

# *Community Food System Assessment Guide for British Columbia*

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## ***What is a Community Food System Assessment?***

“A community food assessment is a participatory and collaborative process that examines a broad range of food-related issues and resources in order to inform actions to improve community food security.”<sup>1</sup>

Community food system assessments (CFSA) should involve a full range of participants, including producers, distributors, and consumers within the community as well as academic and applied researchers, students, and service providers. This range of perspectives and expertise allows for a comprehensive view of the food system and encourages support for the findings and recommendations of the assessment. Community food assessments range in their geographical scope. Some focus on a specific neighbourhood, while others may involve a city or region. There is a variety of information that can be included within a CFSA depending on the concerns of the community. Most food assessments, however, examine the entire food system including production, distribution, and consumption issues.

## ***Why do a Community Food System Assessment?***

Community food assessments can have many purposes, depending on how they are focused and who the audience is. Some of the main benefits of a CFSA are:

- to provide a comprehensive picture of the current state of the food system;
- to provide a framework for understanding how different components of the food system act together to contribute to the health and well being of the community;
- to provide compelling information that can inform decision-making, public policy, and funding with reference to the food system;
- to improve program development and coordination;

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<sup>1</sup> Community Food Security Coalition. (nd) *Community Food Programs: What Do They Look Like?* Available online at [http://www.google.ca/url?sa=U&start=1&q=http://www.foodsecurity.org/CFS\\_projects.pdf&e=15235&ei=g\\_d5RPPclorMpwKZ1NnBAQ](http://www.google.ca/url?sa=U&start=1&q=http://www.foodsecurity.org/CFS_projects.pdf&e=15235&ei=g_d5RPPclorMpwKZ1NnBAQ)

- to increase community awareness of and participation in food-related projects;
- to ensure that projects enhance food security;
- to help articulate a vision of what needs to be done in the community;
- to help set priorities and goals to improve the local food system;
- to identify potential partners, community resources, and opportunities;
- to build new and stronger networks, partnerships, and coalitions;
- to provide data that can be used in future proposals and reports;
- to establish a long-term monitoring system with a clear set of indicators;
- to generate information for funders, including community food security funders, who are increasingly requiring evidence-based research to substantiate proposal requests.

## ***Food Security Continuum Framework***

Food security is best realized through the adoption of a continuum of practices, ranging from those which provide short-term relief to those which aim at redesigning the food system.<sup>2,3,4,5</sup> There may always be people who need short-term relief in the form of food banks or soup kitchens. However, these programs do little to enhance the capacity of the food system or improve its functioning. Capacity building programs such as community kitchens and gardens have the potential not only to empower participants through education and training and to raise public awareness of food issues, but also to contribute to the enhancement of overall community food security. However, these programs often require time and commitment and therefore may not be universally accessible. Redesign of the entire food system, through mechanisms such as food policy councils and social

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<sup>2</sup> Houghton, J. (1998). The dietician's role in British Columbia's food security movement. *Dieticians of Canada: Members in Action Newsletter*. Toronto, Ontario, Canada.

<sup>3</sup> Kalina, L. (2001). *Building Food Security in Canada From Hunger to Sustainable Food Systems: A Community Guide*. Kamloops, BC.

<sup>4</sup> MacRae, R., S.B. Hill, J. Henning and A.J. Bentley. (1990). Policies, programs, and regulations to support transition to sustainable agriculture in Canada. *American Journal of Alternative Agriculture* 5, 76–92.

<sup>5</sup> FORC. (2005) Vancouver Food System Assessment. Available online at <http://www.sfu.ca/cscd/research/foodsecurity/home.htm>

advocacy to address poverty, is broader in scope and requires time, resources, and community mobilization.

We have adapted this concept of the food security continuum to include three stages: short-term relief (e.g., charity), community development models related to food (enhancing local capacity and awareness), and sustainability (environmental, social and economic). Sustainability also refers to the ability of food projects to be self-sustaining rather than relying on unsustainable resources, including funding. Redesign can occur through social enterprise and the social economy, advocacy, alternative policy development, and re-localization of the food system (which entails promoting local production and consumption). In this food security continuum model, strategies can function across categories and contribute to food security in different ways. For example, the charitable food sector can expand its role into the area of capacity building. In some instances, charitable providers can be linked with farmers' markets, community gardens, or community supported agriculture farms.<sup>6</sup> Community kitchens can not only play a role in community development by enhancing awareness of food issues but can also provide training that contributes to food-related social enterprise.

In addition to the food security continuum, we have also found it valuable to consider four kinds of connection between community food systems and health: the food system and human health; the food system and environmental health; the food system and social vitality; the food system and community economic health. Of course, these four kinds of connections overlap and influence one another in a variety of ways. For example, community gardens contribute to all spheres by not only producing food but also supporting social vitality, environmental health, and community economic development. While food is generally plentiful, healthful, and inexpensive, the food system as a whole — for all of us — faces monumental challenges that could make us all food insecure. Therefore, it is important to place food security in context and not assume that hunger and malnutrition affects only those presently in dire straits. Issues that will increasingly

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<sup>6</sup>Ibid.

affect the food system include population growth, climate change, the decline in available fossil fuels, and pandemics among many others.

### ***Starting the Process***

The following pages outline a systematic process to develop a community food assessment. This involves defining the community's information needs, seeking out secondary (or previously collected) data, discovering which indicators have not yet been measured and collecting primary data, and summarizing findings. The ideas presented in this section were drawn largely from guidebooks and assessments previously undertaken in the USA and Canada.

A community food assessment should be conducted in a participatory manner, informed by a mix of findings from previous and new research while attempting primarily to capture the voice, aspirations, needs, and local solutions of the various members of the community. It is strongly encouraged that you extend your invitation to participate in the creation of your CFSA to individuals and groups who may not currently be involved. For example, mainstream producers, restaurateurs, grocers, and chambers of commerce are stakeholders who should be at the table. Including them provides several benefits:

- the best and most innovative solutions often originate in unexpected places (strange bedfellows are often the most effective coalitions);
- barriers to progress often lie with stakeholders that are not invited to the table, and these types of stakeholders will resist the process if routinely neglected;
- without key stakeholders the planned actions may be ineffective or even counterproductive.

Don't worry if you can't get everybody to the table initially. Good work and persistence will attract the needed players eventually.

**Begin your first meeting by considering the following questions. These will help focus your work and ensure that you stay on-track.**

1) What is the purpose of the assessment?

Why do you want to do one? Is the purpose narrowly defined or do you want to provide a broad picture of the food system? What are the central questions you want to answer?

2) What is the scope of the assessment?

How ambitious and well resourced are you? Scope may be in terms of geography or population. For example, are you particularly interested in a specific population? Scope can extend to the whole food system (farm to fork), or to particular components. Take into consideration not only where people live but also important locations for food production and distribution.

3) What data already exists and what data need to be collected?

When determining which data should be collected, be sure to consider: how much money and time is available for data collection, the level of stakeholder awareness and collaboration, and the extent to which data has already been collected and work already done to address identified problems/issues.

4) How will the data be collected, analyzed, and used?

Do you want to inform individuals or change systems? Using data not already collected will require additional expertise, time and effort. The benefit is that the data will likely be more current and reflective of your questions.

5) Who are the audiences for this information?

How will this information be best conveyed to each particular audience?

### ***What are Indicators?***

Once you have determined the goals and scope of your assessment, you can begin selecting indicators. *Indicators are qualitative or quantitative information that reveal the current status and/or change in some social, economic or environmental system over time. Indicators tend to focus on critical components of a system in order to give people a sense of the bigger picture.* Indicators should be linked to program goals, outcomes,

and/or principals. For example, the Vivid Picture project in California came up with the following principle/indicator pairing.<sup>7</sup>

*Principle #1: A sustainable California food system promotes a healthy diet for all eaters in California.*

*Potential indicators:*

Number of servings of fresh fruits and vegetables per capita

Total number of servings of fresh fruits/veggies (-fries) servings per capita

Ratio of fresh-to-processed fruits/veggie servings per capita

Ratio of fresh to total fruit/veggie servings per capita

These indicators can then be linked to actions that will result in a positive change in these numbers such as educational campaigns to increase the consumption of fresh produce or programs that provide produce to populations that cannot access them.

There are a number of public and private agencies that conduct research on topics relevant to CFSAs including demographics, land-use and agricultural production, and other social indicators (e.g., housing costs). In addition, there may be other community-based assessments and reports that can inform your CFSA. For example, reports on social services, health, youth, aboriginals, and seniors may all have a food-related component. Some of the information you need to help contextualize your community's food system can be found in Appendix A, which provides national and provincial trends and other data on food related topics that are only available at these scales. This information is useful in determining how national and provincial trends are affecting your community. Appendix E provides some examples of how other communities developed their indicators.

In Appendix B, we have provided a menu of additional food system indicators and, in Appendix C, helpful tools and other methods for data collection. There is no standard, one-size-fits-all set of indicators. The appropriate set of indicators is entirely dependent

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<sup>7</sup> <http://www.vividpicture.net/documents/indicators.html>

on the unique nature of your community and what you intend to do with the indicators in the future.

Once you have an idea of the indicators you would like to include in the CFSA, it will be necessary to prioritize them. There are several sets of criteria for selecting appropriate indicators. Below is a listing of criteria to keep in mind.

**Indicators should be:**

- 1) **linked to goals.** There is a clear relationship between the indicator and the purpose of the CFSA.
- 2) **clear in value and content.** There is no uncertainty about which direction is good and which is bad and the indicator is easily understandable.
- 3) **compelling and policy relevant.** The indicator should be interesting, even exciting, and suggestive of effective action for all stakeholders in the system, including the least powerful.
- 4) **feasible and timely.** The indicator should be achievable at reasonable cost, with available resources and within a reasonable amount of time.
- 5) **appropriate in scale and collapsible or expandable.** The indicators should be neither too general nor too specific; users should be able to delve down to details if desired but also to get the general message quickly.

In addition, indicators should be:

- **democratic and tentative.** People should have input to indicator choice and have access to results; indicators should be up for discussion. Indicators are just that; they don't *prove* anything.
- **supplementary and participatory.** Indicators should include what people can't measure for themselves (e.g., satellite imagery) and what people can measure for themselves (e.g., local biodiversity)<sup>8</sup>

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<sup>8</sup> Adapted from Meadows, D. (1998) *Indicators and Information Systems for Sustainable Development*, The Sustainability Institute, Hartland Four Corners, VT.

It is very difficult to find indicators that satisfy all criteria. It is important to first organize and prioritize the selection criteria according to the intended audience and the objectives behind your CFSA. For example, if your CFSA is primarily focused on agricultural production, those indicators would be the most relevant. There must also be a balance between two main types of criteria — *reliable* versus *useful information*. For example, already existing statistical data may be cost-effective to collect but if it does not measure community specific conditions (e.g., the number of community gardens), it may not provide relevant information.

A quantitative criteria-rating method can assist in organizing the process of selecting indicators once a goal for the measuring indicators is established. These methods typically start with a point system that rates whether the indicator meets a desired criterion or not: present/absent = 1/0, or how well the indicator rates according to that criterion: high/medium/low = 3/2/1. A five-point scale could be used if needed: 1 = lowest, 5 = highest. After the indicators have been rated against all the criteria, points can be tallied for each indicator. In order to rate each indicator, a template such as the one below may be useful.<sup>9</sup> Here we have provided an example of how your community might use this tool (Appendix F).

<b>Indicator Selection Tool Example</b>		
<b>Goal:</b> Enhance the viability of small farms in our local area		
<b>Indicator and Rationale</b>	<b>Criteria</b>	<b>How well does the indicator meet the criteria?</b>
<b>Indicator:</b> Farming employment and income, including off-farm income	Clear in value and content	Yes, higher off-farm employment is an indicator that farms are not economically sustainable.

<sup>9</sup> Adapted from the RVu Study Group Workbook created by the Regional Vancouver Urban Observatory.

Rationale: This indicator provides information on how economically sustainable farms are in our local area.	Compelling and Policy relevant	Yes, it suggests that more needs to be done to support farmers
	Feasible and Timely	Yes, data is available from Stats Can.
	Appropriate in scale and Hierarchical	Is at the appropriate scale but no specific data related to farm size.
	Linked to goals	Yes

Once your indicators have been selected, it is important to list them and identify who will be responsible for collecting the information. A worksheet to assist you with this is located in Appendix F.

***Using Indicators***

Once you have collected information on your selected indicators, it is time to conduct an analysis. The most effective way of analyzing information is to discuss the findings with a wide range of stakeholders. These discussions should focus on identifying root causes of the findings and potential solutions to any areas where there are gaps. For example, if the research shows that there is not enough community garden space within the community, then it will be necessary to discover why. Are there municipal barriers related to land use? Is it lack of access to the resources to start a community garden? Once the cause has been determined, solutions can be identified. These solutions may take the form of policy development or new or enhanced programs. It may also entail additional community mobilization.

## ***Appendix A: National and Provincial Health and Food Security Trends***

As part of your initial planning process, it is important to understand the context in which you will be working. This includes a grounding in the national and provincial trends that are influencing local conditions. Among these key trends are:

- Sourcing of food continues to be ever more global.
- Mergers and acquisitions continue the trend to fewer and fewer, larger and larger corporations maintaining control of every aspect of the food chain from seed to table.
- While Northern countries continue to advocate for “free trade” in agricultural commodities, the USA, European Union and Japan continue to provide heavy domestic subsidies to producers while restricting imports for low-income countries.
- Government and private investment continue in biotechnology and nanotechnology.
- The increasing price of oil is beginning to be reflected in higher food costs.
- Climate change is affecting the production and distribution of food.
- “In theory, welfare incomes are supposed to cover the basic necessities of life. In practice, they are set arbitrarily by the provincial cabinet with no regard for the actual cost of living,” according to The Canadian Centre for Policy Alternatives in a press release on April 24, 2006.
- The Community Food Action Initiative, part of the healthy eating component of ActNow BC, is the first time the BC government has put food security on the agenda.
- Overall, rates of obesity and overweight in BC have not been increasing. However, there are areas (e.g., northern communities) and populations (e.g., Aboriginals) that are at increased risk.
- The rate of diabetes is increasing. By 2010, it is estimated that the prevalence of diabetes in BC will increase to about 325,000.

- Farming practices affect health through water, air, and soil contamination. The majority of BC farmers engage in practices designed to reduce the environmental and health impacts of farming.
- While most farms in BC are still family-controlled, the number of farms has declined and the average size is increasing. In addition, most farmers supplement farm income with off-farm employment.
- Organic production is increasing, which has the potential to make organic food more accessible to those with lower incomes.
- Food retailing continues to consolidate; fewer companies are providing food through larger stores.
- The poor spend a higher percentage of their income for food than do the wealthy. Vulnerable populations often have very limited food budgets.
- In BC, food bank usage declined by 10.5 percent between 2004 and 2005 (that is, 8,000 fewer people in the province visited a food bank in March of 2005 than in the previous year) and child food bank usage also declined by nine percent.
- Housing affordability, which also affects food budgets, is a problem for 28.6 percent of British Columbia households, according to the 2001 census.
- In 2003, 55 percent of BC's residents ate fewer than five servings of fruits and vegetables a day. However, in most cases, it would only require an additional one to two servings to achieve the Health Canada recommendations.

### ***Trends in Detail***

In this section, we provide a brief overview of many of the national and/or provincial trends and conditions that may affect your CFSA. Although conditions in your community are unique, this information helps to contextualize some of the conditions and trends that affect all local areas.

#### **Dietary-related disease**

The percentage of the population that is obese or overweight has a significant effect on population health and the health care system. According to Statistics Canada's Health

Report (1999), Canadians who are obese or overweight are more likely to have NIDDM (non-insulin dependent diabetes mellitus), hypertension, arthritis, thyroid disease, asthma, heart disease and back problems.<sup>10</sup>

According to the British Columbia Nutrition Survey, the prevalence of overweight and obesity has increased from 44 percent to 55 percent over the past ten years. This study found that 37 percent of BC residents were overweight, with a BMI between 25 and 29.9, and 18 percent were obese, with a BMI over 30.<sup>11</sup> A report created in 2004 by the BC Healthy Living Alliance found that obesity rates were lowest in the Vancouver Health Services Delivery Area (HSDA) and highest in the Peace-Liard HSDA. This study also found that between 2000 and 2003, the percentage of the population who are overweight remained constant in the province, while rates in ten HSDAs increased, one remained the same and five declined.<sup>12</sup>

**Body Weight Trends among Children.** In 2004, the combined overweight/obesity rate among children was about 70 percent higher than it had been in 1978/79, and the obesity rate was 2.5 times higher. However, trends differed for various age groups. For example, the percentage of children aged two to five who were overweight/obese remained virtually unchanged. By contrast, the overweight/obesity rate of adolescents aged 12 to 17 more than doubled from 14 percent to 29 percent, and their obesity rate tripled from three percent to nine percent. Nationally, 59 percent of Canadian children and adolescents were reported to consume fruit and vegetables less than five times a day. These young people were significantly more likely to be overweight/obese or obese than were those who ate fruit and vegetables more frequently.<sup>13</sup>

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<sup>10</sup> Statistics Canada (Summer 1999) Health Reports. Vol. 11(1). Catalogue no. 82-003-XIE.

<sup>11</sup> BC Ministry of Population Health and Wellness (2004) BC Nutrition Survey, available online at <http://www.health.gov.bc.ca/prevent/nutrition/index.html>

<sup>12</sup> BC Healthy Living Alliance (2004) 2010 Target Setting for Risk Factors of Chronic Disease. Available online at [http://www.bchealthyliving.ca/resources/documents/risk\\_factors\\_background.pdf](http://www.bchealthyliving.ca/resources/documents/risk_factors_background.pdf)

<sup>13</sup> Shields, M (2006) Overweight Canadian children and adolescents. *Nutrition: Findings from the Canadian Community Health Survey, 1*. Available online at <http://www.statcan.ca/english/research/82-620-MIE/2005001/pdf/cobesity.pdf>

**Obesity-related illness costs BC \$380 million annually.** Those figures translate into 4.5 percent of total direct health care costs in the province. When productivity losses due to obesity, including premature death, absenteeism, and disability, are included, the total cost of obesity to the British Columbia economy is estimated at between \$730 million and \$830 million a year, equal to 0.8 percent of the province's gross domestic product.<sup>14</sup>

**Diabetes rates on the rise.** In 2004, 5.4 percent of the total population in BC, or 228,013 patients, were diagnosed with diabetes. By 2010, it is estimated that the prevalence of diabetes will increase to about 325,000 patients. Throughout the province, the rate of diabetes-related mortality is rising. Between 1986 and 2004, the rate of diabetes-related deaths has increased from 1.10 to 1.81 (per 10,000 population).<sup>15</sup>

**Diabetes is associated with a cluster of serious complications** that include coronary heart disease and kidney, nerve or retinal damage, which can lead, ultimately, to premature death. However, diabetes can be managed or prevented in those who have precursors of the disease (impaired glucose tolerance) with dietary and exercise interventions.

