

# THE TORONTO AND GREATER GOLDEN HORSESHOE CITY REGION FOOD SYSTEM -WEBS AND FLOWS



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## Acronyms

GGH: Greater Golden Horseshoe

GH: Golden Horseshoe

GHFFA: Golden Horseshoe Food and Farming Alliance

## Executive summary

In the first phase of the City Region Food Systems (CRFS) project in 2015-2016 (see report Describing the Toronto and GHG city region food system), The Toronto CRFS Task Force identified a vision for the future of the Greater Golden Horseshoe's food systems: "Healthy food for all, sourced as regionally as possible, and as sustainably produced, processed, packaged, and distributed as possible". The Diagnostic Report described the current Greater Golden Horseshoe (GGH) city region food systems in terms of all food system areas.

This Phase 2 research builds on the first baseline to explore key issues for the stakeholders, including waste, land and transportation, education, democratic engagement, labour, food access issues (food insecurity solutions), bureaucratic demands and points of risk or vulnerability.

The Toronto and GHG city region food system vision:  
"Healthy food for all, sourced as regionally as possible, and as sustainably produced, processed, packaged, and distributed as possible".

The Phase 2 research develops complex indicators drawing on stakeholder input. These indicators are designed to measure longitudinal and sustainable change towards a more resilient GGH food system. A more resilient food system will use new and existing assets to resist, adapt and redesign in response to shocks that may be environmental, economic or social.

This Phase 2 report explores innovations and change around the critical issues, and measurements of transition towards resilience in these areas. The research provides material for an examination of how change has happened in the past and what change is needed to achieve the goals, and what the barriers are to that change. This analysis develops a framework to test solutions against measurements of resilience and sustainability.

## Overview of research area<sup>1</sup>

The city region of Toronto occupies a significant and unusual landscape in southern Canada that comprises the Greater Golden Horseshoe (GGH) in a half-loop around the western end of Lake Ontario.

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<sup>1</sup> This overview is taken with some modifications from the Phase 1 Diagnosis report, and is reproduced here for those who have not read the Phase 1 report.

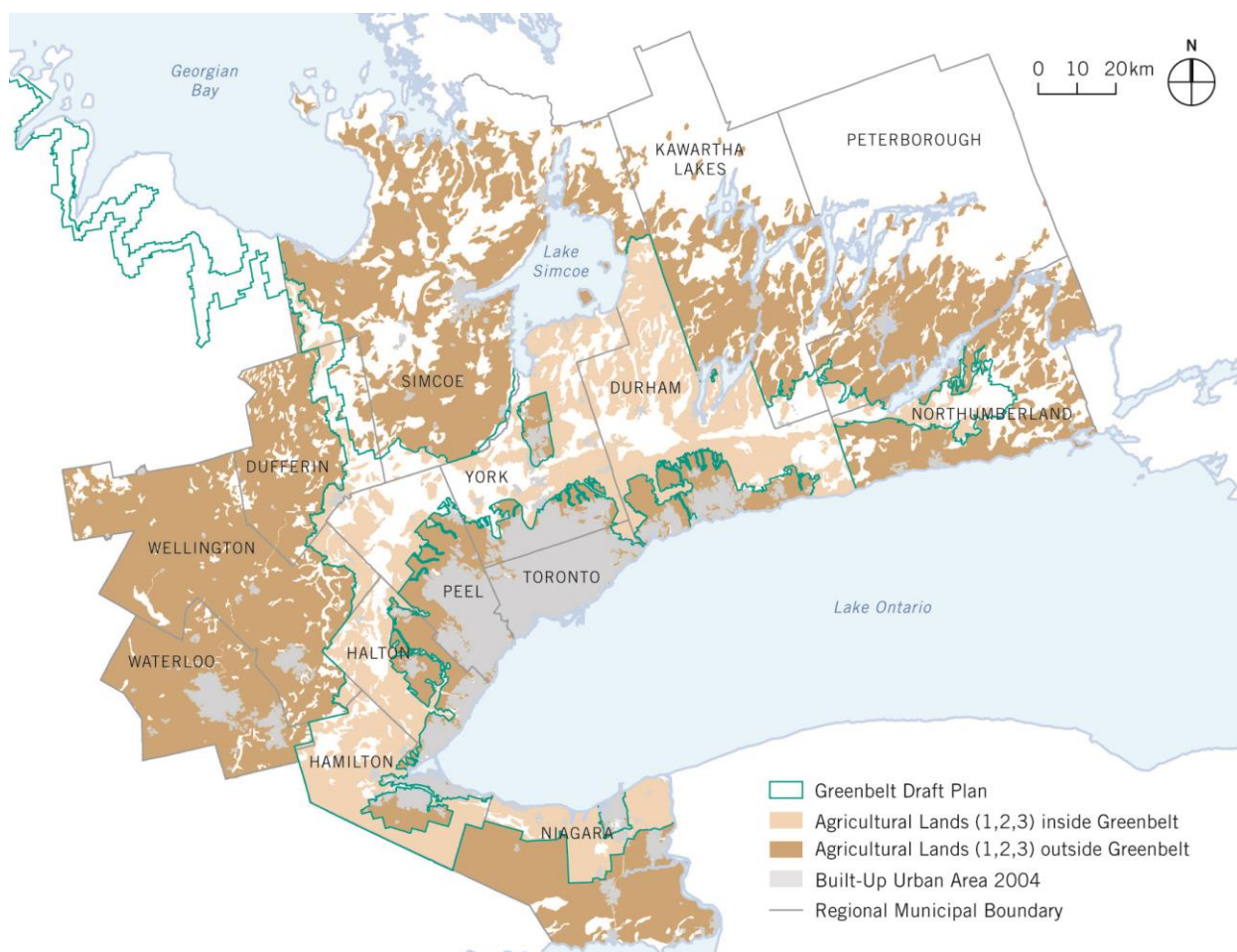




Source: Neptis Foundation, *As the Crow Flies cARTography*, Cartography Office Department of Geography (UofT). October 2009

