on the sustainability of UFP that built upon the presented conceptual framework. (Sanye-Mengual et al., 2018, p. 15)

This building process is important to embed indicator work so that it has staying power and is not lost with a shift in government or through other changes. One mechanism is to liaise with official data collection agencies as this can help to maintain and/or add indicators to the data-gathering process and embed food system sustainability. This is also important to ensure the continuation of functions needed to support food systems.

As explored earlier, creating coherence across scales for indicators is challenging – community participation in developing action-oriented assessment can help mitigate this problem. For example, in Montpellier, France, university researchers gathered municipally elected people together to ask them what they were doing in their political work to advocate for their own food systems. While food was not previously a focus, the elected officials involved in the project started to talk about school canteens, land use, environment, shops, and then the foodscape. Then suddenly everybody did work for food. It was the creation of the process that generated a sense of food, the potential of food, and suddenly people could feel that working on food could be of benefit. Then, when food was an issue and they were working on that, they realized that they need data to understand the situation, to know, for example, that people are hungry, to map the situation, then data becomes important. The data gathering also allows people in civil society and policymakers to think beyond the agenda they had already established. This was the case based on the research in South Africa as reported by Battersby in Chapter 5. Meter found in Chapter 4 that simple network maps changed economic development leaders' perspectives. Prosperi et al.'s chapter (Chapter 7) used a participatory research method throughout the indicator development process to ensure relevant co-production of knowledge and to facilitate, given the complexity, that everyone understood terms, concepts, and frameworks in the same way (see also Lehtonen et al., 2016). Palmer and Santo (Chapter 8) also demonstrate the importance of iteration as assessment tools are being developed as well as the need for as many face-to-face consultations as possible to enable this iteration. The URBAL project (Chapter 2) and the CRFS work (Chapter 9) demonstrate the possibility of engaging multiple stakeholders across disciplines, sectors, and scales and the benefits that can accrue, including increased capacity and coherence for communities.

Building bridges and disseminating knowledge

Part of thoughtful indicator creation is ensuring outcomes do not reinforce or seed more silos between disciplines, sectors, and government departments and institutions. Rather, indicators need to allow actors to talk to each other more frequently and more effectively. At the same time, it is important to work from a food systems perspective to provide the resources and data that communities need in order to address the issues they value within their own food systems. For example, at a meeting leading up to the 3rd UN Conference on Housing and Sustainable Urban Development (Habitat III, Quito, 2016), a panel whose diverse participants worked at multiple scales and from many institutions discussed the need to share instruments and knowledge among cities. While they identified the need for instruments to carry out assessments as well as evidence from focused studies, planning and regulatory instruments for cities were singled out as lacking. The co-creation of knowledge provides a more inclusive and relevant set of indicators as the basis for policy and policy tools.

In this context, a question becomes, how can indicators be used to create networks that link across sectors and institutions to foster system transformation? The indicator work needs to be embedded in potential policy delivery, which is not always easy. The cities of Toronto, Canada and Milan, Italy are pioneers in this regard having developed both depth and breadth in food policy. The Toronto Food Policy Council is a world leader having been established nearly 30 years ago, while Milan has become extremely active following the launch of the Milan Urban Food Policy Pact in 2015. To continue this work requires unpacking the ‘policy-governance’ box and looking at how food can become an issue that engages all communities. Questions to address include: (1) is policy integration taking place, for example between planning and land use (Forster et al., 2015)? And (2) if it is, is the balance right? The CRFS process reported in Chapter 10 and the idea of linking upstream policy with downstream impacts as proposed in Chapter 11 by Cohen are good examples of how this can work.

Sharing the results from indicator projects is key and should be considered part of the process from project inception. There is a need to actively share findings with other researchers, government, the private sector, and civil society. Using multiple platforms including clear plain language reports, online spaces, and social media is critical to keep forward momentum so projects are not time bound and the work is taken up and used by administrators and policymakers. Creative partnerships could help ensure findings are accepted and acted upon, and also employed as part of public education. Including key actors from the outset also helps with knowledge dissemination, as indicators are more likely to reflect key player needs and goals.

It is also valuable to look outside food systems to learn from other domains, such as the health sector where a lot of relevant work is already

being done, for example, the World Health Survey and the water–energy–food nexus. Sustainability movements are confronting similar problems as they challenge the neo-liberal hegemony, so it is helpful to share information about processes and the kinds of frameworks that are useful. The UN Convention on Biodiversity (CDB) was among the first, multi-lateral agreement to tackle a global challenge with the recognition of ‘traditional knowledge’ and provides an example of integration across multi-stakeholders.

The view from here

We conclude the book with some insights that pull out and weave together some common threads as well as raise questions to consider moving forward as we work to advance the relevance and breadth of sustainable food system assessments.

First, in addition to data gathering and tool development, an important part of the assessment work at the centre of this book is the development of, giving voice to, or reinforcing socio-political processes founded in social movements and the evolving relationship between policymakers, practitioners, civil society, and academics. Working on assessments can have the added benefit of capacity building through the participation enabled with this type of research (Chapter 9).