**Aboriginals are particularly vulnerable to food-related disease because of their socioeconomic status, typically poorer access to health care and propensity toward diabetes.** In BC, the leading causes of death for Status Indians were ischemic heart disease, cerebrovascular disease, gastrointestinal cancer, pneumonia/influenza, and cancer of the respiratory system. Overall, diabetes was the 12th leading cause of death, resulting in 169 mortalities province-wide. The age standardized mortality rate (ASMR) for diabetes in the Status Indian population (2.6 per 10,000 standard population) was almost twice the rate for other residents. However, in two service delivery areas, North Shore/Coast Garibaldi and North Vancouver Island, diabetes was the fifth leading cause of death.<sup>16</sup>

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<sup>14</sup> GPIAtlantic (2001) Cost of Obesity in BC. Available online at [http://www.gpiatlantic.org/releases/pr\\_obesitybc.shtml](http://www.gpiatlantic.org/releases/pr_obesitybc.shtml)

<sup>15</sup> BC Ministry of Health. (2005) A Snapshot of Diabetes Care in British Columbia 2003/04. Available online: [http://www.health.gov.bc.ca/cdm/research/diabetes\\_snapshot\\_2004.pdf](http://www.health.gov.bc.ca/cdm/research/diabetes_snapshot_2004.pdf).

<sup>16</sup> Regional Analysis of Health Statistics. (2002) Birth Related and Mortality Summaries for British Columbia and 16

**Cancer is also linked to diet.** Among the forms of cancer that have been related to diet are colorectal (CRC), stomach, pancreatic, thyroid and bladder. In 2000 in BC, one of 17 men and one of 19 women were expected to develop CRC in their lifetime, and one of 47 men and one of 53 women were expected to die from the disease. However, since the mid-1980s, incidence rates for CRC have declined, especially in women. This decline is at least somewhat attributable to dietary improvements.<sup>17</sup>

### **Environmental health and food production**

Food production can affect environmental and ultimately human health in several ways including through contaminated water, air pollution, and loss of wildlife habitat.

**Reduced nutrients in soil.** Some reports claim the overall soil nutrition in North America has decreased by an average of 40 percent over the last 40 years. Reduced soil nutrition results in less nutritious plants and animals. If confirmed, this would have huge implications for recommended intakes of items such as fruits and vegetables since there has been no assumption of reduced nutritional composition.<sup>18</sup>

**Increasing risk to drinking water.** Another way that food production can influence environmental and human health is through the contamination of water from pesticides and fertilizers used in agricultural production. Although the majority of BC's agricultural land is rated as having a very low to low risk of water contamination from nitrogen (nitrogen contamination of water can both hurt the environment and decrease drinking water quality), there have been increases since the 1980s in the percentage of land rated as moderate, high or very high risk, with much of the land in the Lower Mainland and some of the land in southeastern Vancouver Island being rated as very high risk.<sup>19</sup>

### **Fertilizer and pesticide use in BC is low compared to the rest of Canada.**

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Health Service Delivery Areas for Status Indians in British Columbia. Available on-line at:  
<http://www.vs.gov.bc.ca/stats/indian/indian2001/index.html?SMSESSION=NO>

<sup>17</sup> BC Medical Association. (2000) Trends and risk factors for colorectal cancer. <*BC Medical Journal* 42 (3), 31–135

<sup>18</sup> Pawlick, T (2006) *The End of Food: How the Food Industry Is Destroying Our Food Supply-And What You Can Do about*, GreyStone Books.

<sup>19</sup> <http://www.agr.gc.ca/policy/environment/pdfs/aei/Chap12D.pdf>

According to the Statistics Canada report, “Fertilizer and Pesticide Management in Canada,” 61 percent of BC farms applied fertilizer to their fields. This is the lowest of any province and is much lower than the Canadian average of 74.5 percent. In addition, 47.9 percent of farmers in BC applied herbicides, insecticides, or fungicides to their crops — again, the lowest of any province and lower than the Canada average of 74.5 percent.<sup>20</sup>

**Farm workers and their families are exposed to agro-toxins.** Organophosphates have been linked to both acute and chronic disease including cancer, neurological damage, skin disease, miscarriage, and birth defects, particularly among farm workers and their families.<sup>21</sup>

**Almost half of BC farmers use best farming practices.** Farm management practices with the most direct impact on human health are those most directly related with the risk of nitrate and pesticide concentrations in drinking water, including management practices for manure, fertilizer, pesticides, and water. In 2001, 44 percent of surveyed BC farmers had fully implemented best practices for manure management (compared to 26 percent for Canada), 49 percent had fully implemented best practices for fertilizer management (compared to 29 percent for Canada), 48 percent had fully implemented best practices for pesticide management (compared to 28 percent for Canada), and 49 percent had fully implemented best practices for water management (compared to 24 percent for Canada).<sup>22</sup>

**Rise in greenhouse gas emissions (GHG).** Agricultural production also contributes to GHG emissions. GHG from agricultural land in BC rose ten percent between 1991 and 2001, though there was a slight drop over the period from 1981 and 2001.<sup>23</sup>

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<sup>20</sup> Statistics Canada. (2004). Fertilizer and Pesticide Management in Canada. *Farm Environmental Management in Canada*, Catalogue number 21-021-MWE.

<sup>21</sup> Arcury TA, S.A. Quandt, B.G. Mellen. (2003). An exploratory analysis of occupational skin disease among Latino migrant and seasonal farm workers in North Carolina. *Journal of Agricultural Safety and Health*, 9(3), 221–32., Das, R., A. Steege, S. Baron, J. Beckman, & R. Harrison. (2001). Pesticide-related illness among migrant farm workers in the United States. *International Journal of Occupational Environmental Health*, 7, 303–312.

<sup>22</sup> Statistics Canada. (2001). Farm environmental management in Canada.

<sup>23</sup>Ibid.

**Loss of wildlife habitat.** Between 1981 and 2001, wildlife habitat capacity decreased on 50 percent of BC farmland, with negligible or small changes on 39 percent, and increases on 12 percent.<sup>24</sup>

### **Soil quality**

There is data available on several indicators related to the quality of soil, including organic matter content and risk of erosion. Soil organic matter is a key component of soil quality and health, while soil erosion threatens the sustainability of agriculture in many ways, from decreasing crop yields to the off-site transport of fertilizers, pesticides, and other toxins. Both indicators are covered at the provincial level in Agriculture and Agrifood Canada's Agri-Environmental Indicators report, available at [http://www.agr.gc.ca/policy/environment/pubs\\_aei\\_e.phtml](http://www.agr.gc.ca/policy/environment/pubs_aei_e.phtml)

Provincial maps indicate in broad strokes the soil conditions in various regions of the province. To summarize the results:

- Most land in BC is considered to be at a low, very low or moderate risk from water erosion, except for the northeast of the province, where some land is classed as being moderate, high, or very high risk.
- Sandy soils along the Fraser River are considered to be at some risk of wind erosion.
- Slightly more than one third of soils in BC are increasing in organic matter (OM), one third have relatively stable levels, and slightly less than one third are losing OM (the indicator measures only changes in OM, and does not categorize absolute levels in the soil)

The Agro-ecological Indicators project is currently working on an additional indicator for soil quality — risk of soil contamination by trace elements, which covers 11 metallic elements ranging in risk from low to high.<sup>25</sup>

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<sup>25</sup> Ibid.

## Water quality

A variety of factors can affect water quality. Non-point sources of water contaminants include land development, agricultural activities, storm water runoff, sewage systems, forestry and range activities, atmospheric deposition, boating and marine activities, detergents and runoff of lawn and garden inputs. Point sources include municipal waste treatment centres and industrial effluents.

Impacts and indicators of poor water quality include:

- *Public beach closures.* For information on closures in the Northern Health Authority, see <http://www.healthspace.ca/nha/>. For information on closures in the Coast Garibaldi section of the Vancouver Coastal Health area, see <http://www.healthspace.ca/coastgaribaldi>. In the Interior health region, there will be increased monitoring of beaches, with the likelihood in 2006 of a fair number of high-profile beach closures in the Penticton-Kelowna area. Check the Interior health website at <http://www.interiorhealth.ca/default.htm>. The Vancouver Island health Authority will be posting beach closures on its website at <http://www.viha.ca/>
- *Contaminated sediments.* No indicators identified
- *Algal blooms.* No indicators identified
- *Aquatic weed infestations.* No indicators identified
- *Fish kills.* No indicators identified
- *Contaminated ground water.* No indicators identified
- *Shellfish harvesting closures.* For information on both sanitary closures and closures due to paralytic shellfish poisoning (PSP or red tide) in BC, see [http://www.pac.dfo-mpo.gc.ca/ops/fm/shellfish/Biotoxins/closures/sanitary\\_e.htm](http://www.pac.dfo-mpo.gc.ca/ops/fm/shellfish/Biotoxins/closures/sanitary_e.htm)
- *PSP Boil-water advisories.* For a map of boil water advisories in the Fraser Health Authority, see: <http://www.fraserhealth.ca/NR/rdonlyres/e36rx3zwuxdjaqktg2owxrjfccmirccbf4dyvc6vljygemvzhkc32ezxseq4q4nqdtk64guxobbz2b/figure8.pdf> OR <http://tinyurl.com/rtdu3>. For information on boil advisories in the Northern Health Authority area, see <http://www.healthspace.ca/nha/>. For information on boil advisories in the Coast Garibaldi section of the Coastal Health region, see

<http://www.healthspace.ca/coastgaribaldi>. The Vancouver Island Health Authority is in the process of posting their boil water advisories on [www.healthspace.ca](http://www.healthspace.ca), but no timeline has been set for completion. No information on boil water advisories in the Interior Health Authority region: <http://www.interiorhealth.ca/default.htm>.

*Note on boil advisories:* There are two basic types of boil advisories, one triggered by short-term problems which are usually remedied in a few days, and others which are more long-term and which are normally concerned with inadequate equipment. In addition, websites may not be regularly updated, and the provincial government is planning to improve the reporting system to make it more user-friendly, preferably a one window website. The Vancouver Island Health Authority is reporting turbidity precautionary advisories as well.

Drinking water reports for Northern Health Authority and the Coast Garibaldi section of the Coastal Health region are available at <http://www.healthspace.ca/nha/> and <http://www.healthspace.ca/coastgaribaldi>, respectively.

### **Provincial health and education programs**

There are a number of provincial health and education programs designed to improve the consumption of fresh fruits and vegetables and increase the prevalence of a healthy body mass index (BMI).

**Dial-A-Dietitian.** Dial-A-Dietitian is a free nutrition information line for British Columbians, which specializes in easy-to-use nutrition information for self-care. Registered dietitians provide brief nutrition consultation by phone. If more in-depth counseling is required, they will guide you to hospital outpatient dietitians, community nutritionists, or other nutrition services in your community. Dial-A-Dietitian is operated by NutritionLink Services Society with funding provided by the BC Ministry of Health. Translation services are available in 130 languages. <http://www.dialadietitian.org/>

**BC Healthy Living Alliance.** Formed in February 2003, BC Healthy Living Alliance (BCHLA) is a group of health-related organizations that have come together with a mission to improve the health of British Columbians through leadership that enhances collaborative action to promote physical activity, healthy eating, and smoke-free living. Their primary focus is on the common risk factors (physical inactivity, poor dietary habits, tobacco use, obesity) and underlying determinants that contribute significantly to cancer, cardiovascular disease, chronic respiratory disease, and diabetes.

The BCHLA targets for 2010 are:

- nine out of ten British Columbians will not smoke;
- seven out of ten British Columbians will be eating at least five fruits and vegetables a day;
- seven out of ten British Columbians will be physically active;
- seven out of ten British Columbians will be at a healthy weight.

<http://www.bchealthyliving.ca/>

**The School Fruit and Vegetable Program** provides one serving daily of BC grown fruits or vegetables to children at elementary schools around the province. The program is currently available in ten elementary schools, two in each health authority area, as a pilot project. These schools are:

- Brentwood Elementary School, SD 63, Saanich
- Britannia Community Elementary School, SD 39, Vancouver
- Champlain Heights Elementary School, SD 39, Vancouver
- CM Finch Elementary School, SD 60, Fort St. John
- Erickson Elementary School, SD 8, Kootenay Lake
- Eric Langton Elementary School, SD 42, Maple Ridge
- Golden Ears Elementary School, SD 42, Maple Ridge
- Sidney Elementary School, SD 63, Saanich
- W.E. Graham Community School, SD 8, Kootenay Lake
- Westview Elementary School, SD 52, Prince Rupert

## Food production in BC

Food Production statistics for BC:

According to 2004 data, food production in BC includes:

- primary fisheries sales: \$617.4 million (228.6 million aquaculture, \$388.8 in landings by commercial fisheries);
- jobs: 4,500 (1600 in aquaculture, 2900 in fisheries);
- Gross Domestic Product (GDP): \$188 million [includes \$108 million in aquaculture and \$80 million in wild commercial fisheries; does not include the GDP and jobs created in private sports fishing.];
- farm and food exports (including fish): foreign: \$2.6 billion; interprovincial: \$2.4 billion (estimated);
- farm and food imports (including fish): foreign: \$3.5 billion; interprovincial: \$3.4 billion.;
- primary agriculture sales: \$2.4 billion; jobs: 35,200; GDP: \$1.33 billion.

Cattle farms are the most common types of farms in British Columbia, accounting for close to one-quarter (24.8 percent) of all farms, followed by fruit farms with 14.5 percent, horse and pony farms with 12.6 percent, and hay and fodder crop farms with 9.9 percent. Since 1996, the share of cattle farms has increased while the share of fruit farms has declined.<sup>26</sup>

BC's top agricultural commodities (measured by receipts) are dairy products, floriculture, hens and chickens, tomatoes (greenhouse), and nursery products.<sup>27</sup>

In 2004, British Columbia led the nation in the production of blueberries, sweet peppers (greenhouse), raspberries, apples and sweet cherries, and ranked second to Ontario in the production of floriculture, ginseng, grapes, greenhouse cucumbers, greenhouse tomatoes, mushrooms, cranberries, and nursery products.<sup>28</sup>

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<sup>26</sup> <http://www40.statcan.ca/l01/cst01/agrc35k.htm>

<sup>27</sup> Ministry of Agriculture and Lands (2005) Fast Facts: Agriculture and Food. Available on-line at: <http://www.agf.gov.bc.ca/stats/faststats/brochure2005.pdf>

<sup>28</sup> Ibid.

Family farms are in the majority. There were a reported 20,290 farms in BC in 2001, the vast majority of which were family-controlled farms (19,880 or 98 percent).

Most farmers supplement farm income with other employment. Seventy-one percent of BC farmers' total income is from off-farm sources. When total incomes are adjusted for capital cost allowance, 91 percent of total income is from off-farm sources.

The number of farms in BC has declined while size increases. While the overall number of farms in British Columbia has declined 7.1 percent since 1996, their size in terms of area, herd size, and gross farm receipts has increased. The average BC farm was 315 acres in 2001, up 10.1 percent from 1996. Since 1981, the average farm size has increased 17.1 percent. Total farm area in British Columbia has increased 2.3 percent to 6,392,909 acres since 1996. The biggest decline in the number of farms occurred in the Southwest region, where the number of farms decreased 14.1 percent to 5,733. The Thompson-Okanogan region reported 5,679 farms, down 4.3 percent from 1996.<sup>29</sup>

British Columbia is home to a rich but limited resource of highly fertile soils. A very small portion (less than five percent) of the BC land base is suitable for agriculture and only one percent is considered prime agricultural land (capability classes 1, 2, and 3). It should be noted that other capability classes produce high-value food products. However, this land base is being threatened by loss to development as urbanization spreads and land prices rise. Farm Credit Canada reports “The BC farmland market shows the biggest increase in Canada at 6.5 percent. Farmland values have shown a positive trend over the last seven periods, with the largest increase in the last six months. The BC market has a number of distinct markets with unique factors affecting each area.”<sup>30</sup>

Total farmland in BC is increasing, as is farm size. In BC, total land in farms expanded by two percent to a total of 2.587 million hectares (6.393 million acres) from 1996 to 2001. The area under crops increased by nine percent (or 51,807 hectares). The increase

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<sup>29</sup> Moderate decline in British Columbia farms, according to 2001 Census of Agriculture. <http://www.statcan.ca/english/agcensus2001/first/regions/farmbc.htm#2>

<sup>30</sup> Farm Credit Canada. (Fall 2005) Farmland Values. Available on-line at: <http://www.fcc-fac.ca/en/Products/Property/FLV/Fall2005/index.asp?main=2&sub1=property&sub2=farmlandvalues#bc>.

in total farmland reported by a fewer total number of farms than in 1996 meant that the average size of farm in British Columbia was larger, showing an increase from 116 hectares in 1996 to 128 hectares in 2001.<sup>31</sup>

Organic farming is on the rise. According to the census, there were 319 organic farms in BC on Census Day. These made up 14 percent of organic farms in Canada. The most widely grown certified organic products in BC were fruit, vegetable, and greenhouse products. These products were reported on 84 percent of the province's organic farms. More information on agricultural production in BC can be found at Fast Stats on Agriculture and Food by the British Columbia Ministry of Agriculture and Lands.

<http://www.agf.gov.bc.ca/stats/faststats/brochure2005.pdf>

Historical trends in agricultural production in BC can be found at:

<http://www.agf.gov.bc.ca/stats/2001census.pdf>

### **Food processing in BC**

- Food processing sales: \$6.18 billion; jobs: 31,000; GDP; \$2.4 billion (estimated);
- Food wholesaling sales: \$8.6 billion; jobs: 15,000 (includes jobs in farm products wholesaling as well as in food and beverage wholesaling);
- Food retail and food service industry sales: \$17.7 billion; Jobs: 205,013.

The BC food processing industry is dominated by a large number of small- and medium-sized firms, employing fewer than 50 employees. An estimated 55 percent of all food-processing firms are located in the Greater Vancouver area and the Fraser Valley.

Another 30 percent are located in the Okanagan Valley and the coastal regions.<sup>32</sup>

The food and beverage industry is ranked the third highest among manufacturing industries in BC. The BC food and beverage industry contributes approximately \$2.2 billion (for the year 2001) to the provincial gross domestic product (GDP), or just over seven percent of the total provincial GDP contributed by goods-producing industries in BC.

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<sup>31</sup> Ministry of Agriculture, Food and Fisheries. (2002) *Census of Agriculture 2001 and Historical Comparisons, BC Summary*.