Radiating outwards from Canada's largest city, 50% of Canada's best farmland, some of the highest population growth in North America, along with almost unchecked urban sprawl, and magnificent natural areas like the Niagara escarpment vie with each other for protection, function and access. The conflicting pressures can result in acrimonious disputes, as when protected countryside such as the Greenbelt reduces farmer control over sale of their land, or municipalities allow suburban development on Canada's scarce Class 1 farmland. On the other hand, the proximity of uses, demands and infrastructure has the potential which is often realized to be a vibrant foodshed that combines production for urban markets, recreation, dense labour markets for processing and accessible retail markets, population scale and diversity sufficient to support farmers' markets, CSAs, family farms and sustainable food ventures, and a potential for food system planning that can support those who eat as well as those who grow food.

The following map shows the main regions and boundaries in the Greater Golden Horseshoe, as well as the urban, farmland and Greenbelt boundaries.



Source: Neptis Foundation 2014; <http://www.neptis.org/publications/neptis-commentary-draft-greenbelt-plan/chapters/what-are-greenbelts-shortcomings>

The New Urban Agenda, adopted during Habitat III in Quito, Ecuador in October 2016, recognizes that urbanisation has increasingly linked cities with their peri-urban and rural hinterland, spatially as well as functionally. Integrated territorial approaches to food system development are characterised by planning of and interventions in a specific territory (including both more rural and more urban areas in a defined space), at the same time as addressing the development of multiple sectors, implemented by a range of stakeholders and multiple vertical and horizontal levels of government (CFS, 2016).

This city region food system approach has begun to gain ground since 2013. The approach assesses the possibilities of linking urban and rural potential and needs to create vibrant and resilient local economies and communities with sustainable food production enterprises. As noted in the Urban Agriculture magazine of the RUAF foundation “food systems are recently being considered key in operationalizing, among other things, the integration of rural-urban linkages, planning and climate-change adaptation at the territorial level” (2015: 4). Food system thinking is able to address issues at the level of territories, combining and linking issues from more narrow sets of stakeholders and interests.

As more than half the world’s population resides in urban areas, the links between urban and rural areas, and the mobilization of food-growing areas both urban and rural, has become an urgent issue. In Canada over 80% of the population is in the cities, most of these within a few hundred kilometers of the U.S. border. The GGH is home to almost ¼ of Canada’s total population. As Toronto Public

Health points out in their 2010 *Cultivating Food Connections* report, “Food system thinking is a way of seeing the bigger picture, of developing solutions to food problems by seeing and leveraging their connections to other health, social, economic, and environmental issues.” (TPH 2010: 5).

“In the latter half of the 20th century the world's urban population trebled in size and for the first time in human history, more than 50% of people were classed as urban dwellers. By 2050, two thirds of the planet's population is expected to be living in urban areas.” (FAO 2015).

This report highlights research done in Toronto. This research is part of the [CityFoodTools project](#), assessing City Region Food Systems (CRFS) in seven cities, including Toronto, Utrecht (The Netherlands), Lusaka and Kitwe (Zambia), Colombo (Sri Lanka), Quito (Ecuador) and Medellin (Colombia). Overall, the research project seeks to map and assess city region food systems in different locations, identify opportunities for change towards greater sustainability, and plan for city region food policies and strategies.

## Phase 1: The Greater Golden Horseshoe: A conjunction of stakeholder interests

A city region is “the complex network of actors, processes and relationships to do with food production, processing, marketing, and consumption that exist in a given geographical region that includes a more or less concentrated urban centre and its surrounding peri-urban and rural hinterland; a regional landscape across which flows of people, goods and ecosystem services are managed.” ([www.cityregionfoodsyste.ms.org](http://www.cityregionfoodsyste.ms.org)). The CRFS Task Force identified the Greater Golden Horseshoe (GGH) as Toronto’s city region.

This material recapitulates the Phase 1 report to provide context for readers who have not read the first report. The Phase 1 report (*Toronto and the Greater Golden Horseshoe City Region Food Systems: From Terroir to Tables*) reviews and aggregates the secondary research across the food system in the Greater Golden Horseshoe. Wherever possible, more than one dataset was reviewed and compared. In some cases (for instance, some environmental measurements) the methodology for assessment may still be under development, but in general the report focuses on sources that use accepted and professional methods of collection (such as Statistics Canada). The situational analysis set the framework for the primary research phase and subsequent report.

Although little primary production occurs within the Greater Golden Horseshoe urban municipalities (though that is changing), the horseshoe that stretches from just east of the Toronto around the tip of the lake to the prime wine and fruit-growing Niagara region represents a key agricultural area for Ontario and one of the most prolific and diverse food growing regions in Canada. The 32,000 square kilometers incorporates 41% of Ontario’s farms, over 50% of most food manufacturing, 21 upper and single tier municipalities, 89 lower tier municipalities, and around 65% of agri-food jobs according to a recent Synthesis report (GHFFA 2016: 8, 25, 28). Around 40,000 jobs in agriculture alone are sustained in the Golden Horseshoe (a slightly smaller area than the GGH) (Walton 2014: 2.37). A recent study puts primary agricultural jobs at 35,584, indicating both dwindling numbers and perhaps a different statistical analysis (GHFFA 2016). Over 200 different agricultural products are grown or raised in the GGH (Ibid.: 1.2).



The Greater Golden Horseshoe is expected to see population increases of over 4 million in the next 30 years.