It also raises questions about what constitutes data. While indicators are important, stories are interesting and compelling; thus, a key question is, how do we capture the most useful insights? And, how do we link and talk about the indicators as nested, linked, *and* relational? It is important to talk about processes and purpose simultaneously. Chapter 3 by Spring et al. is an excellent example of how communities with traditional food systems need to connect their community food system assessments to the health of the land. In this case, the well-being of the boreal forest, including caribou and fish health, is part of understanding the sustainability of Kakisa’s food system. The EKOMER project (Chapter 10) focuses attention on the household as part of a city region while chapter authors Paredes et al. (Chapter 10) explain the power of the,

efforts of consumers to self-organize around ethical values and morals of consumption and to exert political influence at any stage of the process. Such is the notion of ‘co-producer’, ‘a consumer who knows and understands problems of food production’ (Petrini, n.d.)

(p. XX)

Colombo used a city region focus as part of the FAO-RUAF CRFS project (Chapter 9). In that case, stakeholders attended primarily to indicators using their locally determined project foci of waste, food security, or food safety. The food policy work by Palmer and Santo (Chapter 8) demonstrates

how assessment can be used as a vehicle for building tools for activism. It is anticipated that the URBAL project (Chapter 2) will build communities of food around the process of mapping sustainable urban food system innovations so that knowledge is co-created and agency is enhanced as networks grow. As part of these processes, it is important to combine and point out how the indicators are linked and improve the connections as learning opportunities to understand more about food systems as a whole. In considering scale of assessments, questions include how/whether to move from local or regional indicators to more national or international indicators, or the reverse, and what links and connections exist between scales? Battersby's, Meter's and Cohen's work (Chapters 4, 5 and 11) helps us to understand the challenges in shifting between scales and the need to work within complex frameworks. All of the projects in this book point to the centrality of iteration and the value of cross-verifying data as it is gathered.

Second, while the initiatives reported in this book help to broaden the conversation about assessment and policy, more is needed. In addition to understanding local food systems, it is also important to understand how international laws affect local laws, for example the World Trade Organization, the European Union, or through the multi- or bi-lateral accords such as the SDGs. The common list of indicators used by international organizations applies a global lens that can be difficult to apply at the local level (Chapter 5). It is important to have standard indicators but, from a governance point of view, if people do not understand the value of food then it is a challenge to integrate food into policies. Moving to standard indicators coupled with a participatory approach for interpretation and implementation can be effective. Related questions to address include, does future work compare processes, frameworks, and/or specific indicators? It seems there is an interesting nexus between indicators and unknowns in the realm of governance that needs to be further unpacked to try to identify ways to make new pathways between different interests. A related question is what are the indicators we can use to create and signal transformative food systems? One way to know the indicators are successful, is that we would see change in the values of indicators over time, or pertinent, new indicators may be initiated. But what combination of indicators would signal that food system sustainability is being achieved? The authors of this book certainly suggest that indicators of social capital and relationships of trust play a central role, in concert with other measures (for example, the role of communities as discussed in Chapters 2, 3, 4, 9, & 10, this volume).

A third consideration is capturing the invisible dimensions of SFSA. The social economy, particularly as it is articulated in informal economies, is a good example of the largely invisible and often poorly measured dimensions of SFSA, a situation that is captured in the work of Joubert et al. (2018) on the ways in which informal food systems in South Africa, Kenya, Zimbabwe, and Zambia are overshadowed. Case studies or other qualitative processes that capture these important stories can complement metrics

and other assessment tools by providing the depth needed to connect the data in a meaningful way. To develop relevant policy, it is critical to capture the practices that are out of the scope, or beyond the ‘official’ framework, or simply invisible and the associated contributions that are very difficult to measure. There are many data challenges including, as reported by Paredes et al. (Chapter 10), with people being reluctant to be ‘data-ed’.

The book also raises questions about complexity and using an adaptive systems approach. Meter (Chapter 4) is the most clear about this opportunity but others, for example the chapters by Valette et al. (Chapter 2), Cohen (Chapter 11), and Santini et al. (Chapter 9), draw on these assumptions. As Kate Clancy (2014) states, complex adaptive systems integrate and rely on, ‘many diverse and autonomous components or parts ... which are interrelated, interdependent, linked through many (dense) interconnections, and behave as a unified whole in learning from experience and in adjusting (not just reacting) to changes in the environment’ (p. 10). The multi-directional, iterative co-creation of knowledge demonstrated in the development of the advocacy toolkit developed by Palmer and Santo (Chapter 8) is an excellent example where multiple individuals in the same organization completed the assessment as they worked towards enriched, varied convergence. The heterogeneity that comes from multi-stakeholder, multi-sector, and multidisciplinary assessment opens up space for verification and buy-in.

Finally, we need to consider enacting assessment processes and tools to help address the pressing issues the world now faces. Climate change, migration shifts, and growing inequality can all be addressed through more sustainable food systems. To do this, we need assessment processes and tools that reflect the realities of those most disadvantaged in households, communities, regions, and countries. By providing relevant assessment support, we can make decisions based on evidence that raises the voices of the people who need to be heard the most. At its best, a sustainable food system assessment process, as demonstrated by all the chapters in this volume, offers the potential to build capacity and bring transparency and clarity, in turn enabling a better use of resources and learning over time and across scales (Anderson, 2015). They can also provide the basis for seeing how participation may need to change, measure change over time, enable strategy development, knowledge transfer, and inform transformative, coherent policy.

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