<sup>32</sup> BC Ministry of Agriculture and Lands. (nd) BC Food Processing Industry Overview. Available on-line at: <http://www.agf.gov.bc.ca/foodprocessing/overview.htm>

The Industry Competitiveness site on the website of the BC Ministry of Agriculture and Land (<http://www.agf.gov.bc.ca/indcomp/index.htm>) has a wealth of information on the most important food production and processing sectors in BC, including employment, value, location of enterprises, etc. Other general information can be found at <http://www.agf.gov.bc.ca/aboutind/profile.htm#Plant> and by clicking on individual plant commodities and livestock at <http://www.agf.gov.bc.ca/aboutind/products/>

### **Food retail**

The current trend is toward fewer and bigger stores. Although the overall number of food stores is declining, chain stores are increasing their number of branch and franchise stores in Canada. In 2004, Loblaws had around 1,030 branch/franchise stores, and Sobeys around 1,310 stores.<sup>33</sup> The five largest food retailers in Canada account for about 60 percent of national grocery sales, up from 50 percent a decade ago, while the share of independents has gone down from 47 percent to 39 percent over the same period. Canadian food retailing (national level): the top five retailers account for 77 percent of market, as of 2003.<sup>34</sup>

### **Institutional foodservice**

This segment consists of foodservice in health care, education, military, transportation, corrections, business, and remote settings. Self-operated foodservice accounts for 59.5 percent of total institutional foodservice expenditures in Canada, while managed services providers (contract caterers) account for the remaining 40.5 percent. Foodservice sales at institutions are forecast to grow 2.8 percent this year, generating more than \$5 billion in sales and marking the third consecutive year this segment has led the industry in growth.<sup>35</sup>

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<sup>33</sup> Agriculture and Agri-Food Canada. (2005) An Overview of the Canadian Agriculture and Agri-foodsystem. Research and Analysis Directorate, Strategic Policy Branch

<sup>34</sup> National Farmers Union (2005) Canada Food Retail 2004/2005. Available on-line at: [http://www.marketsharematrix.org/pdf/Canada!\\_Retail.pdf](http://www.marketsharematrix.org/pdf/Canada!_Retail.pdf)

<sup>35</sup> Canadian Restaurant and Food Services Association. (2006) BC now home to Canada's top restaurant spenders, Available on-line at: [http://www.crfca.ca/research/2006/bc\\_now\\_home\\_to\\_top\\_restaurant\\_spenders.asp](http://www.crfca.ca/research/2006/bc_now_home_to_top_restaurant_spenders.asp)

At nearly \$1 billion per year, food retailing in BC represents 25 percent of all retail sales (only automotive is larger with 27 percent).<sup>36</sup> Food retailing in BC mirrors the national trend toward store rationalization and a move to larger operations. However, some of the primary operators are different. Four major chains dominate the retail food market in BC: Safeway (a subsidiary of the U.S. corporation), Overwaitea/Save On, Great Canadian Superstore (Weston/Loblaws), and Costco; and on Vancouver Island, Thrifty's.

### **Food purchasing and dietary trends**

*The poor pay more (relatively speaking).* According to Statistics Canada, the average Canadian household spent \$6,791 on food in 2003, with BC's average at \$6,784, Vancouver households at \$7,510, and Victoria households at \$6,285. In Canada, the lowest household income quintile (\$23,499 or less) spent \$3,562 on food (an average of 23.5 percent of income), the second quintile (\$23,499–\$40,440) spent \$5,283 (or an average of 16.5 percent of income), the third quintile (\$40,440–\$60,989) spent \$6,514 (or 12.9 percent of income), the fourth quintile (\$60,989–\$90,986) spent \$8,114 (or 10.8 percent of income) and the top quintile (\$90,986 and over) spent \$10,482 (or 7.60 percent of income).<sup>37</sup> The overall average percent spent on food was 10.9 percent. In short, the lower the household income, the greater percentage must be devoted to food.

*Vulnerable populations have small food budgets.* Weekly spending on food in Canada ranges from an average of \$66 for households with incomes less than \$20,000, up to \$203 for households with incomes of \$80,000 or more. Individuals in the lowest household income group spent an average of \$39 a week per person on food, compared with \$59 a week for those in the highest income group. The same study found that single-parent families headed by women spend an average of \$99.36 a week on food while the average household expenditure on food was \$124. Furthermore, single adult males and females over the age of 65 spend less than singles under the age of 65. For example, single adult females over the age of 65 spent an average of \$55.07 a week while those under 65 spend \$67 a week.<sup>38</sup>

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<sup>36</sup> <http://www.britishcolumbia.com/information/details.asp?id=44>

<sup>37</sup> Statistics Canada. (2001) Food Expenditure in Canada. Catalogue no. 62-554-XIE

<sup>38</sup> Ibid

*Most meals are eaten at home but restaurants are important.* According to the Canadian Restaurant and Foodservices Association, the majority (67 percent) of all Canadian meals are prepared and eaten at home. Yet the average Canadian family visits a restaurant for a meal or snacks approximately 500 times per year and spends about one-fifth of their total household food expenditures on these meals and snacks. Residents of Alberta, British Columbia, and Ontario spend a larger share of their food expenditures on restaurant meals than do the residents of other provinces.<sup>39</sup> In fact, the average household in British Columbia spent \$2,013 at bars and restaurants in 2004 — a 7.2 percent increase from the previous year — due to rising disposable income and a growing labour market. British Columbia now has the highest foodservice share of the total food dollar at 25.2 percent.<sup>40</sup>

*The wealthy spend more on restaurants.* Where are people spending their food dollars and on what kinds of foods? In 2001, almost 60 percent of restaurant spending took place in table-service restaurants, compared to 26 percent in fast-food restaurants (including take-out) and less than ten percent each in cafeterias and other types of restaurants such as snack bars and chip wagons.<sup>41</sup> According to Statistics Canada, people in the highest income bracket (\$80,000 or more in household income) tend to spend the most on eating in restaurants. They also spend more (in dollar terms) on meat and fish, dairy, bakery and fruits and vegetables, but not a significant amount more.

*BC residents are not eating five servings a day of fruits and vegetables but are close.* The British Columbia Nutrition Survey found that most BC adults do not follow Canada's Food Guide to Healthy Eating, particularly in the area of fruit and vegetable and milk product intake. In 2003, 55 percent of BC's residents ate fewer than five servings of fruits and vegetables a day.<sup>42</sup> However, it was also noted that in most cases, it would only require an additional one to two servings to achieve the goal. The percentage of the

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<sup>39</sup> Canadian Restaurant and Food Services Association, cited in *and Agri-Food Canada, An Overview of the Canadian Agriculture and Agri-Food System*. May 2005. [http://www.agr.gc.ca/spb/rad-dra/publications/system/ocaafs\\_2005\\_e.pdf](http://www.agr.gc.ca/spb/rad-dra/publications/system/ocaafs_2005_e.pdf).

<sup>40</sup> Canadian Restaurant and Food Services Association (2006) BC now home to Canada's top restaurant spenders, Available on-line at: [http://www.crfa.ca/research/2006/bc\\_now\\_home\\_to\\_top\\_restaurant\\_spenders.asp](http://www.crfa.ca/research/2006/bc_now_home_to_top_restaurant_spenders.asp)

<sup>41</sup> Ibid.

<sup>42</sup> BC Ministry of Health (2004) BC Nutrition Survey. Available on-line at <http://www.health.gov.bc.ca/prevent/nutrition/index.html>

population eating fewer than five servings of fruits and vegetables was the lowest in the North Shore-Coast Garibaldi HSDA at 46.5 percent and highest in Richmond at 59.1 percent.<sup>43</sup>

*Nutritional deficiencies are also possible.* In addition, there are nutrient deficiencies that are of concern for large proportions of the BC population, including folate, calcium, and fibre. These nutrients have consequences for chronic disease prevention. For example, there is convincing evidence that diets high in vegetables decrease the risk of colorectal cancer. The data is strongest for both raw and green vegetables, which may exert anticancer effects through the vitamins, dietary fibre, and phytochemicals that they contain. There is less consistent evidence for fruit.<sup>44</sup>

*More BC mothers breastfeed.* There have been a number of immediate and long-term health benefits associated with breastfeeding. Infants who are breastfed show an increased immunological resistance to disease and may also be less susceptible to Type 1 diabetes and some forms of cancer. Exclusive breastfeeding for the first six months has been shown to promote weight loss for the mother and reduced risk of overweight and obesity in the baby.<sup>45</sup> Over half (55 percent) of BC mothers breastfed their babies for at least six months, compared to 30 percent for Canada overall.<sup>46</sup>

*Future food trends.* According to Agriculture and Agri-Food Canada, the top trends that will affect food consumption to 2020 are:

- demographic shifts such as an aging population and shrinking household size;
- a growing disconnect from food preparation and more snacking and portable meals;
- less income spent on food but a greater emphasis on small portions and gourmet items;
- an increasing awareness of health problems associated with obesity, the nutritional value of food and food safety;

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<sup>43</sup> Ibid.

<sup>44</sup> BC Medical Association. (2000) Trends and risk factors for colorectal cancer. *BC Medical Journal*, 42 (3) 131–135

<sup>45</sup> Gillman, M. W. et al. (2001). Risk of overweight among adolescents who were breastfed as infants. *Journal of American Medical Association*, 285 2461-467.

<sup>46</sup> Statistics Canada. (2003) *Canadian Community Health Survey*.

- an increase in ethnic and fusion cuisines, meatless meals and organics.<sup>47</sup>

### **Food marketing and media**

*Children and television viewing.* Studies have shown that television viewing is the major media for food advertising, that children are more likely to buy/consume what they are exposed to on TV, and that food advertising to children is skewed very strongly to high sugar/high fat foods, which would lead to obesity and other health problems if followed as a diet. Given these findings, it is likely that hours of television watched is a useful indicator of exposure to unhealthy eating patterns.

Recent figures show that the number of hours during which children aged two to 11 watch television has increased in BC. In 1998, BC children watched an average of 14.5 hours a week; in 2003, BC children watched 12.4 hours a week. However, in 2004, the number of hours increased to 14.4, which is approximately the same as the Canadian average of 14.1.<sup>48</sup> This increase may signal an alarming trend toward increasing use of television among this age group. At the same time, television viewing by teens was lower, at 11.7 hours a week, which was the lowest in all provinces.

Food is a gender issue. Even though the percentage of women in the workforce has increased, the percentage of time that women spend in food purchasing and preparation compared to men has not changed.

“The omission of unpaid work from GDP-based measures of progress also has important implications for gender equality. As women still do nearly two-thirds of the unpaid household work in most industrialized societies, the lack of value ascribed to unpaid work effectively means that a large portion of women’s work is not valued, even though raising and nurturing children and families is essential for the functioning of a healthy market economy. When unpaid child-care and domestic work — traditionally regarded as “free” — are shifted to the market economy, they are generally still done by women and fetch among the lowest

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<sup>47</sup> Agriculture and Agri-Food Canada (2005) Canadian Food Trends to 2020: A Long Range Consumer Outlook. Available on-line at [http://www.agr.gc.ca/misb/fb-ba/pdf/ft-ta\\_e.pdf](http://www.agr.gc.ca/misb/fb-ba/pdf/ft-ta_e.pdf)

<sup>48</sup> <http://www.statcan.ca/Daily/English/060331/d060331b.htm>

rates of pay, even though skilled child-care is arguably one of the most challenging and important social tasks.”<sup>49</sup>

### **Food bank usage**

While food bank usage can act as a measure of overall food insecurity, at the same time many people are food insecure but are unable or unwilling to obtain food from these sources.

Food bank usage has declined provincially. In BC, food bank usage declined by 10.5 percent between 2004 and 2005, and child food bank usage also declined by nine percent. This drop may in part be the result of the recent high economic growth in the province and low level of unemployment. Despite the overall decline in the number of food bank clients over last year, 44.9 percent of BC food banks reported increases in food bank use. The most common users of food banks are single people (40 percent). While the majority of those using food banks receive social assistance (52 percent), 11 percent of recipients were employed.<sup>50</sup>

### **Cost of eating**

*The Cost of Eating in BC* report has been published annually since 2000. In 2005, the report found the following:

- It costs about \$654 a month to feed a family of four (two parents, two children).
- The cost of food has risen over three percent since 2004.
- For those families with low incomes, especially those on welfare, there is not enough money to buy healthy food.
- An average family of four with one income would need to spend about 15 percent of their income to buy food.
- The same family of four on a low income would need to spend almost 30 percent of their income to buy the same food basket.

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<sup>49</sup> Colman, Ronald (GPI Atlantic) and Hans Messinger. (2004) Economic Performance and the Wellbeing of Canadians. Statistics Canada Canadian Economic Association Annual Meeting, Toronto, Ontario, p. 14.

<sup>50</sup> Hunger Count. (2005) Available on-line at [http://foodbank.duoweb.ca/documents/hc05\\_eng.pdf](http://foodbank.duoweb.ca/documents/hc05_eng.pdf)

- The same family on BC welfare would need to spend 44 percent of their income on the food basket.<sup>51</sup>

### **Housing costs**

Housing affordability is a problem for 28.6 percent of BC households, according to the 2001 census. Households are considered to have affordability problems if more than 30 percent of their income is spent on housing, resulting in the possibility that not enough money will be left over for other necessities. Renters are more than twice as likely as homeowners to experience housing affordability problems. While 44.1 percent of renters spent more than 30 percent of their household income on shelter costs, only 20.7 percent of homeowners found themselves in the same situation.<sup>52</sup>

Since 2000, rents for a one-bedroom apartment in the Greater Vancouver region have increased by 7.7 percent; in Victoria, they have increased by seven percent; in Kelowna, by ten percent. The province recently made changes to the Residential Tenancy Act that allows annual rent increases of two percent plus inflation (a 4.6 percent increase in 2004). These rent increases are likely to put greater pressure on low-income earners and will drive up the demand for social housing. Roughly, 65,000 households in BC spend more than half their income on rent.<sup>53</sup>

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<sup>51</sup> *Cost of Eating BC 2005* Available on-line at <http://www.dietitians.ca/resources/resourcesearch.asp?fn=view&contentid=1944>

<sup>52</sup> 2001 Census Fast Facts: Housing Affordability in BC. Available on-line at

<sup>53</sup> <http://www.policyalternatives.ca/index.cfm?act=news&do=Article&call=908&pA=CF69F1AA&type=2,1,5>

## Appendix B: Indicator List

### Food Insecurity Indicators

Food insecurity indicators are socioeconomic factors that have been linked to food insecurity. These include being below the low-income cutoff, on public assistance, a single mother, Aboriginal, elderly, and/or having a mental or physical disability. These indicators can be combined into an index that can identify areas where residents are particularly vulnerable to food insecurity based upon sociodemographic characteristics.<sup>54</sup>

Indicator	Data Source
<p><b>Demographic indicators related to food insecurity*</b></p> <p>These indicators provide an overview of the populations within your community who may be at greatest risk for food insecurity.</p>	
<ul style="list-style-type: none"> <li>• Median annual family income</li> <li>• Social assistance rates</li> <li>• Employment rates</li> <li>• Percentage of single parent households</li> <li>• Percentage of elderly</li> <li>• Percentage of Aboriginal</li> <li>• Percentage of HH spending more than 30percent of their income on shelter</li> <li>• Percentage of families living below the Low-Income Cut-Off (LICO)</li> <li>• Percent of population aged 20 years and above who do not have grade nine completion</li> </ul>	<p>For statistics at the Regional Health Authority Level, go to:  <a href="http://www.bcstats.gov.bc.ca/data/sep/ha/ha_main.asp">http://www.bcstats.gov.bc.ca/data/sep/ha/ha_main.asp</a> and select your health area.</p> <p>Socioeconomic profiles for Local Health Areas are available at:  <a href="http://www.bcstats.gov.bc.ca/data/sep/lha/lha_main.asp">http://www.bcstats.gov.bc.ca/data/sep/lha/lha_main.asp</a></p> <p>For smaller geographic areas, such as a city, town, or reserve lands, go to:  <a href="http://www12.statcan.ca/english/profil01/CP01/Index.cfm?Lang=E">http://www12.statcan.ca/english/profil01/CP01/Index.cfm?Lang=E</a> and type in the place</p>

<sup>54</sup> **Note:** This does not mean that everyone who has one or more of these sociodemographic characteristics is food insecure but it does provide information on a population level where people may be most at risk.

<sup>55</sup> **Note:** Updated demographic data from the 2007 Census should be used when it becomes available. Check this link for release dates <http://www12.statcan.ca/english/census06/release/index.cfm>.