Population in the GGH is growing and is predicted to continue to grow at 1.4% compounded annually. By 2031 the total Golden Horseshoe population is forecasted at almost 9.6 million (Walton 2014: 3.2). The Greater Golden Horseshoe is expected to see population increases of over 4 million in the next 30 years (Allen and Campsie, 2013: 1).

General trends in the GGH show a preponderance of small to medium scale farms but a tendency towards consolidation, as Gross Farm Receipts (GFRs) continue to rise but the number of farms and acreage is dropping (Walton 2014: E2 (based on 2011 Census of Agriculture). This can mean both higher food prices as well as higher productivity, and can mean the loss of jobs and related knowledge. Although food system jobs have been increasing, these are generally in the realm of food service. Food service sites are generally businesses that are owned by transnational corporations that contribute less to economic multipliers than regionally owned and operated retail markets.

Despite the high agricultural productivity of the area, opportunities for regional processing have dropped significantly (Carter-Whitney and Miller 2010); producers must send raw ingredients abroad for processing, weakening the overall food system as the higher manufacturing margins go to other regions or countries.

The GGH region is also home to important environmentally sensitive areas, and includes most of the area protected under the Greenbelt plan. Estimates of the value of ecosystem services are high: "This report quantifies the value of the ecosystem services provided by the Greenbelt's natural capital, revealing the annual value of the region's measurable non-market eco-system services at an estimated \$2.6 billion annually; an average of \$3487 per hectare." (Wilson 2008: 1). The agricultural areas alone account for a significant portion of this value: "The Greenbelt's agricultural lands total value is also substantial at an estimated \$329 million per year including cropland, idle land, hedgerows, and orchards. Key values include the pollination value of idle land and hedgerows, the storage of carbon in soils, and the cultural value of agricultural lands." (Wilson 2008: 2). Wilson (2013: 5) notes that "Between 1996 and 2001, 16% of the prime farmland in the region was lost to urbanization."

The Advisory Panel on the Coordinated Review of the Growth Plan for the Greater Golden Horseshoe found that the diversity and mixed land uses of the GGH were valued by the resident population: "We heard that people value a diverse mix of land uses and housing types, a range of employment opportunities, high-quality public open space, a variety of transportation choices, and easy access to stores and services. We call these places 'complete communities'" (Advisory Panel 2015: 11; see also Growth Plan for the Greater Golden Horseshoe 2006: 7). "Complete communities" may require a different lens to measure impact, goals and conduct planning; they require robust and effective approaches to problem-solving, conflict resolution and long-term participatory planning involving all stakeholders. The Golden Horseshoe Food and Farming Alliance, the Toronto Food Policy Council, and other stakeholders have begun this task, bringing diverse stakeholders together to participate in planning and policy-making.

The diversity of jurisdictions and regulations, often contradictory and overlapping, can be frustrating (Caldwell and Proctor, 2013), while access to excellent growing conditions and lucrative markets in the GGH as well as the eastern United States for export-oriented producers continue to be a draw for food producers. A variety of planning acts seek to reconcile the different users in the area: “The 2006 Growth Plan for the Greater Golden Horseshoe was prepared under the Places to Grow Act and works in concert with the Greenbelt Plan to ensure that communities can accommodate new settlement while still protecting the natural areas and farmland that provide critical ecosystem services for residents, such as clean air, water, and local food.” (Wilson 2013: 8).

The ability to make change is not distributed evenly among all actors, a fact that can lead to frustration as well as new initiatives to change the status quo.

External legislation and arrangements like trade deals also affect the food systems in the area. The ability to make change is not distributed evenly among all actors, a fact that can lead to frustration as well as new initiatives to change the status quo. “Power circulates and value accrues at different stages along the chain, partly determined by enabling conditions such as subsidies, trade rules, transport infrastructure and business norms.” (FAO 2015: 17).

Demands for land use in the GGH come from agriculture, housing, food security challenges, recreation, industrial use, infrastructure for all uses, and aggregate extraction. These can be compatible, as in the case of farmers who promote agri-tourism with hay-rides and corn mazes, or on-farm stores that combine marketing with production, or incompatible, as in the aggregate extraction sites where rehabilitation for agriculture has only been partially effective.

A variety of pressures are driving food producers away from the GGH. Walton (2014: 2.21) observes that uses that are incompatible with near-urban development, such as livestock, tend to move to the periphery (see also GHFFA 2016: 45). Likewise, food production that requires high capital investment tend to focus elsewhere, as tenure uncertainty, increase in rental properties, and the encroaching urban edge can reduce the appeal of long-term investment for food producers. The diversity of potential users, including many who can realistically pay more than farmers, drives the property values up, to the point that new agricultural producers cannot get entry to the area (Walton 2014: 2.32). The report from Advisory Panel for the review of the Growth Plan (2015: 73) observed that,

The development sector has generally assumed that the lands below the Greenbelt will eventually be urbanized, and most of these lands have now been purchased or optioned by investors. This has led to significant impacts on the viability of agriculture, including an increase in the number of tenant farmers, lack of investment in agricultural infrastructure, fragmentation of the land base by development-related uses, and near-urban pressure on agricultural operations.

Food production has been estimated to engage economic multipliers of 2-3 times the original impact of farmgate sales.

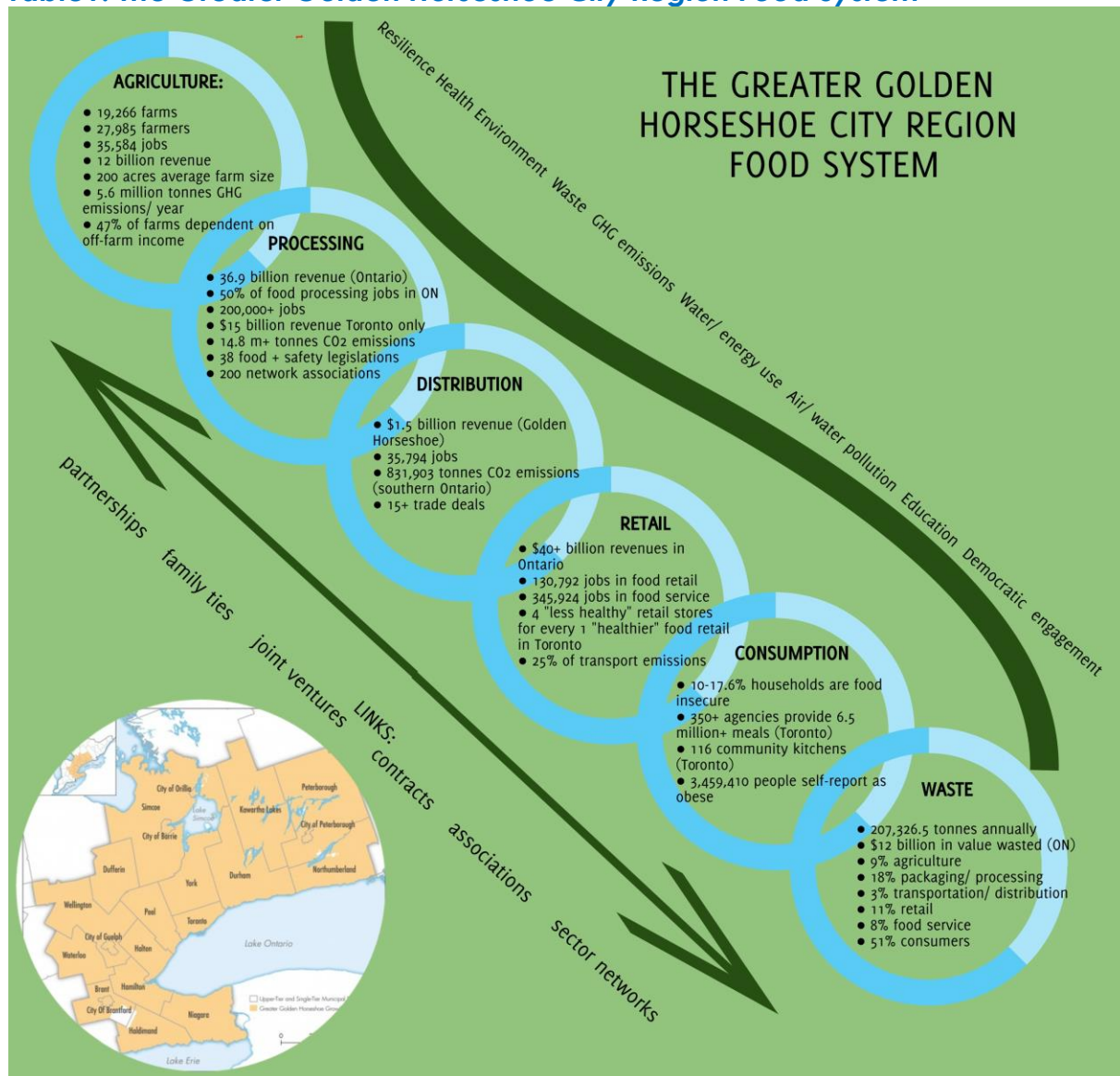
Food production has been estimated to engage economic multipliers of 2-3 times the original impact of farmgate sales. This means that food production activities provide revenues to a municipality in the form of jobs, taxes and indirect impacts like revenues from farm supply stores, large animal veterinarians, and farm equipment suppliers.

The revenues from agriculture tend to circulate, going to income for local residents, who may spend some of it at local stores, and support additional jobs and businesses through the circulation of this money. Other businesses, such as transnational corporations, tend to remove profits from local economies and aggregate it elsewhere, often in other countries, and to rely on specialized equipment and expertise that is not available locally. The process of multiplying agricultural revenues locally and building local economies can be a long-term process, with new jobs and businesses gradually forming as the process unfolds. In comparison, housing development creates short-term profits for a non-local developer, and short term construction jobs (often taken by people who are non-residents). Housing also costs the municipality through requirements for new public infrastructure like water and sewage.

The long-term resilience of strong local economies, with money circulating from local farms to local markets and farm suppliers through local jobs and back to local food producers can be undermined by the appeal of immediate short-term profit from the sale of land to the highest bidder, generally housing development. The actual higher cost of housing development, particularly sprawl, in new infrastructure like water and sewage to service the new developments is generally paid by the municipality through tax-payer funds in Ontario. Development charges to offset these costs have generally not been effective or applied to move the cost of sprawl to those who profit from the development (Baumeister 2012).

This section has provided an overview of the Phase 1 Situational Analysis: *The Toronto and Greater Golden Horseshoe City Region Food Systems: From Terroir to Tables*. The baseline assessments were quantified in detail in that report based on secondary research, and summarized in the infographic below.

**Table 1: The Greater Golden Horseshoe City Region Food System**



## Phase 2 overview and introduction

This Phase 2 research built on the framework and baseline information established in Phase 1 to explore opportunities, barriers, and mechanisms for change towards a stronger and more resilient city region food system. Research was conducted with key stakeholders across the GGH and across food system areas. Key areas for research were established by the Task Force and international coordinators, and include:

1. Food flows in the Greater Golden Horseshoe for four commodities (and two additional commodities for case studies: carrots, apples, chicken, potatoes, beef and dairy.
2. Place-based food system analysis focused on key regions of the GGH
3. Review of critical themes that emerged from the research
4. Compilation of indicator set drawn from the key themes and solutions
5. Assessment of collaborations and networks to identify agents for change in the GGH
6. Policy recommendations based on the two phases of research

The first part of the following analysis examines the key themes that arose from the primary research. These themes are used to extrapolate complex indicators that can be used to assess the sustainability and progress towards a resilient food system for each aspect of the food system. The themes and indicators are then used to examine the flow of the key food sectors identified by the Task Force: carrots, apples, chicken, potatoes. In the subsequent section, the analysis uses a place-based lens to assess interlocking clusters of innovation and activity in some regions of the Greater Golden Horseshoe. Next, the trends of change and innovation are examined to establish and assess complex patterns of change that cross food system areas and can unite disparate points of view.