<ul style="list-style-type: none"> <li>• Percentage of recent immigrants</li> <li>• Number of homeless</li> </ul> <p>(Tracking employment, income, education, and other socioeconomic information is important because these factors directly affect people’s ability to obtain an adequate and nutritious diet.)</p>	<p>name of your community. For breakdowns of age, education, household, and income categories, select the Additional Data button and select the data you need. You can also download the data in Excel format by selecting the Download data button.</p> <p>The Human Early Learning Partnership has maps and downloadable sociodemographic data at the school district and neighbourhood level:  <a href="http://ecdportal.help.ubc.ca/communityProfiles.htm">http://ecdportal.help.ubc.ca/communityProfiles.htm</a></p>
<p>Indicators of extreme financial hardship:<sup>56</sup></p> <ul style="list-style-type: none"> <li>• Homelessness</li> <li>• Risk of homelessness (People living in single room occupancy hotels or rooming houses; households paying more than 50% of their income for rent; and households doubling up with others or temporarily living with friends)</li> <li>• Evictions</li> <li>• Arrears</li> <li>• Termination of household utilities because of unpaid bills</li> <li>• Availability of social housing</li> </ul>	<p>Homelessness Research Virtual Library:  <a href="http://www.hvl.ihpr.ubc.ca/">http://www.hvl.ihpr.ubc.ca/</a></p> <p>Homeless Count for the GVRD:  <a href="http://www.gvrd.bc.ca/homelessness/pdfs/HomelessCount2005Final.pdf">http://www.gvrd.bc.ca/homelessness/pdfs/HomelessCount2005Final.pdf</a></p> <p>BC Housing:  <a href="http://www.bchousing.org/applicants/housing_listing">http://www.bchousing.org/applicants/housing_listing</a></p>

<sup>56</sup> This set of indicators is derived from Discussion Paper on Household and Individual Food Insecurity [http://www.hc-sc.gc.ca/fn-an/nutrition/pol/food\\_sec\\_entire-sec\\_aliments\\_entier\\_e.html](http://www.hc-sc.gc.ca/fn-an/nutrition/pol/food_sec_entire-sec_aliments_entier_e.html)

<p>Health-related indicators:</p> <ul style="list-style-type: none"> <li>• Prevalence of dietary-related disease</li> <li>• Mortality from dietary-related disease</li> <li>• Rates of obesity/overweight</li> <li>• Low birth weight</li> </ul>	<p>For Mortality Statistics by local health area, BC, 2000-2004:  <a href="http://www.vs.gov.bc.ca/stats/annual/2004/xl/append3b.xls">http://www.vs.gov.bc.ca/stats/annual/2004/xl/append3b.xls</a></p> <p>For rates of obesity and overweight by health regions:  <a href="http://www.statcan.ca/english/freepub/82-221-XIE/2005001/tables/html/1228_03.htm">http://www.statcan.ca/english/freepub/82-221-XIE/2005001/tables/html/1228_03.htm</a></p> <p>Low birth weight for local health area (LHA):  <a href="http://www.vs.gov.bc.ca/stats/quarter/index.html">http://www.vs.gov.bc.ca/stats/quarter/index.html</a></p> <p>For rates of diabetes by health regions:  <a href="http://www.statcan.ca/english/freepub/82-221-XIE/2005001/tables/html/1246.htm">http://www.statcan.ca/english/freepub/82-221-XIE/2005001/tables/html/1246.htm</a></p> <p>For Aboriginal Communities, see: Regional Analysis of Health Statistics. Birth Related and Mortality Summaries for British Columbia and 16 Health Service Delivery Areas for Status Indians in British Columbia at:  <a href="http://www.vs.gov.bc.ca/stats/indian/indian2001/index.html">http://www.vs.gov.bc.ca/stats/indian/indian2001/index.html</a></p>
<p>Accessibility of transportation (including cost)</p>	<p>BC Transit maintains a listing of detailed information on hours and days of service, routes, and fares for communities in BC:  <a href="http://www.busonline.ca/regions/?p=r3.txt">http://www.busonline.ca/regions/?p=r3.txt</a></p>

<p>Community social capital:</p> <ul style="list-style-type: none"> <li>• Voter registration</li> <li>• Number of hours spent providing unpaid care to seniors</li> <li>• Seniors living alone</li> <li>• Residential mobility</li> <li>• Charitable giving</li> <li>• Volunteerism</li> </ul> <p>(These indicators reflect a community’s social cohesion and ability to work together to address food security issues.)</p>	<p>Elections BC has voter registration and voting data for provincial voting districts:  <a href="http://www.elections.bc.ca/elections/vpstats01/vpstats010516.htm#B">http://www.elections.bc.ca/elections/vpstats01/vpstats010516.htm#B</a></p> <p>Seniors living alone (potential measure of social isolation)</p> <p>Residential mobility</p> <p>Number of hours spent providing unpaid care to seniors:  <a href="http://www.bcstats.gov.bc.ca/data/cen01/profiles/csd_txt.asp">http://www.bcstats.gov.bc.ca/data/cen01/profiles/csd_txt.asp</a></p> <p>Charitable giving and volunteerism statistics available at the provincial level:  <a href="http://dissemination.statcan.ca/english/freepub/71-542-XIE/71-542-XIE00001.pdf">http://dissemination.statcan.ca/english/freepub/71-542-XIE/71-542-XIE00001.pdf</a></p>
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### ***Food Production Indicators***

Food production indicators provide a basic picture of the production system in your area. For CFSAs in areas that do not include farmland (e.g., a neighbourhood or urban area), take into consideration other productive areas such as community, household, or rooftop gardens, fruit trees, small animal husbandry, as well as areas that could be turned into productive land.

<p><b>Basic Production Statistics</b></p> <p>These statistics are important baseline indicators of the general status of agricultural production in your community.</p>	
<p>Number of farms</p>	<p>Agricultural Community Profiles:  <a href="http://www25.statcan.ca:8081/AgrProfile/acphome.jsp">http://www25.statcan.ca:8081/AgrProfile/acphome.jsp</a></p>

	<p>The profiles include agricultural statistics on population and farm operators, land use and land practices, farm finances, crops and horticulture, and livestock for most communities at the geographic level of the census division (CD) and census agricultural region (CAR).</p> <p>Trends can be investigated by comparing data from older Census of Agriculture information, available at some public libraries.</p>
Number of farmer operators	<p>Agricultural Community Profiles</p> <p><a href="http://www25.statcan.ca:8081/AgrProfile/acphome.jsp">http://www25.statcan.ca:8081/AgrProfile/acphome.jsp</a></p>
Total area of farms (hectares)	<p>Agricultural Community Profiles</p> <p><a href="http://www25.statcan.ca:8081/AgrProfile/acphome.jsp">http://www25.statcan.ca:8081/AgrProfile/acphome.jsp</a></p>
Land use	<p>Agricultural Community Profiles</p> <p><a href="http://www25.statcan.ca:8081/AgrProfile/acphome.jsp">http://www25.statcan.ca:8081/AgrProfile/acphome.jsp</a></p>
Top five crops (hectares)	<p>Agricultural Community Profiles</p> <p><a href="http://www25.statcan.ca:8081/AgrProfile/acphome.jsp">http://www25.statcan.ca:8081/AgrProfile/acphome.jsp</a></p>
Number of organic farms	<p>Farms classified by certified organic products produced:</p> <p><a href="http://www25.statcan.ca:8081/AgrProfile/acphome.jsp">http://www25.statcan.ca:8081/AgrProfile/acphome.jsp</a></p> <p>Also, Certified Organic Associations of British Columbia contains provincial-level statistics</p>

	on organic production and lists of organic producers by region: <a href="http://www.certifiedorganic.bc.ca/infonews/statistics.htm">http://www.certifiedorganic.bc.ca/infonews/statistics.htm</a>
Average farm size (Maintaining small farms is a key component to providing communities with a sustainable, local food supply.)	Statistics Canada Census of Agriculture 2001: <a href="http://www.statcan.ca/english/agcensus2001/index.htm">http://www.statcan.ca/english/agcensus2001/index.htm</a>
Number and percent of large, medium, and small farms	Statistics Canada Census of Agriculture 2001: <a href="http://www.statcan.ca/english/agcensus2001/index.htm">http://www.statcan.ca/english/agcensus2001/index.htm</a>
Farming employment and income, including off-farm income	Census of Agriculture Farm operators' income provides sources by farm type (NAICS classification): <a href="http://www.statcan.ca/english/agcensus2001/index.htm">http://www.statcan.ca/english/agcensus2001/index.htm</a>
Number and types of food processors (The number of food processors affects opportunities for agricultural products to be processed locally.)	The BC Food Processors directory provides a listing of food processors within the province: <a href="http://www.agf.gov.bc.ca/foodprocessing">http://www.agf.gov.bc.ca/foodprocessing</a> Small-Scale Food Processors Association: <a href="http://www.ssfpa.net/">http://www.ssfpa.net/</a> BC Food Processors Association: <a href="http://www.bcfpa.ca">http://www.bcfpa.ca</a>

<b>Food system and community economic health</b>	
The economic viability of farming is key to maintaining a healthy and vibrant local food system. If farming becomes economically difficult, there will be fewer farmers.	
Total gross farm receipts (excluding forest products sold) (\$)	Agricultural Community Profiles: <a href="http://www25.statcan.ca:8081/AgrProfile/acphome.jsp">http://www25.statcan.ca:8081/AgrProfile/acphome.jsp</a>
Farm operating expenses	Agricultural Community Profiles:

	<a href="http://www25.statcan.ca:8081/AgrProfile/acphome.jsp">http://www25.statcan.ca:8081/AgrProfile/acphome.jsp</a>
Total farm capital (market value \$)	Agricultural Community Profiles <a href="http://www25.statcan.ca:8081/AgrProfile/acphome.jsp">http://www25.statcan.ca:8081/AgrProfile/acphome.jsp</a>
Extent of producers' debt	Total debt (both current and long-term) is available provincially and by type of farm in the Farm Financial Survey: <a href="http://www.statcan.ca/english/freepub/21F0008XIB/21F0008XIB2005001.pdf">http://www.statcan.ca/english/freepub/21F0008XIB/21F0008XIB2005001.pdf</a>
Land tenure (Land tenure is important because of the amount of control an individual has over how land is utilized and managed. Owners have a greater control and security over land than farmers who lease land.)	Agricultural Community Profiles: <a href="http://www25.statcan.ca:8081/AgrProfile/acphome.jsp">http://www25.statcan.ca:8081/AgrProfile/acphome.jsp</a>
Availability of agricultural land to new farmers	<a href="#">Focus groups</a> with producers
Average age of farmers (Age is an indicator of the productivity and longevity of a work sector. If farmers retire and are not replaced by a new generation, land may remain unused or may be sold for development.)	Agricultural Community Profiles: <a href="http://www25.statcan.ca:8081/AgrProfile/acphome.jsp">http://www25.statcan.ca:8081/AgrProfile/acphome.jsp</a>
Contribution of agriculture to the region's economy	"Income dependency" on agriculture is available from BC Stats Regional District Socio-Economic Profiles: <a href="http://www.bcstats.gov.bc.ca/data/sep/rd/rd_main.asp">http://www.bcstats.gov.bc.ca/data/sep/rd/rd_main.asp</a>
Agrotourism operations	BC Agrotourism Alliance: <a href="http://www.agritourismbc.org">www.agritourismbc.org</a> Members in different regions:

	<a href="http://www.agritourismbc.org/about/members.php">http://www.agritourismbc.org/about/members.php</a>
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<b>Agricultural Land Use</b>	
How agricultural land is used and any threats to that use (such as sprawl, high land costs) are key considerations in understanding the sustainability of local production.	
Net change in land in the Agricultural Land Reserve (ALR) by regional district	Agricultural Land Reserve, 2001–2005 Summary Statistics: <a href="http://www.landcommission.gov.bc.ca/alr/stats/2001-05Summary_main.htm">http://www.landcommission.gov.bc.ca/alr/stats/2001-05Summary_main.htm</a> Other information on the ALR: <a href="http://www.greenbelt.bc.ca/getpdf.php?org=oS_tate_of_the_ALR_Report_final.pdf">http://www.greenbelt.bc.ca/getpdf.php?org=oS_tate_of_the_ALR_Report_final.pdf</a>
Extent of urbanization and sprawl (Urbanization and sprawl can affect the availability of agriculturally productive land within a community.)	BC Sprawl Report available for selected communities: <a href="http://www.smartgrowth.bc.ca/downloads/Sprawl2004.pdf">http://www.smartgrowth.bc.ca/downloads/Sprawl2004.pdf</a>
Cost of land (Land that is expensive may disadvantage farming and promote development.)	Canadian Farm Credit Corporation: <a href="http://www.fcc-fac.ca/en/OnlineServices/flv_online_service_e.asp">http://www.fcc-fac.ca/en/OnlineServices/flv_online_service_e.asp</a>

<b>Food system and regional environmental health</b>	
Food production can influence both environmental and human health. Mitigating negative effects creates a more sustainable food system.	
Identified environmental issues in farming communities	Producer and citizen interviews Regional Scan Summary: Environmental Farm Planning Program, Agricultural Policy Framework, British Columbia. Submitted to BC Ministry of Agriculture, Food and Fisheries by Golder Associates, March 2003.

Farm-worker health (Farm-workers are often the most affected by agricultural contamination and pollution.)	<a href="#">Interviews or focus groups</a> with local farm workers
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<b>Availability of Local Food</b>	
The availability of local food is a key indicator of a community's capacity to produce and distribute local food. Lack of local foods suggests a heavy reliance on imports.	
Food miles for local vs. imported foods (Transporting food over long distances contributes to environmental pollution.)	<a href="#">Food Miles Calculation Tool</a>
Ability of local farms to meet the nutritional needs of local consumers.	<a href="#">Optimum Nutrition Environment Assessment Tool</a>

<b>Non-Farm Production</b>	
Statistics on non-farm production are important indicators of urban dwellers' ability to produce their own food.	
Number of community gardens, number of plots, and food produced	<a href="#">Community Garden Survey</a>
The location of community gardens (in relationship to low-income or high-density neighbourhoods) indicates ability for low-income populations to access community gardens.	<a href="#">Community Garden Survey</a>
Waiting lists at community gardens (Long waiting lists suggest the need for more community gardening space.)	<a href="#">Community Garden Survey</a>
Degree to which gardening space and space for food production is incorporated into city planning	<a href="#">Food Policy Inventory</a>
Number of vacant lots, brownfields, and	<a href="#">Urban Agriculture Inventory</a>

available green space that are potentially productive in urban areas	
Amount of vacant city land converted to food production in urban areas	<a href="#">Urban agriculture inventory</a>
Percentage of residents living in apartments/townhouses vs. single family homes (This indicates need for community garden space, as those living in high-density housing likely do not have private gardening space.)	Data available for provincial electoral districts and regional districts <a href="http://www.bcstats.gov.bc.ca/data/cen01/profiles/csd_txt.asp">http://www.bcstats.gov.bc.ca/data/cen01/profiles/csd_txt.asp</a>
Population density (This may indicate need for community garden space.)	Statistics Canada 2001 Community Profiles: <a href="http://www12.statcan.ca/english/profil01/CP01/Index.cfm?Lang=E">http://www12.statcan.ca/english/profil01/CP01/Index.cfm?Lang=E</a>
The amount of produce that is harvested from city orchards and backyard fruit trees.	Local Fruit Tree Project, if applicable
Extent of small-scale household animal husbandry or honey production	Municipal regulations on animal husbandry and bee-keeping. <a href="#">Community food mapping, interviews, and focus groups.</a>

<b>Hunting and Gathering (Aboriginal)</b>	
Monitoring dietary change for Aboriginal populations is particularly important because a shift away from traditional foods has been associated with increased rates of diabetes and other health problems. Being able to record and restore traditional food practices and resources is an important component to physical, cultural, and spiritual health.	
Dietary change	Inventory of traditional foods compared to foods available today through oral histories.
Traditional food use	What is the extent of traditional food use within the community? What productive resources exist for accessing traditional foods? Are traditional foods utilized in institutional meals (e.g., schools)?

## ***Food Distribution Indicators***

These indicators measure how food is distributed to consumers, either through retail (mainstream and alternative), community-based programs (e.g., community kitchens), or charitable food sources (e.g., food banks). Food distribution indicators can also track food diversion, or how food within the retail sector is either donated or composted. Food diversion is an issue that not only affects food access but also other environmental and health issues such as air quality.

<b>Basic Distribution Statistics</b>	
Basic distribution statistics provide an overview of this sector of the food system. These are important in understanding how people within the community obtain food.	
Number of Wholesalers	
Number of Mainstream Food Retailers (The number and type of retailers within the community can give some sense of how well people are served by the retail food sector.)	Reference Canada is a database of over one million complete business listings in Canada. You can search by business type, company name, geographic location, or standard industrial classification (SIC) code. The database provides details such as address, size, sales, and a key contact person. Data can be accessed at many libraries.  Canadian Council of Grocery Distributors: <a href="http://www.ccgd.ca/">http://www.ccgd.ca/</a>
Alternative retailers (e.g., co-ops, farmers markets) (This can suggest the health of the alternative food sector.)	The BC Association of Farmers Markets, BC Market Directory has a listing of market days and links to many market sites.  <a href="http://www.bcfarmersmarket.org/directory/index.htm">http://www.bcfarmersmarket.org/directory/index.htm</a>
Number of people who attend farmers' markets, and amount spent at farmers markets	<a href="#">Farmers' market assessment</a>

(These indicators reflect the economic vitality of farmers markets.)	
Locally-grown fruits and vegetables that are most widely available	<a href="#">Local Food Retail Survey</a>
Number of Good Food Box depots and number of participants in the program	Contact Good Food Box Program in your area
Number of Community Shared Agriculture (CSA) farms	<a href="#">Community Food Mapping</a>
Number of community kitchens	Contact community kitchen coordinator or health authority community developer.
Number of community food resources per capita	Create an inventory of all resources and divide by the number of these resourced by the number residents in your area of focus.
<p>Number of charitable food resources and number per capita low-income:</p> <ul style="list-style-type: none"> <li>• food banks/food rescue programs</li> <li>• soup kitchens</li> <li>• shelters with meals</li> <li>• mobile kitchens</li> </ul>	<p>Contact local food bank or charitable provider network in your area.</p> <p>The Canadian Association of Food Banks has an online list of members by province. Go to <a href="http://www.cafb-acba.ca/">http://www.cafb-acba.ca/</a> and then select BC.</p>
<p>Number of people who use charitable food resources on a monthly basis</p> <p>(This indicator suggests whether community food insecurity is increasing or decreasing as well as the ability of the charitable system to meet this need. However, there may be a significant population who are either unable or unwilling to use charitable food. By keeping monthly records, it is possible to see fluctuations in use that may point to the need for additional resources at certain times.)</p>	Contact local food bank or charitable provider network in your area.

<b>Mainstream retail</b>	
Indicators which track the mainstream retail sector can suggest its success in providing healthy and local food to community residents.	
Number of restaurants serving local food (The number of restaurants that serve local foods is an indicator of the awareness of local production and the ability of restaurants to buy locally.)	Farm Folk/City Folk has a partial listing of restaurants, grocers, and caterers featuring organic and/or local foods in southwest BC: <a href="http://www.ffcf.bc.ca/Food&amp;Agri.html#localfoods">http://www.ffcf.bc.ca/Food&amp;Agri.html#localfoods</a>
Availability of local and/or organic compared to conventional produce in mainstream retail stores	<a href="#">Local Food Retail Survey</a>
Price of local/organic compared to conventional	<a href="#">Local Food Retail Survey</a>
Location of supermarkets and convenience stores in a community.	<a href="#">GIS</a> or <a href="#">Community Food Mapping</a>
Distribution of fast food outlets (including convenience stores) and relation to low-income neighbourhoods.	<a href="#">GIS Food Mapping</a>
Number of fast food outlets per capita	Reference Canada has listings of restaurants. Fast food restaurant chains can be identified by name.
Percentage of population that is within walking distance (450 meters) of a large grocery store or of public transportation that will take them to a large grocery store	<a href="#">GIS Food Mapping</a>
Location of large and other grocery stores relative to public transportation routes.	<a href="#">GIS Food Mapping</a>

<p><b>Alternative retail</b></p> <p>These indicators provide information on the viability and sustainability of alternatives to mainstream retail outlets. Alternative retail structures are thought to be more economically, socially, and environmentally sustainable.</p>	
Existence of food buying cooperatives or community food retail outlets	BC Cooperative Association has an online directory of members. Categories include fruit, organic food, and groceries: <a href="http://baseline-graphics.com/beta/bcca/results.asp?prod=groceries">http://baseline-graphics.com/beta/bcca/results.asp?prod=groceries</a>
Number of urban delivery operations (e.g., Small Potatoes Urban Delivery in Vancouver).	Farm Folk/City Folk Home Delivery Services: <a href="http://www.ffcf.bc.ca/Food&amp;Agri.html#localfoods">http://www.ffcf.bc.ca/Food&amp;Agri.html#localfoods</a> (may not be comprehensive for the province)
Farmers' and residents' degree of participation in and satisfaction with local farmers' market arrangements.	<a href="#">Farmers Market Assessment</a>
Cost of food in farmers' markets compared to grocery stores (This indicator reflects how accessible farmers' markets are to those with limited incomes.)	<a href="#">Farmers Market Assessment</a>
Number of mobile food vendors and types of food sold	Check municipal regulations regarding mobile food vending
Number of farm markets and road side stands (Selling directly to consumers is an important way for farmers to increase profits, especially for those who cannot enter the wholesale market because of competition or economic concentration.)	Data available for Fraser Valley and southern Vancouver Island: <a href="http://www.bcfarmfresh.com/">http://www.bcfarmfresh.com/</a> and <a href="http://www.islandfarmfresh.com/">http://www.islandfarmfresh.com/</a> Focus groups, key informants, chamber of commerce, grower groups
Number of participants in Good Food Box programs	Contact local Good Food Box coordinator if available

Some communities may have other alternative distribution mechanisms that should be recorded, including marketing cooperatives, regional marketing centres, and e-commerce.