In general, interviews were conducted with attention to shared themes and opportunities; most stakeholders moved from discussion of specifics in their own work to discussing a holistic view of policy and system changes that would lead to stronger and more resilient regional food systems around Toronto. The final section develops these shared recommendations to identify policy opportunities. These final recommendations aggregate this stakeholder input to make a framework for a transition towards a more resilient system that provides “healthy food for all, sourced as regionally as possible, and as sustainably produced, processed, packaged, and distributed as possible”, the vision identified by the Task Force.

Some leading questions guide this analysis:

- How do different lenses lead to different conclusions and different priorities?
- What are key topics of conflict and opportunities for agreement across the food systems?
- What is each food system area not able to address easily?
- What is the level in the system of resilience and vulnerability: how would climate, political or economic shocks affect the food system area, sector or network?

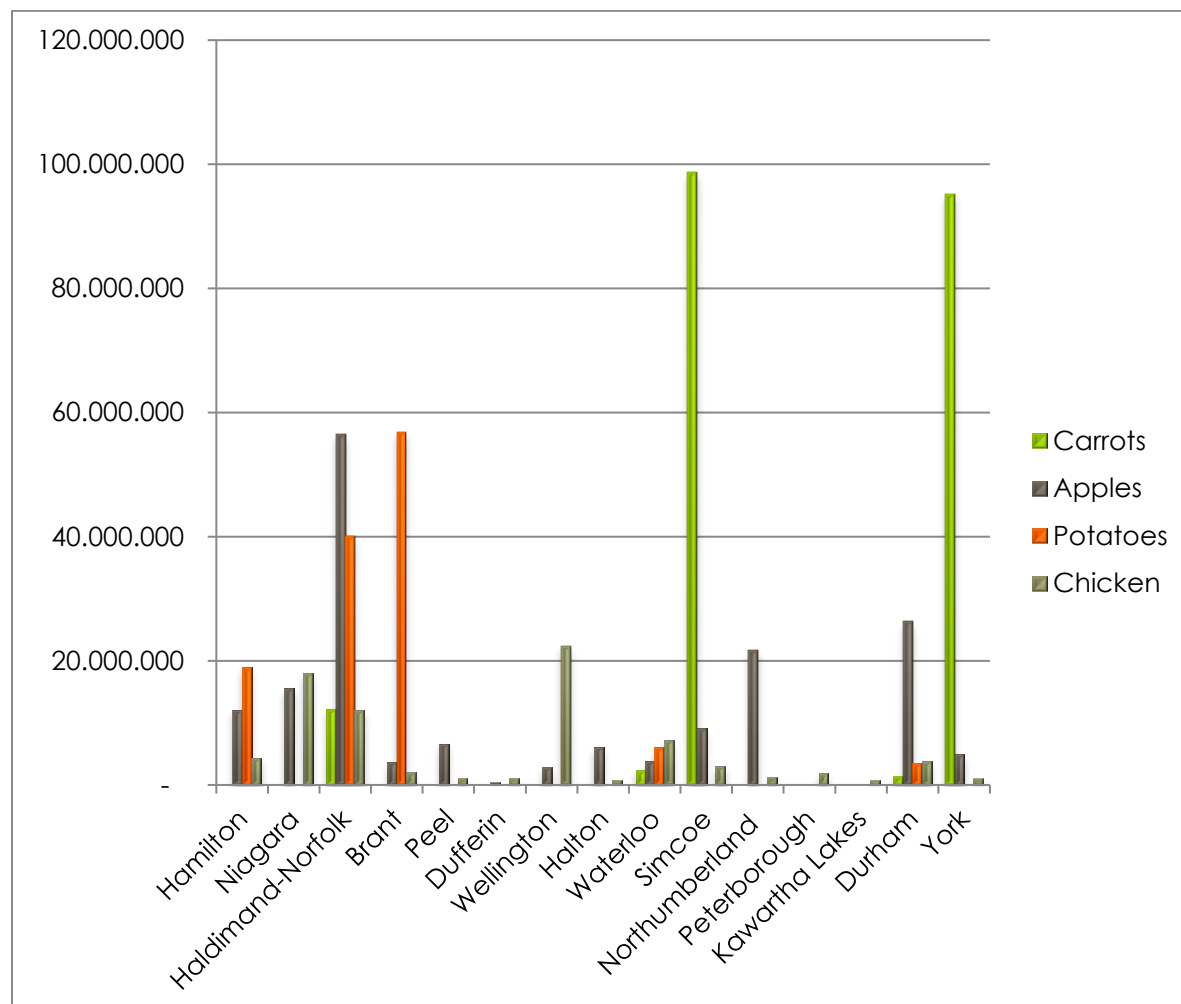
## Section 1. Food flows in the Greater Golden Horseshoe for four commodities

The first section presents material in terms of the flow of several key products across the entire GGH food system. Wherever possible, each section describes the relevant networks as well as the flows of a commodity, as part of the exploration of collaboration. This is summarized in the table below.



**Table 2: Total production by region in the Greater Golden Horseshoe for key commodities in 2014 (pounds)**

Note: Potato production is not shown in this table; the high production and product weight distort the picture. A little under 250 million pounds of potatoes was produced in Simcoe County in 2014 (Econometrics Research Limited 2014a).



Source: Econometrics Research Limited 2014a

## Section 2: Place-based food system analysis

The next section examines the city region food systems from a place-based perspective. The regions and municipalities assessed are: Halton Region, Peel Region, the City of Hamilton, Niagara Region, York Region, and the City of Toronto. The GGH is divided into distinct jurisdictions (regional, municipal and others). These can be independent entities within the province, and then within Canada, or they can be embedded as a municipality can be part of a region (e.g., Whitby and Oshawa towns, part of Durham Region). The geographic and demographic nature of each area can differ considerably, although they are generally all within an hour's drive of Toronto or Hamilton, the two largest municipalities in the GGH. Some areas, such as Peterborough and Kawartha Lakes contain significant rural land, both natural and agricultural. Other areas are sparsely settled but contain mostly farmland, as in the case of the Holland Marsh that straddles King township (York Region) and Bradford West Gwillimbury town (Simcoe County).

The jurisdictional boundaries can mean that the assets and permissions that support the agricultural economy, or address food insecurity, can vary, although any regional or municipal plans should not contradict plans at higher tiers. Given the complexity of plans and the variability of interpretation of terms, the result is considerable diversity. In addition, average income, the existence of rules against severance that constrain residential spread in single family homes (sprawl), protected natural features like the Niagara Escarpment (A UNESCO World Biosphere Reserve), and the presence of champions and organizations to move some agendas forward has led to distinct assets and character in each area's food systems.

### **Section 3: Review of critical themes**

Following the place-based analysis the report turns to overall themes. These were reviewed and discussed by the Task Force, and were used to guide the interviews. The project seeks to identify these issues to highlight common ground and places of agreement, and to make recommendations for ways to strengthen the food systems that provide the greatest benefit possible for all stakeholders. Although the issues are often raised in narrative of conflict, that poses one stakeholder group's point of view in opposition to another, the research shows many shared values and goals, and opportunities for agreement. These provide a guide to initiatives that can improve the resilience and sustainability of the food system and can at the same time include everyone in positive change.

The themes that emerged as crucial and determinant for stakeholder activities included:

1. Waste
2. Land and Transportation
3. Prices and Costs
4. Democratic engagement
5. Education
6. Bureaucratic processes
7. Labour and decent work
8. Food access issues

Waste was identified as a food system area in the original framework and is addressed first. Land, transportation and cost issues were common themes, particularly for agricultural stakeholders, and are addressed next. Democratic engagement and education were also identified in Phase 1 as key issues. For the secondary research, it was found that data for these two topics had not been aggregated, so the issues were addressed as part of the interview questions. However, the results on these two topics remain preliminary, and are well suited to further research.

The final topics are bureaucratic processes ("red tape"), labour, and food access. These are issues on which stakeholders took strong and sometimes conflicting positions. The analysis reviews these positions to determine grounds for agreement and collaboration. Identification of common ground can allow the system to address some of the challenges without engaging strategies that have negative consequences for some stakeholder groups. In this way, the analysis seeks to mediate between conflicting perspectives to point out shared goals and values that move beyond the conflicts. This approach lays the groundwork for the later sections that examines the keys to successful collaborations for positive change.

The section also looks at the cross-cutting themes of vulnerability and risk as an additional assessment for food system activities and proposed changes. This is included to address climate change effects, economic shock, and other stressor effects, as well as to provide additional information for the later section on innovation and policy change. The research showed that highly

innovative actions can succeed that were undertaken at great risk on the part of the business, organization, or individual. The test of risk and vulnerability is an additional way to plan for change: can such inspiring examples be recommended for common action or policy support when they are high risk? Are there systemic ways to reduce the risk if the action promises to make beneficial change across the food system and across stakeholder groups (that is, would policy or other supports reduce the risk)?

## Section 4: Compilation of complex indicator set

Each theme section is used to identify a small number of complex indicators. These are measurements that go beyond simple counts of food-related examples (number of farms, community gardens). These proposed measurements identify resilience factors such as longevity, security of tenure, diversity of options and other characteristics that are key to long-lasting sustainability. These indicators are combined in the next section to form the set of complex indicators below. This set represents a robust collection of measurements that have been prioritized by the stakeholder process. They can be used to identify and measure progress towards the vision of a resilient and sustainable food system.

**Table 3: Phase 2 set of complex indicators**

| Indicator  |
|--|
| Labour   |
| 1. Good quality work for skilled labourers   |
| 2. Fair pay for skill level of work  |
| 3. Stability of tenure in work   |
|  |
| Food access  |
| 1. Engagement levels (growing, preparing, sharing food)  |
| 2. Logistics system efficiency (distribution and trucking, software supporting ordering, route planning, inventory management)   |
| 3. Stability of labour (reliance on volunteers, quality and security of jobs)  |
| 4. Level of ownership, governance and management by consumers/ food insecure groups (make-up of staff, board, clients as well as governance structure and consultation practices)                    |
| 5. Level of use of purchasing dollars for regionally produced healthy food   |
| 6. Ability to track clients needs and impact of provision of specific foods (e.g., how many clients are diabetic and what percentage of food provided is part of an appropriate diet for diabetics?) |
|  |
| Cost, price and competition from outside region  |
| 1. Solutions of sufficient but appropriate scale to make system change   |
| 2. Distributed market system allowing a variety of choices for the producer  |
| 3. Level of consolidation of power (number of buyers to number of sellers)   |
| 4. Level of protection for sellers in limited option markets (trade deals, supply management, legal written contracts)   |
| 5. Level of stability of markets for long-term planning, infrastructure investment, stable succession  |
|  |
| Governance challenges  |
| 1. Level of cross-sector discussion in regulation development  |
| 2. Availability of scale-appropriate regulations   |