<b>Charitable Food Indicators</b>	
These indicators assess the ability of the charitable food system to provide adequately for those who are most food insecure.	
Demographics of residents accessing charitable food sources (age, gender, ethnicity)	<a href="#">Charitable Food Consumer Survey</a>
Where charitable food comes from and the amount that is locally grown or processed. (At least some of the food provided through the charitable food system is purchased. Charitable providers can be encouraged to purchase local food whenever possible in order to support local farmers.)	<a href="#">Charitable Provider Survey</a>
Number of programs that provide food and/or nutritional information/support for people with specific health issues (e.g., diabetes, HIV/AIDS) and perceived acceptability and quality of food.	<a href="#">Charitable Provider Survey</a>
Charitable food provider policies regarding how food is accessed (line-ups, religious observances before food is provided, etc.) (Line-ups and other barriers can affect the ability of some to access charitable food.)	<a href="#">Charitable Provider Survey</a>

<b>Food Diversion Indicators</b>	
These indicators reveal how food from retailers and restaurants is handled once it is no longer considered saleable.	
The percentage of edible food donated from various sources — institutions, retail grocers,	<a href="#">Food Diversion Survey</a>

restaurants and food processors.	
The percentage of inedible food from various sources — institutions, retail grocers, restaurants and food processors — that is composted.	<a href="#">Food Diversion Survey</a>

***Food Knowledge, Preparation and Consumption Indicators***

<b>Food Knowledge, Preparation and Consumption Indicators \</b>	
These indicators provide information on community members’ knowledge of food issues, ability to prepare food, and patterns of consumption.	
Cost of Nutritious Food Basket relative to household income, low-income cutoff (LICO), and social assistance rates	<a href="#">Food Costing Tool</a>
Average food costs of large and small stores	<a href="#">Food Costing Tool</a>
Average food costs in wealthy and low-income neighbourhoods	<a href="#">Food Costing Tool</a>
Nutritional quality of food provided at charitable food operations	<a href="#">Charitable Food Quality Assessment</a>
Consumption of fruits and vegetables	For the percentage of population who consume five servings of fresh fruits and vegetables a day by Health Service Delivery Area (HSDA), see <a href="http://www.bchealthyiving.ca/">http://www.bchealthyiving.ca/</a>
Exposure to healthy/unhealthy food advertising	<a href="#">Advertising Analysis</a>
Food knowledge and skills held by community members.	<a href="#">Survey of Community Food Knowledge and Skills</a>

## ***Sustainability Indicators***

Sustainability indicators incorporate various aspects of the considerations discussed in earlier sections of the guide, but are specifically focused on tracking progress toward a sustainable and equitable food system. These include elements such as policies, institutions, and programs that help move the food system from an unsustainable to a sustainable state.

<b>Sustainability Indicators</b>	
These are indicators that measure the existence of resources within a community that contribute to developing a sustainable food system.	
Residents' access to resources needed to participate in food policy development	<a href="#">Local Food Audit</a>
Existence of nutrition and/or food procurement policies for public institutions	<a href="#">Institutional Food Inventory Tool</a>
Number and viability of food-related social enterprises.	<a href="#">Interviews or surveys</a>
Number of agri-food organizations and programs that are active in the community.	<a href="#">Local Food Audit</a>
Existence and nature of local policies around food, agriculture, and land usage.	<a href="#">Food Policy Inventory</a>
Implementation of local food, agriculture, and land-use policies.	<a href="#">Food Policy Inventory</a>
Food-related economic development initiatives or community-owned processing ventures	<a href="#">Local Food Audit</a>
The number of community, school, and/or residential garden training programs	<a href="#">Local Food Audit</a>
Residents' access to resources needed to grow food or purchase food grown regionally and sustainability.	<a href="#">Local Food Audit</a>

# ***Appendix C: Tools and Methods for Measuring Community Food Systems***

## ***Tools for Measuring Food Insecurity***

### **Estimating Numbers of Food Insecure**

Without nutritional assessments at the community level, it may be difficult to estimate the number of people who are food insecure within your community. One method is to use the numbers of individuals who utilize charitable food resources. However, this measure may miss those who are food insecure but are unable or unwilling to access these resources.

Another way to estimate the number of food insecure within a particular community is to estimate based on national statistics.<sup>57</sup> According to the Canadian Community Health Survey:

- 15 percent of Canadians were considered to be living in what is known as a “food-insecure” household at some point during 2000/01. This rate was 17 percent for British Columbia.
- More specifically, 46 percent of people in low- or lower-middle income households in BC were food insecure and 30 percent reported not having enough to eat in the past year.<sup>58</sup>
- Nationally, 33 percent of female lone parents reported food insecurity.
- Nationally, approximately 31 percent of Aboriginal people living off-reserve indicated that they were food insecure.
- Nationally, 58 percent of those on income assistance reported food insecurity (1998/99).
- Nationally, seven percent of seniors reported being food insecure, although this number is likely higher for low-income seniors.

In order to estimate the number of people in your community who are food insecure, select the appropriate demographic (e.g., female lone-parents) from the Statistics

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<sup>57</sup> Food insecurity is defined as not eating the desired quality or variety of food, worrying about not having enough to eat, and/or not having enough to eat.

<sup>58</sup> A household of three or four people was considered low-income if it had total income of less than \$20,000.

Canada’s Community Profiles or similar demographic resource and find the total number for that demographic in your community. You can then calculate the approximate number for your community using the provincial or national percent who are food insecure. Once you have the numbers, you can enter them in a table similar to the following.

Demographic characteristic	Total number	Percent food insecure from Provincial or National Statistics	Approximate number of female lone-parents who are food insecure
Female lone-parents	6,835	33% (national)	2,255

### ***Tools for Collecting Data on Food Production Indicators***

#### **Private Food Production**

Although it would be difficult without a comprehensive survey to estimate the number of people in urban areas who grow their own food, another indicator of people’s ability to grow their own food is to compare the percentage of residents living in apartments or townhouses compared to those in single-family homes. This indicator is based on the assumption that people in single-family homes have access to a yard that could be used for food production and that those in multiple family dwelling do not. While this is not always the case, it does provide an indication of the relative need for community garden space.

#### **Urban Agriculture Inventory**

An Urban Agriculture Inventory provides an assessment of land that is currently or could potentially be used for food production. The inventory should include all of the following:

- Land currently being used for food production, including large and small scale agriculture, community gardens, and roof-top gardens (food producing only);

- municipally-controlled land such as under-utilized streets, right of ways, greenways, greenstreets, blooming boulevards, bikeways;
- vacant or under-utilized land on new and upcoming major developments;
- private vacant or under-utilized land;
- provincial or crown land (e.g., hospitals, schools);
- federal land.

Once the sites have been inventoried, the second phase is to analyze potential uses for sites that are currently not productive. The analysis covers both physical criteria (sunlight, access to water, slope, impervious surface, brownfields, adjacent buildings, contaminated soil, proximity to other urban agriculture activity) and social criteria (access to parking or transit, bikeway proximity, site security, land tenure, demonstrated need, neighbourhood support, visual impression, opportunities for community capacity building, proximity to density). Based upon these criteria, land can be categorized into that which is appropriate for:

- small-scale growing operations (food bank gardening, herb growing, beekeeping, pocket garden, floriculture),
- large scale growing operations (community supported agriculture, urban orchards, animal husbandry),
- community gardens, or
- production on impervious surfaces or poor soil (e.g., vertical gardening; indoor growing, greenhouses, community processing, farmers' markets, container gardening, hydroponics).

More information on conducting an Urban Agriculture Inventory can be found at

<http://www.diggablecity.org/>

<http://www.vancouverurbanagriculture.ca>

### **Community Garden Assessment**

Community garden assessments can be conducted with surveys, but it is recommended that site visits be used as the primary method or in addition to surveys. Site visits are

particularly useful for generating a list of foods being produced. Indicators related to community gardens are important for understanding the accessibility of urban populations to productive land. This is particularly important in areas where urbanization and densification is reducing access to private garden space. Not only have community gardens been shown to increase the consumption of fresh produce amongst gardeners (compared to non-gardeners), they are also important sites for community building and increasing awareness about food production.

Basic questions to ask regarding community gardens:

- Where are gardens located? Are they easily accessible via walking or public transportation?
- How many plots exist at each garden? What size are the plots?
- What is being grown? (These data should be collected through site visits.)
- Does the community garden have collective growing areas such as an orchard, herb gardens, and bee farms? If yes, how much is harvested and how is it distributed?
- Do the gardens have waiting lists? If so, how long (average length of wait)?

For more information on the components of community garden assessments look at the Environmental Youth Alliance website: [www.vancouverurbanagriculture.ca](http://www.vancouverurbanagriculture.ca)

### **Food Miles Calculations**

The concept of “food miles” is used to describe the distance that food travels from the location where it is grown or raised to the location where it is consumed.

The Region of Waterloo Public Health recently conducted a study of food miles using methodology originally developed by the Lifecycles Project.<sup>59</sup> Lifecycles has created an online tool for calculating food miles using import data tracked by Customs and Immigration Canada to generate average distances traveled by all imports of selected food items. Food miles and studies of greenhouse gas emissions rely on two calculations to assess the distances traveled by food and the air emissions associated with the transport

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<sup>59</sup>Xuereb, M (2005) Food Miles: Environmental Implications of Food Imports to Waterloo Region. Available on-line at: [http://www.leopold.iastate.edu/research/marketing\\_files/foodmiles\\_Canada\\_1105.pdf](http://www.leopold.iastate.edu/research/marketing_files/foodmiles_Canada_1105.pdf)

— Weighted Average Source Distance (WASD) and Weighted Average Emissions Ratio (WAER). The WASD is the average distance that a food item travels from where it is produced to where it is consumed.<sup>60</sup>

$$\text{Weighted Average Source Distance (WASD) (km)} = \frac{\sum(v * d)}{\sum v}$$

where:

$\sum$  = sum of

v = value (\$) of imports from each location of production origin

d = distance (km) from each location of production origin to the point of consumption.

The WAER is the average amount of greenhouse gas emissions (in kg) created by each kg of a food item in its travel from the point of production to consumption.<sup>61</sup>

$$\text{Weighted Average Emissions Ratio (WAER)} = \frac{\sum(v * d * e)}{\sum v}$$

where:

v = value (\$) of imports from each location of production origin

d = distance (km) from each location of production origin to the point of consumption

e = greenhouse gas (GHG) emission rate (g/T-km) for mode of transport

In order to develop a picture of the food miles for your community, begin by selecting a basket of foods using the following criteria:

- must be grown or raised locally;
- must have accessible and reliable import data;
- must reflect a mixture of fresh and preserved products; and
- must be representative of the basket of items that consumers in your community eat

<sup>60</sup>*Lifecycles*. (2004) <http://www.lifecyclesproject.ca/>

<sup>61</sup>Ibid

Once food items have been selected, you can calculate food miles by using the WASD and WAER formulas.

#### *Food Import Data*

Import data for each of the food items can be obtained from Industry Canada's Strategies website: [http://strategis.ic.gc.ca/sc\\_mrkti/tdst/engdoc/tr\\_homep.html](http://strategis.ic.gc.ca/sc_mrkti/tdst/engdoc/tr_homep.html)

#### *Distances from Sources of Production Origin*

All distances are calculated from provincial and country capitals, or the biggest port or airport if different than the capital.

Imports from the USA and Mexico can be calculated by using an online mapping service such as [www.mapblast.com](http://www.mapblast.com), which measures distance by road.

For imports from outside of North America, it is assumed that perishable products travel by air and preserved products traveled by ship. Air distances can be calculated using [www.indo.com/distance/index.html](http://www.indo.com/distance/index.html), to which you should add the distance from Vancouver to your community. Marine distances to Vancouver can be calculated using [www.maritimechain.com](http://www.maritimechain.com). Again, the distance from the Port of Vancouver to your community should be added.

#### **Food Flow Analysis**

A food flow analysis allows a community or region to determine what percentage of the food that is consumed in the region has been grown, raised, and/or processed in that region. In 2005, the Region of Waterloo undertook a food flow analysis.<sup>62</sup> It was concluded that most of the items in the Region of Waterloo Food Basket were readily available in local supermarkets and convenience stores and that most food items have a moderate to high degree of Ontario content. However, in most cases the amount of Waterloo Region content in food items was low because processors source products from many areas of the province and nation. They found that locally grown produce was available to a limited extent in some supermarkets, typically in large display cases alongside products from other provinces/countries, which makes it more difficult for

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<sup>62</sup>Harry Cummings and Associates. (2005) Region of Waterloo Food Flow Analysis Study. Available on-line at: [http://www.region.waterloo.on.ca/web/Region.nsf/0/D82004FE6AE3B57585256F48006C2264/\\$file/FFS.pdf?OpenElement](http://www.region.waterloo.on.ca/web/Region.nsf/0/D82004FE6AE3B57585256F48006C2264/$file/FFS.pdf?OpenElement)

consumers to identify local products. Locally grown produce, dairy, and meat products are available through farmers' markets and farm stores.

### **Food Flow Analysis Methodology**

The following is an overview of the methodology used in the Waterloo Study. For a detailed description, please see the Region of Waterloo Food Flow Analysis Study, which used a mixed methodology consisting of a document/data review, key informant interviews and surveys, and site observation surveys.

The first step is to identify a food basket of approximately 20 items that are currently being locally produced, which can be traced back from food retailers to food processors and producers, and that reflect foods typically consumed within the community. The list can include both processed and raw foods.

Once the list has been finalized, conduct a survey of food commodity representatives for the appropriate Food Basket items in order to identify current trends and challenges in agricultural production in the region. Questions should focus on the following issues (for more detail on this survey see Region of Waterloo Food Flow Analysis Study, Appendix B):

- general trends/challenges in agricultural production as well as trends/challenges specific to the region;
- assessment of the capacity of the processing/packaging industry in the region to meet the needs of local producers;
- assessment of producer reliance on processors/packagers located outside the region;
- identification of major processors/packagers located in the region and the surrounding area;
- general trends/challenges in the processing/packaging sector as well as trends/challenges specific to the region.

Third, survey a small sample of supermarkets and convenience stores to determine the availability of the Food Basket items across the region. The survey should also gather

information on the major food processors associated with the Food Basket items. For each store, the following information should be collected:

### **Store profile**

- name, type and location/address of store and hours of operation
- date and time of day the survey was conducted

### **Food item profile** (for each item in the Food Basket):

- description of the food item including the purchase unit and price
- brand name and processor/packager name and address/website
- product place of origin (if available)

Fourth, based on the information collected through the store survey, interview the most commonly identified processors to determine the extent to which they use agricultural products from BC or the region in their food products (for more detail on this survey see Region of Waterloo Food Flow Analysis Study, Appendix B).

### **Optimum Nutrition Environment Assessment**

This study, conducted for the Region of Waterloo Public Health, looked at the nutritional needs of their community and assessed the potential for meeting those needs with the products of local agriculture. (For a detailed description of this study and methodology, please see Optimal Nutrition Environment for Waterloo Region, 2006–2046.)<sup>63</sup>

According to Desjardins and MacRae, “The regional food supply can affect the ‘nutrition environment’ of the local population, in that the food produced, distributed, and sold within the region can determine in great part how well the population eats.” Therefore, a region with a thriving and diverse agricultural economy will have fewer environmental and dietary-related health costs.<sup>64</sup>

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<sup>63</sup>Desjardins, E and R. MacRae. (2005) Optimal Nutrition Environment for Waterloo Region, 2006–2046. Available on-line at: [http://www.region.waterloo.on.ca/web/region.nsf/0/D82004FE6AE3B57585256F48006C2264/\\$file/NER.pdf?OpenElement](http://www.region.waterloo.on.ca/web/region.nsf/0/D82004FE6AE3B57585256F48006C2264/$file/NER.pdf?OpenElement)

<sup>64</sup> Ibid.

The study attempted to answer three questions:

- What changes would be needed in the consumption of vegetables, fruits, legumes, and whole grains by Waterloo Region (WR) residents (for 2006, 2026 and 2046) in order to meet the recommendations stated in *Canada's Food Guide to Healthy Eating* and in *Canada's Guidelines to Healthy Eating* (for 2006, 2026 and 2046)?
- How does current local WR production of vegetables, fruit, legumes, and whole grains compare with the amount needed by its residents to meet recommended dietary requirements?
- What are the opportunities for WR agriculture, if it attempted to produce as much of the required amounts of these foods as is feasible (an “optimal nutritional environment”) for the WR population in 2006, 2026 and 2046?

In order to answer these questions, the study first selected foods based upon a) suitability to be grown locally in the Waterloo Region (including in greenhouses), taking into account climatic and biological growing limitations and opportunities, b) availability of reliable data, c) popularity of foods (based on their frequency of consumption), d) potential of foods to improve dietary quality where it is currently lacking. Researchers then developed an estimation of population dietary needs by food groups and food types using serving recommendations by food groups as given in *Canada's Food Guide* (CFG). They compared this ideal amount to the actual consumption rates in the region to come up with number of servings per person per day needed to meet CFG recommendations. Researchers then translated these amounts into recommended amounts to be consumed and produced by the population. Finally, researchers developed an estimation of the amount of land required to produce the selected foods for population needs in 2006, 2026, and 2046. The study concluded, “It appears from the above calculations and projections that the need for many key nutritious foods could be met in whole or part from local production. This represents a major opportunity for local growers.”<sup>65</sup>

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<sup>65</sup> Ibid

## **Farmers Market Assessments**

Rapid Market Assessment is a tool developed to assist farmers' markets to gather quickly and cost effectively the information necessary to understand their market. This tool combines quantitative methods, attendance counts, and "dot" surveys, with Constructive Comments and Observations (CCO) that are provided by a group of selected market reviewers (often other market managers).

Attendance counts provide information that is useful for estimating vendor sales and the economic impact of farmers' markets on surrounding businesses. It can also provide support for the contention that farmers' markets are important sites of social interaction. In a "dot" survey, farmers' market customers respond to questions regarding where they live, how much they spent (or plan to spend) at the market, and what draws them to the market. The CCO component asks reviewers to comment on the atmosphere, product quality and quantity and physical characteristics of the market and make suggestions for improvement.

For more details on how to conduct a RMA, go to  
<http://www.ruralroots.org/RMA/RMA.asp>

### **Case Study: Prince George Rapid Market Assessment**

A Rapid Market Assessment was conducted in 2005 by Dr. David Connell, Assistant Professor in the School of Environmental Planning at the University of Northern British Columbia. The objective was to collect basic data from customers of the Prince George Farmers Market about why they go to the market, how often they attend, and what changes they would like to see. The assessment method involved a one-day, on-site study of customers while the market was operating. Team members surveyed market customers, conducted crowd counts, and assessed the market site. The results of the research helped to quantify and qualify the success of the Prince George Farmers Market in its tenth year of operation.

While many people attend the market for a combination of reasons, the results highlighted the following:

- 58.5 percent of respondents stated that they would like to have a year-round indoor market (currently, it is open outdoor seasonally);
- 69 percent of respondents were downtown because of the farmers market;
- 44 percent of respondents visit the market either regularly (almost weekly) or frequently (2–3 times per month);
- 30 percent come to the market for local farm produce.

### **Community Food Security Assessments and Maps**

Much of the information collected through a Community Food Security Assessment can be displayed on maps. Information that is displayed on maps is known as spatial information. Spatial information can be displayed on a map as a point, a line, or a polygon (shape).

From a food security assessment perspective, a point on a map could represent a grocery store, a line on a map could represent a transit route, and a polygon could represent a neighbourhood. Combining this information on a map could show whether individuals in a neighbourhood can easily access grocery stores by transit. This information could inform decisions associated with the development of community plans or the provision of transit services.

### **What is a Geographical Information System?**

Geographical Information Systems or GIS are computer programs that can manipulate and display spatial information to produce maps. The spatial information of points, lines, and polygons is stored in a database, together with associated attribute information. For example, the location of a grocery store is stored in the database, together with all other grocery stores in the community. Associated with each grocery store point is attribute information such as size of store, whether it sells fresh fruit and vegetables, whether it has a delivery service, whether it sells local produce, etc. Using the power of the GIS, the database can be queried and maps displayed that answer questions such as “Show all large grocery stores that have a delivery service and sell local produce”.

Similarly, attribute information can be associated with lines and polygons. The number of the bus route, hours of operation, and days of service could be associated with a transit

route line; the population characteristics of a neighbourhood such as whether it contains a significant population at risk to food insecurity (such as low income, single parents with children under age 6) could be associated with a polygon.

GIS allow a wide variety of points, lines, and polygons, sorted by various combinations of attribute information, to be displayed as maps at the “click of a mouse.” It is a very powerful tool in supporting decision-making for a wide variety of uses. Fast food chains use GIS to help locate new restaurants; city planners use GIS systems to support land use decisions. Community food security assessments can also be supported through GIS technologies.

### **GIS Case Study: The proposed Kamloops–South Thompson Community Food Security Atlas**

In April 2006, a proposal<sup>66</sup> was prepared for the Interior Health Service Area for a pilot project in mapping food security for the Kamloops area. This proposal represents one approach to the use of GIS, which illustrates the potential of GIS to support community food security decisions. It also illustrates, however, the importance of clear objectives, cooperation with partners, the establishment of data standards, as well as the provision of a list of potential GIS data to address food security concerns in a community.

The context for this proposed food security mapping system is illustrated in the diagram below. The intention of the map products is to provide information to agency staff who develop policy for the approval of decision makers. The proposed Kamloops–South Thompson Food Security Atlas is designed to bring food security information into the decision-making processes that affect the design and development of the city, the types of programs delivered by agencies, and the types of policies developed in educational institutions, agricultural agencies, community facilities, and workplaces. Such food security information can also be used by individuals to inform personal decisions. The basic assumption of the proposal is that changes to the community food system can be

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<sup>66</sup> Whiting D.G and B. King. (March 2006) Developing the Kamloops–South Thompson Community Food Security Atlas Pilot Project and Defining a Provincial Community Food Security Mapping Strategy. Fraser Basin Council.

most readily accomplished by providing targeted information to decision makers within organizations that make policies that affect the environment where people live.

As shown in the diagram, GIS Map Information is a component of Food Security Assessment Information. These GIS products inform the staff of agencies that prepare policies for the approval of decision makers. For example, food security map products can inform the development of proposed community plans prepared by city planners for the approval of elected officials, the city council. Other food security maps could inform a social service agency of the best location to effectively deliver a specific social service program.

[[Insert the graphic image titled Figure 3: Community Food Security Mapping within the Policy Framework.]]

A key message from staff interviews on the development of the GIS food security system was the need to maintain currency of mapped information through regular updates. Information partnerships were suggested as a means to regularly update specific data sets by using simple web-based software requiring little staff training. It was also recommended that saving the information at regular intervals would allow food security indicators to be tracked over time so that trends could be identified, policies monitored, and information gaps identified.

#### *Proposed Food Security Map Information*

The proposed spatial and attribute information and associated GIS products were identified by interviewing Kamloops staff in both public and private agencies, and asking the question “What types of food security maps could inform the decision making in your organization?” The table below shows the results of the interviews. The identified spatial and attribute data, if available through a web-based GIS atlas, and in some cases provided directly to their own GIS departments, would inform policy making within their agencies.

It should be noted that some of this information may be available through partnerships or purchase. For example, socio-economic maps can be derived from census data acquired from Statistics Canada. Through the licensing functions of the health region, a database of restaurants may be available that provides public information on restaurants such as name and address. If the information includes a postal code (which is spatial information), point locations of restaurants can be displayed in a GIS. Attribute data pertinent to food security, such as whether the restaurant buys local produce, would have to be acquired and added to the database.

Spatial Data	Updateable online?	Associated Attribute Data
Retail Outlets		
Grocery Stores and Convenience Stores	Yes	Delivery service provided? Hours of operation? Percentage shelf space dedicated to local food? Local food purchasing policy in place? Organic food available? Participation in FoodShare program? Size in square meters “big box store”/convenience store/independently operated?
Restaurants	Yes	Healthy Restaurant (as defined by Health Check criteria) <sup>67</sup> ? Fast Food Restaurant (as defined by Health Check criteria) <sup>68</sup> ? Hours of operation? Local food purchasing policy in place (serve local food)?

<sup>67</sup> [http://www.healthcheck.org/english/criteria\\_b.htm](http://www.healthcheck.org/english/criteria_b.htm)

<sup>68</sup> Ibid.

Spatial Data	Updateable online?	Associated Attribute Data
Farmers' Market	Yes	Hours of operation? Food products available
Farm gate/Roadside sellers (producers and processors) in partnership with the Ministry of Agriculture and Lands	Yes	Hours of operation? Food products available? Products available? Certification body? Area under cultivation?
Hunger Assistance Programs		
Food Banks	Yes	Hours of operation? Fresh fruit & vegetables available?
Free Meal Programs	Yes	Hours of operation? Fresh fruit & vegetables available?
Community Development Programs		
Community Gardens	Yes	Hours of operation? Plots available?
Community Kitchens	Yes	Hours of operation? New members welcome?
Good Food Box program	Yes	Hours of operation? Choice in box contents available?
Environmental Supports/Food Security Policies		
Schools	Yes	Healthy school food policy? Programs associated with policy? Vending machine(s)? Healthy vending policy? School Meal program?
Workplaces with Healthy Food Policies	Yes	Vending machines? Programs associated with the healthy food policy

Spatial Data	Updateable online?	Associated Attribute Data
Sites available for community gardens/urban agriculture	No	Function of zoning, topography, elevation?
Agricultural Land Reserve (ALR)	No	n/a
Community Demographics		
Socio-economic information	No	Households with children under 6 Household income Percentage Aboriginal Percentage Seniors Cost of Nutritious Food Basket as a proportion of household income
Accessibility		
Transit Routes (lines on map)	No	Route number Schedule
Walking time	No	To nearest grocery store To nearest fast food restaurant To nearest healthy food restaurant To farmers' market
Topographic barriers to walking and cycling	No	Calculated by GIS using slopes and extent of slopes
Base Map Layers		
2004 Air Photos	No	
Street Grid	No	Street names
Cadastre (surveyed lots within the community)	No	

A few examples of map layers that could be derived from this information include:

- Relative location of high schools to fast food restaurants
- Access barriers to food banks

- Farmers wishing to sell locally and food retailers wishing to buy locally.

This information could be displayed in conjunction with base information such as an air photo image, the street grid, and lot lines.

### **The Community Mapping Network**

In the preparation of the proposal, a resource was identified that facilitates the development of internet atlases across British Columbia. The Community Mapping Network provides low-cost web-hosting, base-mapping information, and a common internet mapping interface for community initiatives. A large number of “internet atlases” in BC are hosted within the Community Mapping Network. Information on the Community Mapping Network and access to atlas projects around the province can be found at: <http://www.shim.bc.ca/>

### **The need for a consistent, integrated food security mapping system**

A key message from agency interviews was that great efficiencies, effectiveness, and cost savings are outcomes of developing GIS-based community food security atlases in a consistent manner. If each BC community were to develop its own food security atlas in an ad hoc manner, the resulting products would likely have different data standards, use different terms and map symbols, different computer software, and different map projections and data. The information from the various atlases could not be combined to produce provincial aggregates or allow progress to be tracked across the province. Moreover, each community would be inventing its own wheel.

A consistent, integrated approach, however, would provide common database standards and structures with consistent data entry templates and data display. New atlases could be efficiently launched through the provision of standardized web designs and databases ready to be populated by local information. An online community would soon provide support and resources to new community atlas initiatives. Aggregates of the information could inform policy development at the provincial level.

## Community Food Mapping

Community mapping is “a process of map-making that centres on the experience of local people and identifies the social, cultural, economic, and ecological assets that contribute to a sense of health and belonging”.<sup>69</sup> Over the last two decades community-based mapping has become a tool for community development, settling aboriginal land claims, as well as facilitating asset-based planning for marginalized communities around the world including children, youth, First Nations, and those who are food insecure.<sup>70</sup>

Community mapping has become increasingly useful to policy makers who are moving away from “needs-based” resource analysis towards asset-based planning and decision-making. As with other technological tools, skillful mapmaking takes time and patience and improves with experience. However, it is important to keep in mind that the goal of grassroots mapmaking is to put this tool in the hands of lay citizens rather than outside professionals. Either way, mapmaking is a powerful tool in representing community perspectives. Community mapping is essentially a framework for understanding how food, other resources, and people are distributed across space.

In terms of food systems, community mapping often has a strong emphasis on local production, distribution, and consumption. One aspect of community mapping that is critical to keep in mind is process as a product. That is to say: the creation of dialogue between people around food systems and sustainability, healthy communities, and connections to the food we eat can be the most valuable aspect of the mapping process.

There are three central reasons why community mapping is an important information gathering/capacity building process:

- It creates a sense of place and provides a framework for people to share stories, experiences, and knowledge;
- it facilitates dialogue and brings together a diverse set of world views in creating a common vision of a space (i.e., community); and

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<sup>69</sup> Rosenblatt, S. Kiyooka, S. Smith, F.C. Slobodian, Q. Bouris, K (2001), *Mapping food matters: a resource on place based food system mapping*. Victoria, BC, CA: Common Ground Community Mapping Project.

<sup>70</sup> Aberley, D. et al. (1995). *Giving the Land a Voice: Mapping our Home Places*. Salt Spring Island Community Services Society, Salt Spring Island, BC.

- it transforms reality by shedding a new light on an issue such as food systems and sustainability.<sup>71</sup>

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Community mapping is a highly localized process and as a methodology for food system research, it is highly versatile. In Vancouver alone, there are several community food mapping projects that are highly diverse, each with very different outcomes. (See case study below.)

Community mapping can serve a variety of purposes in fields as diverse as education, advocacy, policy planning, information, capacity building, conservation,<sup>72</sup> economic development, culture and heritage, community plans and visions, personal and community health, and green mapping. As this broad range of topics indicates, community mapping is a highly versatile technique and can be used on a micro- or macro-basis to explore specific situations or to address broad themes in the food system at large.

The benefits of community mapping as a process in and of itself or for specific goals are far reaching. For instance, the creation of dialogue and questions around food and food systems can reconnect people to their communities and space around them. Community food mapping provides a snap shot of a food system that can be used in planning projects or policies. The process and results of mapping can help to inform *sustainable food systems by design*<sup>73</sup> through the identification of resources, needs, and assets in a given community.

Bioregional and community development mapping use maps to represent and validate the experiences and knowledge of local people. Mapmaking in marginalized communities (such as communities that lack food security) exemplifies transformative pedagogy because it requires people to *name their world and to see the possibility of change*.<sup>74</sup>

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<sup>71</sup>Rosenblatt, S. Kiyooka, S. Smith, F.C. Slobodian, Q. Bouris, K. (2001), *Mapping food matters : a resource on place based food system mapping*. Victoria, BC , CA : Common Ground Community Mapping Project.

<sup>72</sup>Ericson, Jenny. (2006). A participatory approach to conservation in the Calakmul Biosphere Reserve, Campeche, Mexico. *Landscape and Urban Planning*, 74, 242–266.

<sup>73</sup>Rosenblatt, S. Kiyooka, S. Smith, F.C. Slobodian, Q. Bouris, K. (2001), *Mapping food matters : a resource on place based food system mapping*. Victoria, BC , CA : Common Ground Community Mapping Project.

<sup>74</sup>Lydon, M. (1999) Mapping: The Recovery of Natural Knowledge and the Creation of Sustainable Communities. Research paper, University of Victoria, Eco-Research Chair.

Community mapping can have an emancipatory effect as an inclusive tool to build community capacity. Community mapping requires participation from community members and therefore community buy-in is essential.

Overall, community mapping is a relatively new method of research and information gathering that provides an effective framework for participation and ownership of those involved to share information about the spaces in which we live. Dialogue and learning as a result of mapping exercises can be the most important aspect to the mapping project. Community mapping can also be used to inform decision-making at the community, organization, or government level and is a powerful tool in representing community perspectives at these levels.

### **Case Study: Little Mountain: Sharing Fruit, Sharing Stories**

Vancouver Fruit Tree Project (VFTP) in partnership with Little Mountain Neighbourhood Society (LMNHS) developed the Sharing Fruit Sharing Stories (SFSS) project, which included a community food-mapping component. This project was co-designed by the VFTP and LMNH. SFSS targeted a diverse set of immigrant groups in the Little Mountain area and engaged them in a community food mapping process that encouraged residents to think about food choices (e.g., where food comes from), to identify assets and gaps in the community, and to share stories about food.

The project design was a large part of the mapping process. Consultations with LMNHS coordinators and external advisors played a central role in the framework as well as the activities of the mapping workshops. The food-mapping component of the SFSS project followed a workshop format and included a range of activities appropriate for all levels of English.

The study found that people shop relatively near to their homes at supermarkets, specialty stores, and markets. Interestingly, access to groceries, even specialty ingredients, did not emerge as an issue. Within this population, there is a real interest in learning about food (diet and nutrition) and, as noted by participants, food mapping was beneficial by increasing their knowledge about where to buy groceries. For more information, contact Janine de la Salle Phone: phone 604-873-1191, e-mail: [fruit@vcn.bc.ca](mailto:fruit@vcn.bc.ca).

### **Case Study: Feed the City — Environmental Youth Alliance, Vancouver BC**

The Feed the City Street Youth Mapping project focused on creating a resource for marginalized and vulnerable youth, who themselves developed a set of indicators that defined food security resources for vulnerable youth in Vancouver. The city was then divided up into neighbourhoods based on populations of food-insecure youth, and young people scouted each neighbourhood for food-security resources accessed by young people, including charitable food resources, low cost food, locations where youth can grow food, food programs, hot lunch programs for vulnerable children, and opportunities for dumpster diving. Three maps were generated based on neighbourhood boundaries, pinpointing food security resources in the area. A zine created by the project contains detailed information about each resource as well as maps to facilitate youth access. The zine was distributed through local food service providers and youth drop-in centres. For more information, contact: Susan Kurbis, phone 604 689 4446, fax 604 689 4242, e-mail [susan@eya.ca](mailto:susan@eya.ca).

### **Charitable Food Consumer Surveys**

The Daily Bread Food Bank (DBFB) in Toronto conducts annual assessments of who is utilizing their services. They collect information on demographics, income, immigration, housing, and disability in order to help advocate for specific programs to address the needs of the specific populations who use their services.

In addition, the DBFB conducted an *area analysis* of food bank users, to provide information collected through food bank user surveys and categorize them according to location within the city. This was done in order to identify the key issues driving food bank use in different parts of the region and to ensure that food distribution is aligned with area needs. In addition, localized information can be used in awareness campaigns aimed at local MPs, MPPs, city councilors and the general public in these areas. Finally, the information offers agencies greater insight into the clients they serve; a greater understanding of the people that pass through their doors can lead to better advocacy.<sup>75</sup>

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<sup>75</sup> Daily Bread Food Bank. (2005) Analysis of Food Bank Use by Area. Available online: <http://www.dailybread.ca/apps/index.cfm?fuseaction=publications.dspDetails&Publicationsid=ab217c82-cb2a-4d22-8b64-6287eda860ed>

Another example of food bank client surveys can be found at *Looking for a Hand Up: A Profile of Food Bank Recipients in Four Ontario Communities, September 2003*  
<http://www.socialplanningtoronto.org/CSPC-Tpercent20Reports/Reports.htm>

### **Charitable Food Provider Surveys**

Charitable food providers can be surveyed in order to understand the process by which they obtain and distribute food. For example, the Redwood Empire Food Bank and the University of California Cooperative Extension developed a survey tool for charitable food providers that collects information on:

- who is served by the program;
- the number and type of hampers or meals;
- the number of clients served and the criteria used to receive food;
- where food is obtained;
- types of foods that are lacking;
- food storage and waste.