|   |
|---|
| <b>3. Opportunity for streamlined change to regulations in line with changes in food system</b>   |
| Democratic engagement   |
| 1. Number of farmers engaged in agricultural decision-making through various channels   |
| 2. Activity level of agricultural committees (impact on policy, finances, etc.)   |
| 3. Number of (non-farming) community members engaged in community-level activities and programs around food and agriculture   |
| 4. Level of impact of key sectoral councils, committees, etc. (are their recommendations reflected in policy and regulatory change?)  |
| 5. Longitudinal engagement of community members in food system issues   |
| 6. Impact level of community consultations on higher level decisions  |
| Education   |
| 1. Number of people accessing education opportunity   |
| 2. Number of people acting on the information over a period of time (years) (e.g., new farmers who are still farming, consumers who eat more healthy food)                                |
| 3. Level of stable funding  |
| 4. Level of cross-sectoral, food system information   |
| 5. Availability of training in non-commodity farming, markets, consumption habits   |
| 6. Access for practitioners (workers, farmers, students) to rights-based information related to their efforts   |
| Waste   |
| 1. Level of positive and negative impact across the supply chain  |
| 2. Combined economic and environmental impacts of activities  |
| 3. Indirect impacts of innovations (upstream and downstream of waste reduction measure)   |
| Land and roads  |
| 1. Level of tenure security on near urban land  |
| 2. Security of contract for food businesses renting or borrowing land   |
| 3. Level of agricultural impact assessment for new development projects   |
| 4. Access to tenure security on farmland for new farmers  |
| 5. Level of supply chain infrastructure investment by agricultural and other communities (including primary and secondary processing, food hubs, perennial crops, etc.)                   |
| 6. Transportation indicators such as time to market compared to net profit and cost of transport mode   |
| Points of vulnerability and resilience or risk  |
| 1. Large power inequities in transactions, as between the corporate food buyers and the farmers,  |
| 2. Limited choice (as in the lack of fresh food in high-volume donations, or the limitations of commercial farm markets largely to mass market or export),                                |
| 3. Unstable funding, particularly for non-profits and charitable organizations for whom grant funding is focused on program start-up and is rarely sustaining                             |
| 4. Dependence on volunteers for program delivery (as in many school food and food security programs)  |
| 5. Climate change shocks in agriculture (frequent crop failures as in the apple sector)   |
| 6. Climate change shocks for food (as in the increased price of food during the California drought, and the related increase in risk for urban areas with only a few days supply of food) |

|  |
|--|
| <b>7. Succession challenges for new farmers, particularly ones focused on traditional or alternative methods of farming and marketing</b>  |
| <b>8. Reductions in social assistance (recent cuts to key supplemental income for food left many low income people with increase food insecurity as well as challenges in managing diet-related illnesses as choice was further decreased by the cuts)</b> |
| Availability of systemic solutions   |
| <b>1. Systematic social assistance that recognizes the international right to food</b>   |
| <b>2. A national school food program instead of individual, volunteer dependent programs</b>   |
| <b>3. Government support for the next generation of farmers regardless of their approach (as Quebec has instituted)</b>  |
| <b>4. Long-term planning by appropriate government levels for strong food and agricultural systems</b>   |
| <b>5. An approved national food policy with budget and timeline for implementation</b>   |
| <b>6. Support for diverse markets</b>  |
| <b>7. Measures to reduce monopoly control in any economic sector</b>   |
| <b>8. Access to multi-year funding and funding that supports the ongoing operation of successful programs</b>  |
| <b>9. Research into climate resistant agriculture (drought tolerant varieties, cropping diversity (Gaudin et al.), frost-hardy fruits, etc.)</b>   |

The complex indicator set is then applied to assess the top commodity flows and the place-based activities described earlier. The analysis finds greater resilience and sustainability at the regional level than across the Greater Golden Horseshoe as a whole.

## **Section 5: Assessment of collaborations and networks**

The next section examines the examples of collaboration in the GGH to identify assets and actors that are moving positive change forward. This draws on the discussion of networks with stakeholders and the keys to collaboration identified by interviewees. The level and strength of collaborative mechanisms is not uniform across food system areas. For instance, agriculture has developed significant coordination of effort that has culminated in important changes in draft local planning acts. Other food system representatives tend to be regionally coordinated and active as in the case of food security organizations, or nationally and transnationally (as in the case of food retail and food service).

## **Section 6: Policy recommendations**

The final section amalgamates the data and indicators to identify eight policy recommendations. Stakeholder recommendations and positive examples of change and innovation help to build the final set of policy recommendations. These will be further assessed and elaborated in the Phase 3 focus groups and final outcomes of the CRFS Toronto project. The eight priority policy recommendations are summarized in the table below:

**Table 4: Priority policy recommendations from Phase 2 CRFS Toronto research**

Key recommendation #1

*Develop and support for transition to mid-scale infrastructure (regional processing, distribution, marketing)*

Key recommendation #2

*Establish financial resources that support a range of scales and stages*

Key recommendation #3

*Establish scale-appropriate regulations and feasibility assessments for mid-scale infrastructure like regional food hubs*

Key recommendation #4

*Increase research and educational opportunities directed at regional agriculture and regional infrastructure needs linked to shorter supply chains*

Key Recommendation #5

*Provide sufficient social assistance, through a guaranteed income or other measures, to ensure that everyone can afford to eat healthy food*

Key Recommendation #6

*Establish a national food policy and a national school food policy*

Key Recommendation #7

*Ensure widespread formalization and implementation of public procurement policies for local food (with percentages and budgets to meet policy goals)*

Key Recommendation #8

*Revise the labour practices, government support and subsidy programs to ensure the necessary skilled labour for all food system areas with tenure security and fair compensation for work*

## **Methodology**

Key issues and commodities were chosen from recommendations by Task Force members. The choice of interview sites and contacts was driven first by recommendations from network representatives from the GHFFA, OMAFRA, and others, and then by recommendations from the interviewees themselves. Key stakeholders (given priority by the Task Force members) were interviewed first. A snowballing method was used so that their recommendations for follow-up interviews was pursued as much as possible. Given the limits of time and resources, not all recommendations could be pursued. Stakeholders were more likely to be solicited for an interview if they were recommended by more than one other interviewee.