For a copy of the survey instrument, go to [http://www.foodsecurity.org/cfa\\_survey.html](http://www.foodsecurity.org/cfa_survey.html)

### **Food Diversion Survey**

A food diversion survey helps track where and how edible and inedible food is disposed of by restaurants, food retailers, institutions, and food processors. It can help determine if edible food is being donated and if inedible food is being composted or turned into animal feed. It can also help to understand the barriers that prevent donation or composting. For example, a diversion study conducted for the City of Santa Barbara surveyed the primary producers of food waste. The survey asked about 1) willingness to participate in a food scrap diversion program, 2) the potential benefits and challenges associated with participation, and 3) the outreach and education necessary for successful implementation. The survey results showed that restaurants and schools have the greatest willingness to participate in a food scrap diversion program. These sectors expressed a

need for outreach particularly in the form of bilingual (English and Spanish) printed materials and on-site staff training.<sup>76</sup>

This type of survey can be conducted by contacting selected food retailers, restaurants and other institutions of various sizes. Questions should include:

- whether the organization donates edible food and, if so, what types of food it typically donates. If not, what are the barriers;
- whether the organization composts or turns inedible food into animal feed, and if so, what types of foods are typically composted. If not, what are the barriers?

### ***Tools for Measuring Food Knowledge, Preparation and Consumption Indicators***

#### **The Nutritious Food Basket Costing Tool**

To analyze the cost of a healthy diet and compare costs across different areas, a standard costing tool is Health Canada's Nutritious Food Basket (NFB), which lists 66 food items with standard container sizes or volumes, in the following categories: milk products, eggs, meat, poultry and fish, meat alternatives, grain products, citrus fruit and tomatoes, other fruit, potatoes, other vegetables, fats and oils, and sugar and other sweets.

The strength of this tool is that it allows a comparison between the cost of a healthy diet and measures of income, thus providing one indicator of low-income barriers to health and nutrition. With some caveats, it may also serve as a mechanism for comparing the cost of a healthy diet between one jurisdiction and another, within regions or across Canada.

The Nutritious Food Basket tool has several limitations.<sup>77</sup> It measures the cost of low-cost healthy foods, but does not include pre-packaged convenience or restaurant foods. In 2001, Canadians spent 30 cents of every food dollar on restaurant foods; clearly, the tool underestimates the cost of food. Secondly, while it can indicate whether healthy foods are

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<sup>76</sup> [http://www.bren.ucsb.edu/research/2004Group\\_Projects/food/food\\_brief.pdf](http://www.bren.ucsb.edu/research/2004Group_Projects/food/food_brief.pdf). See also Vancouver Food Policy Council (2006) Food Diversion Report. Environmental Youth Alliance. Report used with permission.

<sup>77</sup> Tasnim, Nathoo and Jean Shoveller. (2003). Do healthy food baskets assess food security? *Chronic Diseases in Canada*, 24 (2/3). [http://www.phac-aspc.gc.ca/publicat/cdic-mcc/24-2/c\\_e.html](http://www.phac-aspc.gc.ca/publicat/cdic-mcc/24-2/c_e.html)

available to groups of individuals in their local environments, it cannot provide sensitive information regarding the impact of micro-level food consumption patterns on food security within and across communities. While it can be used to compare costs of healthy eating between one area and another, it cannot account for the influence of different market share of stores in different communities or different buying patterns in different regions. As well, communities are not precisely defined and, in fact, subcommunities may overlap with each other — for instance, many communities may include a variety of economically diverse neighbourhoods which may be located adjacent to one another. In such cases, members of the different neighbourhoods may cross boundaries to shop in the same stores. This issue can be important when a comparison is made between different neighbourhoods in an urban region where food access is more strongly influenced by factors such as transportation and store location rather than by geographical boundaries.

In summary, the Nutritious Food Basket should be used only in conjunction with other measures. It does not measure the other broad concepts included in definitions of food security such as sustainable agriculture or food safety, nor does it identify individuals or groups who may be vulnerable to food insecurity for other reasons. In addition, the NFB is not sufficiently flexible to capture understandings of food security that may be culturally specific — an important issue in Canada's highly multicultural society. The contents of the NFB are generally derived from population-level food consumption patterns, and are derived from averages (e.g., they do not reflect individual differences in activity and metabolism or special dietary needs), and cannot therefore provide a basis for making inferences about individuals. Because food consumption patterns vary significantly among individuals, the statistical and theoretical assumptions underpinning population-level analyses do not necessarily translate directly to the individual or micro level. Thus, the NFB tool may be effective in assessing which populations may be economically vulnerable to food insecurity, but it provides, at best, only a proxy for individual or micro-level food security.

## **Comparing neighbourhoods and different sized-stores using statistics from the Reference Canada database**

Because food items may be priced differently in stores of different sizes, it is useful to determine the cost of the Healthy Food Basket in both small and large grocery stores. The Reference Canada database, available at Small Business BC, maintains a database of retail grocers, which offers a number of metrics, including seven categories of total annual sales. Consolidating the seven into three categories results in stores with annual sales of less than \$1 million, between \$1 and \$2.5 million, and \$2.5 million and greater. Determining the cost of the Healthy Food Basket at several stores of each size will provide a comparison between stores of different size within a neighbourhood and across a city or town. Measuring the cost of the Healthy Food Basket in several neighbourhoods with different household or family income levels provides a comparison of the relative cost of healthy eating in neighbourhoods with different incomes. Further, the differences in cost, if any, between differently sized stores or between different neighbourhoods can be broken down by food group to investigate whether one or more food groups accounts for a larger or smaller part of the difference in cost. The cost of the Nutritious Food Basket can further be compared to the Low Income Cutoff and to the current provincial welfare rates.

It may be of further use to determine the cost of staples'. FORC determined the cost of a basket of 15 staple foods, e.g., milk, bread, rice, and margarine.<sup>78</sup> The cost of a basket of staples was similarly compared between stores of different sizes and across neighbourhoods.

## **Charitable Food Quality Assessment**

In order to assess the nutritional quality of the food provided through the charitable food system, begin by surveying a representative sample of charitable food providers in your area (if the area is small and there are few providers, try to obtain information from all). For this survey, site visits may be optimal as it provides the researcher the opportunity to see actual food quality and portion sizes. If site visits are not possible, ask each

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<sup>78</sup> FORC. (2005) Vancouver Food System Assessment. Available online at <http://www.sfu.ca/cscd/research/foodsecurity/home.htm>

organization to tell you in as much detail as possible the menu of items being served that day. Be sure to ask how the food is prepared and, for items such as soups and stews, which ingredients are used.

The assessment of food quality can be done in several ways. One is to categorize food into types (e.g., fruits and vegetables, meat, dairy) and then estimate how well charitable hampers or prepared meals meet recommended daily intakes. Alternatively, you may wish to conduct a more detailed assessment by determining the actual nutritional content of each meal. There are many online calculators to help with this. For example, the University of Illinois' The Nutrition Analysis Tool (NAT) can provide information on calories, fat, fiber, protein, carbohydrates along with vitamin and mineral content for selected foods; go to <http://www.ag.uiuc.edu/~food-lab/nat/>

### **Advertising analysis**

Determine an area of interest (e.g., schools) and have a team locate food advertising in the surrounding area, including billboards and shop signs. These advertisements can be assessed in terms of the food marketing and health-related messages they convey, for example, whether they are largely negative or positive. This technique can also be used to assess food advertising in locations such as schools by doing a walk-through and noting all the places where food is marketed and the types of images that are being presented. (See also the section on TV advertising above.)

### **Survey of Community Food Knowledge and Skills**

This kind of survey can provide an understanding of how people perceive food issues (e.g., local food, healthy food) and the skills and resources they possess to act upon their knowledge. This information can help to target interventions. For example, people may have knowledge about food issues but not have access to the resources to make good choices. In this instance, more education would not address the issue, however, more resources would. Alternatively, if there is a gap in knowledge, then more effort should be put into increasing awareness. These interviews can be conducted by phone, mail or face-to-face. Some important questions to ask are:

- Do residents in your community know how to distinguish between food that was grown in BC and food that was grown elsewhere?
- How many residents feel they know basic nutrition information? What is the main source of nutrition information in your community? How many residents in your neighbourhood know how to cook? How many cook regularly?
- Do all residents in your community have access to an oven, a refrigerator and functioning gas and electricity? Do all residents in your community have the tools they need to cook — pots, pans, and utensils?
- How important is food to the people in your community? What does it mean to them? What are the specific cultural meanings of food in your community?
- How many community residents make food/eating choices based on nutrition and health considerations?

### ***Tools for Sustainability Indicators***

#### **Local food audit**

Local food audits provide an opportunity to develop a database of food resources within a community and help to promote greater collaboration between various initiatives. A local food audit begins by an invitation to a community meeting — including everyone who is in some way involved in growing, supplying, distributing, and cooking food. At the meeting, ask participants to mark on a map all the initiatives and projects they knew about in the area that had anything to do with food. This can include stores, community gardens, farmers' markets, community kitchens, soup kitchens, farms or farm stands, religious institutions that provide food, food-related social enterprises, restaurants, food banks, and areas where wild food is gathered. Color-coding can be used to distinguish between various types of projects (charity, community, retail, social enterprise). From this map, a database can be developed that contains contact information for food projects within a community in order to facilitate communications between organizations working within the same area.

### **Local Food Retail Survey**

Measuring the amount of local food available within grocery stores can provide a good indicator of availability of these items. Measuring the amount of local food available in grocery stores can be done by measuring the amount of shelf space devoted to local items (and then calculating the percentage that is local) or measuring the percent of a particular food category (e.g., dairy or produce) that comes from local sources. It may also be useful to record the price of local food in comparison to non-local items to determine if local food is more economically accessible.

### **Food Policy Inventory**

Whether within an institution or at a municipal level, there are a number of people in departments that are concerned with issues related to food yet who do not necessarily think of themselves as such. Although it is often not explicit, most organizations have policies that are related to food, including who is allowed to provide food, what kind of food is provided, how land is used, and how waste is managed. One way of understanding how food issues operate in a policy context is to develop a food policy inventory.

A food policy inventory examines which programs, policies, and projects occurring within an organization are related to food. For example, the Social Planning Department in Vancouver conducted an inventory of food-related programs and projects currently provided and/or supported by the City of Vancouver. The purpose of the inventory was to assess the extent of the city's involvement in food-related issues. The inventory highlighted the extensive role that the city has in various aspects of the food system, from production (community gardens) to waste (composting). They found that among the departments that were involved with food were Engineering (e.g., community gardens), Solid Waste Management (composting programs), Streets, Structures, and Greenways (urban agriculture), Office of Sustainability (greenhouse gas emission reduction), the Parks Board (food service leases), and the School Board (agriculture in the classroom).

Once the inventory is complete, it is important to examine the specific policies related to food. For example, do the policies between departments support one another or do they

conflict? Do the policies that are in place support a sustainable food system or prohibit it? Are there gaps or overlaps that make it difficult to develop a coherent food policy for the organization?

### **Institutional Food Inventory**

Large institutions, whether they are school, universities, prisons, hospitals, or even municipalities can play a role in promoting a sustainable food system by facilitating access to healthy, local food. This not only improves the dietary health of members of those institutions but also reduces environmental pollution caused by unsustainable growing and transportation methods. This contributes to the health of the wider community.

To make an institutional food inventory, begin by asking, “Are our food policies and practices aligned with patient, member, and employee wellness and with health education programs?” Conduct an inventory of the food offered onsite. This will include inpatient food services, cafeterias, vending machines, food carts, and catered meals.

Consider the following:

- What kinds of food are provided? What proportion could be considered healthy (e.g., fresh fruits and vegetables, low-fat meat, low-fat dairy, water) and what proportion is “junk” (e.g., candy, soda, pastries)?
- What is the price difference between a healthy and an unhealthy option (e.g., compare the price of an apple to that of a candy bar)?
- What is the quality of healthy foods?
- Are healthy options readily available or are they difficult to find?
- What proportion of the food is locally sourced?
- How is food waste disposed of? What percent is recycled? What percent of unused food is donated?

## ***Other Data Collection Methods and Tools***

After looking over the data sources that already exist for your topic and your community, consider what is missing. Perhaps the questions you would like answered were never asked. Maybe previous surveys neglected certain neighbourhoods, non-English speaking residents, or unique periods of the month or year. Many times, questionnaires and tables cannot capture the whole story of a person's or a community's experience. Below is a list of traditional research methods that you can use to paint a more complete picture of your community's experience.

**Document Review** involves gathering and analyzing key documentary material such as laws, regulations, contracts, correspondence, memoranda, and routine records on services and clients. These kinds of documents are a useful source of information on program activities and processes, and they can generate ideas for questions that can be pursued through observation and interviewing.

**Survey Methodology** A good survey requires expertise and resources to conduct. Surveys can vary considerably in size and type of sample. Some study all people living in a defined area but others might focus on special population groups (e.g., children, physicians, community leaders, or the unemployed) or even inanimate objects (e.g., soils, housing). Surveys can be used to assess programs. For example, surveys can be conducted on the number of community garden plots that are available or the quality of food provided through charitable programs. Survey data is collected through mail, telephone, internet, or in-person interviews.

**Mail surveys** are relatively inexpensive however; low response rates may make findings invalid. **Telephone surveys** are an efficient method of collecting some types of data; however, they require significant time commitment and some training in order to conduct a successful survey. **In-person surveys** are more expensive and time-consuming than mail or telephone surveys; however, they can be useful for contacting individuals who might not respond to other forms of surveying.

**Intercept interviews** occur when interviewers approach people in a public place such as a shopping mall, street, sports event, or similar venue. These interviews are ideal for cost-effectively targeting select types of people, but the interviews must be short, as respondents are usually en route elsewhere. This method may be particularly useful in gathering perspectives on the local shopping facilities. In their community mapping project, Sustain, a food justice organization in the United Kingdom, used intercept interviews by first having respondents show where they shopped in the area. They were then asked to establish the reasons why they shopped in different locations and a matrix was built up using the participants' criteria. Intercept interviews are generally less time-consuming than other forms of in-person surveying but because the selection of respondents is not random, there are issues with validity.

**Internet surveys** are becoming increasingly popular as more people have access to computers. They are also very inexpensive to administer and there are a number of online companies who provide survey software. Their primary weakness is that in most cases you need to know the e-mail address of your population in order to distribute the survey. This type of survey is more effective with a small, defined group.

### **Interviews and Focus Groups**

**In-depth interviews (also called semi-structured interviews)** involve open-ended questions asked by a researcher to an individual. Interviewers use a topic guide but do not rely on a structured question set. Probing techniques are used to encourage respondents to give the fullest answer possible. Often interviews are the best way to engage low-literacy populations. Structured interviews can take the place of questionnaires for clients who may have difficulty filling out forms.

There are modifications to the traditional one-on-one interviews such as: **Paired / Coupled interviews**, which are useful for gaining an understanding of particular behaviours or decisions which consumers usually make in pairs. **Accompanied shopping**

/ **observations** take place when a researcher accompanies a respondent on a given activity, observing and questioning the respondent's behaviour as they proceed.

**Key Respondent Interviews (also called key informant interviews)** involve obtaining information from individuals who are in a position to know the community as a whole, or the particular portion you are interested in. That community resident may be a professional person who works with the group you want more information about, or a member of a particular group. Interviews can be informal conversations or techniques that are more formal may be used (e.g., telephone interviews, personal interviews, group interviews, or community forums and public hearings). These interviews can be done as a one-time event, or on an ongoing basis in order to increase buy-in from key stakeholders.

Key respondent interviews provide an opportunity to establish rapport with stakeholders and increase their cooperation; the interviewer is able to access an insider's view of an issue. There is also the potential to clarify ideas and information on an ongoing basis. However, this type of interview may require considerable time to establish a relationship of trust, and relying on only these respondents may bias the findings.

**Focus groups** involve between eight and ten people who have been carefully selected and gathered together to discuss a specific topic. A trained moderator asks the questions and guides the conversations. Focus groups allow for a number of opinions to be expressed and participants can help one another in developing their responses. Focus groups are also a rich source of anecdotal information that can enhance quantitative data, and can also provide a fast turnaround and a high information return. Disadvantages are that the format may be intimidating to some people; focus groups are time consuming for both organizers and participants and often require incentives for participation.

### **Basic guidelines for conducting a focus group**

When the group meets:

- thank people for coming;

- review the purpose of the group and goals of the meeting;
- explain how the meeting will proceed and how members can contribute;
- ensure that confidentiality will be maintained (e.g., no names associated with responses);
- set ground rules (e.g., no talking over others, respectful listening);
- encourage open participation;
- set the tone by asking an opening question and making sure all opinions are heard and recorded.
- when all your questions have been asked, ask if anyone has any other comments to make.
- inform the group about any next steps that will occur and how the information will be used. (If responses or notes will be sent back to focus group participants, make sure you have contact information.)
- thank the group for coming.
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### **Types of focus groups**

- social service providers (e.g., charitable food providers, social workers, advocates, health and nutrition workers),
- charitable food consumers,
- producers (local farmers, dairies, fisheries),
- food policy personnel (e.g., municipal departments that work on food-related issues such as social planning, housing, waste),
- retail (mainstream and alternative food retailers).

Most focus groups begin by collecting some basic demographic data such as gender, ethnicity, age, employment status, family status, health status that may affect dietary needs (e.g., diabetes), etc. If the information is sensitive, you can pass around an anonymous survey before beginning the session. Below are a few sample questions for focus groups.

**Questions related to charitable food access:**

- How do you access food on a daily basis? Where do you go for food? How long does it take you to get the food you need?
- What kind of food is typically provided? What is your opinion of this food?
- Have you experienced any barriers in accessing the type of food you want? If so, please describe.

**Questions related to the community food system**

- How would you characterize the food system in your community? What are its strengths and weaknesses?
- Which populations are particularly vulnerable to food insecurity?
- What are the gaps that exist within the food system? What should be done to address these gaps?

**Questions related to food policy**

- How do local regulations affect the food system? (prompt for production, distribution and consumption). Are there policies that positively or negatively affect the food system?
- Which institutions or organizations are affecting change within the food system? How effective have they been?
- Are food-related issues integrated within larger community planning processes?

**Questions related to shopping**

- Where do you do the majority of your shopping? Why do you choose these stores (prompt: price, food quality, quantity, location, other).
- How often do you go shopping? Do you tend to make a few small trips or many smaller trips?
- How do you get to the store? How long does it usually take you to get there?

**Questions related to alternative food sources**

- Do you garden, fish or hunt for some of your food? If yes, please describe where food comes from and how it is obtained.
- Are there community gardens in your neighbourhood? If yes, do you participate in a community garden?

- Are there farmers markets in your community? Do you shop at farmers markets? Why or why not?
- What was your experience with these programs? How could they be improved?

### **Questions related to food production resources**

- What types of food is grown or raised in your community? Is food production a viable economic activity?
- Are young people able to have access to productive land?
- Are people able to raise small livestock or produce honey in urban areas?

### **After the meeting:**

- Make a transcript or written summary of the meeting.
- Examine the data for patterns, themes, new questions, and conclusions. (Note: too often focus group material is presented as a list of bullet points. A more effective means of data analysis is to group comments by theme. By combining the responses from several focus groups, you can develop themes that crosscut groups.)
- Share the result with the group.
- Use the results.
- 

**Community interviews** (hearings, meetings, and testimonies) are conducted as public meetings in which the whole community is consulted. Typically, these interviews involve a set of factually based, closed-ended questions. Once the interviewers pose the question, the group will interact to come to a consensus.

### **Observational methods and Unobtrusive Measures**

Participant observation occurs when the researcher participates in activities of the community, observing how people behave and interact with each other and with outside organizations. The purpose of such participation is not only to see what is happening but also to feel what it is like to be part of the group. In the context of a food assessment, participant observation may be useful in helping to understand how food programs, such as community kitchens or food banks, work.

Direct observation can help to provide additional context to the overall picture of the food system. Observation simply involves walking through an area noting down features, such as locations of food resources and other attributes that may attract or pose barriers to people to the neighbourhood. Using this method, you can describe how people use space. For example, are there patterns to how space is used (e.g., heavily used in the mornings, not used at night)? Are there barriers, such as lack of transit or high incidence of crime that might pose barriers to accessing certain spaces? What is the housing and retail like in the area? It is also possible to discuss how this area has changed over time and to develop an historical transect.

For more on unobtrusive measures go to  
<http://www.socialresearchmethods.net/kb/unobtrus.htm>

## ***Appendix D: Examples of Community Food Assessments***

***Bringing Kentucky's Food and Farm Economy Home (2003). Community Farm Alliance.***

<http://www.foodroutes.org/doclib/238/Bringingpercent2BKYpercent2BHome.pdf>

This report on the current state of Kentucky's agricultural sector is one of the food assessments that focuses on the production side, making it particularly valuable. It takes an in-depth look at changes in agriculture and food consumption over time and established a vision for economic revitalization of agriculture. Emphasis is placed on the fundamental interconnectedness between the rural/producing and urban/consuming sectors. In this assessment, current data on local vs. external production and consumption is compared to a 1983 report that looks at the proportion of food produced and consumed in state to out of state. It is concluded that on average (between meat, dairy, and produce) that dependency on external sources has increased since the 1980s.

A Locally Integrated Food Economy (LIFE) framework is used to analyze the current state of the local food system. The LIFE framework essentially values a system where people grow and eat food closer to home. The case is made for shifting towards a more locally-based food system, including benefits such as more responsiveness to local needs, keeping food dollars local through direct and alternative marketing, reduction in transportation costs, and the increased freshness and nutritional value of more local foods.

The central purpose of this report is to inform a statewide food system planning that incorporates the LIFE model. Key areas that need attention are identified and fall into the categories of creating innovative economic structures, developing policy, implementing new production techniques, and information tracking.

***Community Food Assessment for Thunder Bay; A Closer Look at our Local Food System (2004). Thunder Bay Food Action Network***

[http://www.tbdhu.com/food/security/FAN\\_ReportSept2004.pdf](http://www.tbdhu.com/food/security/FAN_ReportSept2004.pdf)

This CFA takes a food security perspective that addresses social, economic, and environmental aspects of the food system. In focusing on vulnerabilities, the assessment emphasizes the role of health and nutrition in disease prevention. The overall purpose of the report is to profile the characteristics and resources of community food security in the area. As such, it provides a detailed case for the identification of vulnerable populations. The report looks at barriers to accessing food. Specifically, there is a focus on barriers to local farming, distribution, and consumption. While this report sees community gardening and kitchens as critical skill and community building activities, it holds that these activities are not effective in direct food supplementation.

Information for this assessment was collected through two main methods:

- key informant interview focus groups used to identify challenges, benefits, and opportunities to food security, and
- mapping of food related programs in the area.
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Based on an analysis of the information collected, comprehensive lists of recommendations are made.

***MacNair, Emily (2004). A Baseline Assessment of Food Security in British Columbia's Capital Region***

[http://www.communitycouncil.ca/CR-FAIR\\_FSpercent20Assessment\\_web.pdf](http://www.communitycouncil.ca/CR-FAIR_FSpercent20Assessment_web.pdf)

This study reports on indicator research done on community food production resources, the food distribution network, and individual and household food security in the Capital Region District (CRD). The overall approach emphasizes the importance of increasing regional food production. In addition, this assessment takes a regional systems approach to examining food security in the area and addresses community food production

resources, the distribution network, and individual and household food security. The definition of food security adopted in this report includes the principals of social justice, regionally based, and environmentally sound production, distribution, and consumption. This baseline study uses indicators to identify strengths, weaknesses, assets, and challenges in the CRD food system. Both qualitative and quantitative indicators are used to determine the level of food security in the region.

Findings of this report include the need to increase regional food production in terms of protecting agricultural land and promoting farming, to educate the public around whole life costing of foods, and to increase infrastructure for meat and poultry producers. Further, this report ascertains that the small local food retail distribution is not accessible to the majority of the population and thousands of people in the CRD are unable to meet their base nutritional needs. This report makes a call to action for government and nonprofit sectors to develop a new approach to food security.

**Maul, Lauren (2003). *Lane Country Food System Assessment Report: A Compilation of Findings and Suggestions for Future Research*. A report to the Lane Country Food Coalition.**

[http://www.lanefood.org/pdf/food\\_system\\_assessment/lane\\_county\\_food\\_system\\_assessment\\_report.pdf](http://www.lanefood.org/pdf/food_system_assessment/lane_county_food_system_assessment_report.pdf)

This document is an inventory of research and findings on the Lane County, Oregon, food system. Topics covered include:

- Statistics on the loss of agricultural land to development;
- Food channels, information tracking on where food comes from;
- Transportation costs (both fiscal and in terms of GHG emissions) and energy consumption of different modes of moving food;
- Food origins: tracing where food originated from, identifying gaps in the data, and discussion of forms of food outlets;
- Methods for determining food miles;

- A breakdown of the food dollar that looks at the proportion of every dollar spent on food that goes to the farm and to marketing.

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Throughout this document, further research questions are posed and methods recommended.

***San Francisco Food Systems Guide Book (2003). San Francisco Food Systems Council (2003). Ed. Leah Rimkus***

[http://www.sffoodsystems.org/pdf/SANpercent20FRANCISCOpercent20FOODpercent20SYSTEMSpercent20GUIDE BOOK.pdf](http://www.sffoodsystems.org/pdf/SANpercent20FRANCISCOpercent20FOODpercent20SYSTEMSpercent20GUIDE%20BOOK.pdf)

The overall approach of this guide is to “promote a systemic ecological approach to food.” It considers issues such as access to nutritious food, local production, sustainable agriculture, and links between markets and farmers. The guide is directed to a broad audience with emphasis on community ownership. The guide takes a food-crisis perspective and holds that there is a problematic disconnect between people and their food, while focusing on vulnerable populations. This report provides a wide audience with a resource guide for initiating community projects around food such as a food system assessment.

This report takes a systems approach and considers the stages of food: i.e., production distribution, consumption, and disposal. Suggested indicators for use in food assessment range widely from rural/urban connections, institutional procurement, income and poverty, availability, price to hunger, to calorie intakes, degree of food overproduction, gleaning initiatives, and tax incentives.

Suggested research methods are highly diverse and data may be collected in a number of different ways. For example, this report suggests document review, survey, photo novella, photo documentary, GIS, direct observation, key informant interview, participant observation, and semi-structured interviews — all as ways to measure indicators. Other

strategies may include informal exercises such as asset mapping and suggestions on how to take action with the results.

***San Francisco Collaborative Food Systems Assessment (2005). San Francisco Food Alliance***

<http://www.sffoodsystems.org/pdf/FSA-online.pdf>

This assessment emerged out of a community process led by the San Francisco Food Alliance. The overall design promotes a holistic overview of the food system that values local access, health, social justice, economic stability, and environmental sustainability. As such, this assessment seeks to reach policy makers and has a strong emphasis on indicators.

This report takes a systems perspective and breaks down into the production, distribution, consumption, and recycling of food. These categories then focus on urban agriculture, wholesale and alternative distribution pathways, poverty, and recycling, respectively. In addition, it identifies assets, gaps, and opportunities within these areas.

***Xuereb, Mark, Ellen Desjardins (2005). Towards a Healthy Community Food System for Waterloo Region. Region of Waterloo Public Health***

[http://chd.region.waterloo.on.ca/web/health.nsf/0/D2A33208D1CE83BB85256EED005C3310/\\$file/Foodpercent20Systemspercent20Report.pdf?openelement](http://chd.region.waterloo.on.ca/web/health.nsf/0/D2A33208D1CE83BB85256EED005C3310/$file/Foodpercent20Systemspercent20Report.pdf?openelement)

This is an assessment of the current food system in the Waterloo region and is an interim report on the findings of several local studies. The overall framework of the assessment is *A Healthy Community Food System Approach* that looks at the broad context of where food choices occur and examines the ways in which social, economic, and environmental conditions determine health. Further, this assessment provides an action plan for the future of the regions food system that integrates local production and consumption in to a long-term sustainable plan and targets policy makers as central to the implementation of such a plan.

Themes that are explored include diet and health, access, availability and affordability of food, agricultural production and distribution and social-environmental consequences of the current food system. An analysis of the current food system provides insight into emerging trends in the area such as increased support for the local food economy including urban agriculture.

## *Appendix E: Food System Assessment Scenarios*<sup>79</sup>

Below are a few scenarios based on existing food system assessments that highlight the relationship between goals and indicators. We explore food system assessments conducted in rural and urban contexts and highlight the types of indicators that were most useful and the recommendations that emerged from the assessment. Some food system assessments are more narrowly focused on particular areas such as low-income populations or agricultural production while others take a broader, systems approach, selecting indicators from all sectors of the food system. These scenarios provide real-world examples of communities that conducted community food system assessments.

### *Scenario 1: Urban Food Indicators: Food Access and Knowledge in Low-Income Neighbourhoods*

**Source:** A Community Food Assessment of Trenton, New Jersey<sup>80</sup>

**Location:** Trenton, NJ: Population 85,000, median HH income \$31,074 USD, 21 percent of residents live below the poverty line.

**Food Assessment Goal:** To better understand food and nutrition in Trenton’s low-income neighbourhoods.

**Indicators selected:**

Food Access

- Walking distance to grocery stores (method: Geographic Information Systems (GIS) mapping)
- Proximity of supermarkets to public transit (method: GIS mapping. See Appendix C)
- Food costing (method: food costing tool)

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<sup>79</sup> NOTE: Several groups reviewing drafts of this guide expressed interest in developing a set of ten or 12 “canary indicators” that could be used by all communities doing food assessments and subsequently to compare communities. After careful examination it became clear that such an exercise would be counter-productive for several reasons. First, there is such diversity in the make-up of BC communities that there would have to be many sets of canary indicators to address dramatically different needs, which defeats the purpose of having a simple approach; second, the development of goals and indicators is a participatory process with each community determining their own goals and therefore key and/or canary indicators.

<sup>80</sup> [http://policy.rutgers.edu:16080/food/Studio\\_05Final.pdf](http://policy.rutgers.edu:16080/food/Studio_05Final.pdf)

- Availability of healthy food in large and small stores (method: store survey)
- Location of farmers markets and roadside stands (method: GIS mapping)
- Location of community gardens (method: GIS mapping)

#### Food in School

- What children eat and what they know about food (methods: food diaries, interviews).

#### Knowledge about healthy food

- Percentage of people interested in eating health food, what people consider healthy food, where they learn about food and whether they read nutrition labels (method: focus groups)

**Recommendations:** Based on the information collected as part of this report, the following recommendation were developed:

#### Short-term actions

- Provide transportation to supermarkets and Trenton Farmers' Market
- Encourage greater use of federal assistance programs
- Develop a newsletter about healthy eating and form partnerships with local restaurants and organizations to provide nutrition and cooking courses.
- Work with schools and local farmers to introduce children to local agriculture and expose them to different types of meals.

#### Long-term actions

- Work with the Trenton public schools to emphasize nutrition in the curriculum.
- Increase the linkages between areas farms and Trenton's neighbourhoods
- Collaborate with Trenton stores to increase the availability of fresh produce.
- Work with other organizations, policy makers, and governments to develop a food policy council and to facilitate connections between Trenton leaders and local farmers.

### ***Scenario 2: Regional/State Indicators: Farmland and Food Security***

**Source:** *Northeast Farms to Food: Understanding Our Region's Food System*<sup>81</sup>

**Location:** Northeastern Region of the USA from Maine to West Virginia.

**Food Assessment Goal:** to provide information and analysis about the Northeast food and farming system, as well as an introduction for those who are new to thinking about Northeast food and agriculture, and a resource for those who want to increase their understanding about these complex issues.

**Indicators selected:**<sup>82</sup>

### ***Production***

#### **Section One Northeast Farms and Land Resources**

- Farmland by Type
- Farms by Size
- The Cost of Land
- Farmland Loss

#### **Section Two Northeast Farmers**

- Farm Operators
- Farm Labor
- Farm Ownership and Tenure

#### **Section Three Northeast Production**

- Farms by Type
- Agricultural Sales
- Production by Commodity

#### **Section Four Production Systems**

- Fertility Management
- Pest Management
- Livestock Waste Management
- Energy Use
- Water Use
- Organic Agriculture

#### **Section Five Northeast Farm Economics**

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<sup>81</sup> <http://www.smallfarm.org/nesawg/pdf/NEFTF-Update2004.pdf>

<sup>82</sup> All indicators from United States Agricultural Census and other secondary sources.

- Farm Sales by Class
- Farmers' Share of the Food Dollar
- Net Cash Returns in the USA and NE
- Exports
- Government Payments

### ***Processing and Distribution***

- Wholesaling
- Wholesale Industries
- NE Fresh Produce Distribution
- Retailing
- Direct Marketing
- Transportation and "Food Miles"

### ***Consumption***

#### **Section One Population and Demographics**

- Census Population Change
- Population by Race or National Origin

#### **Section Two Eating Habits and Market Trends**

- Dietary Patterns in the USA
- Food Purchasing Trends
- Food Fears

#### **Section Three Food Access and Insecurity**

- Food Insecurity
- Food Access: the Challenge
- Responses: Government Programs

**Recommendations:** Based on the information collected as part of this report, the following recommendations were developed.

#### **1. Farm Economic Viability and Food System Economic Development**

- Create adequate, responsive farm support services
- Integrate agriculture and economic development

- Bring attention to the needs of next generation of farmers
- Develop regulations and programs that enhance availability of farm labor

## **2. Natural Resource Conservation and Enhancement**

- Link farmland protection, “multifunctionality,” and growth management
- Invest in regulations, incentives, and research that promote stewardship.
- Foster secure and affordable tenure on NE farmland
- Encourage marketplace recognition for good stewardship

## **3. Community Food Security**

- Embrace a systems approach that includes nutrition, diet, and food safety
- Link urban and rural communities to enhance food self-reliance
- Improve food access for all citizens
- Promote urban agriculture and community gardening

## **4. Food “Citizenship”**

- Build consumer awareness and understanding of farming and the food system
- Promote relationships that foster local and regional food purchasing
- Encourage behaviour beyond food buying that supports local agriculture
- Promote “agricultural literacy” in schools and other settings
- Recruit more people and new groups to work toward our vision

### ***Scenario 3: Rural Indicators***

**Source:** *Our Foodshed in Focus: Missoula County Food and Agriculture by the Numbers*<sup>83</sup> and *Food Matters: Farm Viability and Food Consumption in Missoula County*<sup>84</sup>

**Location:** Missoula County, MT. Missoula County is predominantly rural, covering approximately 2,600 square miles in the western part of Montana. It has a population of over 90,000 people; the county seat is Missoula. In 2002, the per capita personal income in Missoula County was \$26,823.

**Food Assessment Goal:** To determine the following:

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<sup>83</sup>*Our Foodshed in Focus: Missoula County Food and Agriculture by the Numbers.* Available online at <http://www.umt.edu/cfa/indicator.htm>

<sup>84</sup>*Food Matters: Farm Viability and Food Consumption in Missoula County,* Available online at <http://www.umt.edu/cfa/research.htm>

- 1) What is needed for viable and sustainable, commercial food production in Missoula County? What are the existing assets and barriers to creating a more viable and sustainable production system?
- 2) What concerns do Missoula County residents of various income levels have about food (including quality, access, transportation to food outlets, cost, eating behaviours, and choices), and what do they perceive as the county's food-related assets?

### **Selected Indicators Used in the Missoula County Food Assessment**

#### **Demographics**

- density
- Unemployment
- Median HH income
- Percentage Living below Poverty Line
- Number on Public Assistance

#### **Agricultural Resource Base Indicators**

- Number of farms
- Average farm size
- Number of Missoula County Farm Operators by Tenure
- Average Age of Operators in Missoula County
- Number of organic farmers

#### **Economic Productivity Indicators for Agriculture and Food Distribution**

- Market Value of Agricultural Products Sold in Missoula County
- Gross Receipts from Direct Marketing by Farms in Missoula County
- Number of Farms Engaged in Direct Marketing in Missoula County
- Number of Food Wholesalers in Missoula County
- Number of Food Retailers in Missoula County

#### **Food Consumption Indicators**

- Total Food Expenditures in Missoula County
- Food Expenditures in Missoula County, Home vs. Away from Home
- Total Number of Visits to the Missoula Food Bank

- Average Meals Per Day Served at the Poverello Center (free meal service)
- Number of Emergency Boxes of Food Distributed Food Pantries
- Amount of Food Harvested from Community Gardens

**Recommendations.** Based on the information collected as part of this report, the following recommendation were developed:

**Recommendation 1:** Create a multi-stakeholder food policy coalition that addresses community needs related to food and agriculture in a comprehensive, systematic, and creative way.

**Recommendation 2:** Improve food quality and access to healthy foods at emergency food services and elsewhere in the county.

**Recommendation 3:** Work with relevant advocacy organizations to create public education campaigns around the human right to food, and expand the current dialogue around cost-of-living concerns to include food issues.

**Recommendation 4:** Develop a strong community-based food system that supports local farmers and ranchers, and meets consumers' interest in access to locally grown food.

**Recommendation 5:** Identify and assess strategies for protecting and assisting working farms and ranches and for keeping agricultural land affordable for farming and ranching.

**Recommendation 6:** Investigate further the extent to which transportation to food outlets (both grocery stores and food pantries) is a concern for low-income residents throughout the county and develop appropriate recommendations for change.