Given the thousands of people involved in food and agriculture in the area, this approach was used to ensure some relevance to policy work by identifying interviewees well situated to make change, but also to ensure that actors who were not necessarily in positions of power to make change were able to give their perspective of the context in which they do their work, and what is important in that context.

In 2016, seventy-six stakeholders were interviewed by the research team (Sarah Miller and Nicholas Godfrey) (see list of interviewees in Appendix B). Interviews were semi-structured, and encouraged stakeholders to identify the issues that were most important to them. A template set of questions also guided the interviews. Stakeholders were generous with their time and thoughts; their opinions were crucial to the formation of the policy recommendations at the end of this report. Some additional secondary research was used to provide general organizational information, to prepare for the interviews, and to review materials recommended or shared by the participants themselves. Interviews were transcribed by Nicholas Godfrey in detailed notes taken from the recordings.

## Phase 2 report summary

The research showed that stakeholders are often working within their local context, with access to information and opinion within that context, but with a stereotyped understanding of opinion and rationales outside that context.

For example, it is not unusual for farmers correctly to complain that prices in Canada for food are too low (below the cost of production). This position is accurate; farmgate prices are the same in real dollars as they were in the 1970's in Canada, and are some of the lowest in the world relative to

Farmgate prices are the same in real dollars as they were in the 1970's in Canada, and are some of the lowest in the world relative to per capita income.

per capita income. Likewise, people who are food insecure or who work with food insecure groups are likely to state that the cost of food is too high. This position is also accurate, given the low level of income these groups access (including those on social assistance) and the high and rising cost of housing. However, the conclusion should not be drawn from these truths either that all consumers should pay more, or that farmers should take less for their product. Such conclusions miss the mark of the shared context of a food and agriculture economy in which both producers and

consumers face challenges. The CRFS Toronto research provided the framework and input from stakeholders to identify structural change that can move beyond positions that are contradictory or in opposition to shared solutions that can benefit all stakeholders, as well as the environment and communities of the Greater Golden Horseshoe (GGH).

The analysis is tasked with examining this and similar situations. In the previous example, the entrenched positions pit farmers against consumers. The analysis asks if there are shared problems that can be extracted from their positions. In this case, both groups are addressing poverty. Whether income comes from selling the product of your fields or from social assistance or minimum wage food service jobs, the result is that the revenue is insufficient to meet the needs of the household. As farmers like to say, farmers live poor and die rich (because of the market value of their land). Although established farmers generally live in rural middle class surroundings, unless they are protected by supply management, their living is much more precarious than non-farmers realize: they are often overloaded with debt (offered on easy terms through various programs), and the farm is frequently supported, even on prime agricultural land, by off-farm jobs. Canada has seen a steady decrease in the number of farmers and farmland over the last hundred years. There were "280,043 farms in 1991, according to the Census of Agriculture, by 2011, that number had gradually declined to 205,730. Since 1991, the average farm area increased from 598 to 778 acres, while the number of



farm operators decreased from 390,875 to 293,925, a 24.8% drop. Over the same period, the average age of farm operators increased, rising from 47.5 to 54.0 years” Statistics Canada, Table 002-0035; [Beaulieu, Demographic Changes in Canadian Agriculture](#). This analysis seeks to establish the grounds for cross-sector understanding that can lead to food sovereignty, where Canada both has the ability to feed itself, and people living in Canada all have access to healthy affordable food.

The Phase 1 mid-term report established a base set of indicators which were used to describe the current situation of food systems in the Greater Golden Horseshoe in the Phase 1 final report. The list of indicators was cross-referenced with existing data to determine gaps and opportunities for further detail. In general it was found that agriculture and directly related jobs and businesses have been fairly thoroughly mapped, most recently in the comprehensive asset mapping project of the Golden Horseshoe Food and Farming Alliance.

There were “280,043 farms in 1991, according to the Census of Agriculture, by 2011, that number had gradually declined to 205,730. Since 1991, the average farm area increased from 598 to 778 acres, while the number of farm operators decreased from 390,875 to 293,925, a 24.8% drop.”

-- [Beaulieu, Demographic Changes in Canadian Agriculture](#).

Agriculture provides important services in ecosystem protection and management as well as significant economic impact through revenues and jobs. Wilson (2008: 1) provides estimates of the Greenbelt’s ecosystem services, estimating a total of \$2.6 billion/ year in value, an average of \$3487/ hectare. Wilson (2008: 11) assesses an array of ecosystem services, including water regulation, climate regulation, soil retention, nutrient cycling, waste treatment, pollination, habitat and recreation. Tomalty’s *Carbon in the Bank* report (2012) assesses carbon storage and sequestration for the same area, finding storage values of \$919/ hectare/ year for forests, \$429 to \$1360/ year for wetlands, and \$300/ year for agricultural soils. Wilson’s work (2013: 10) identifies a range of techniques for assessing the ecosystem services, including “1) assessing economic damages; 2) the willingness of individuals to pay for goods and services; 3) the willingness to accept compensation for losses”.

Farther along the food chain, there is less information that covers the whole region for activities around consumption and food security. Although production levels are available from Statistics Canada at least up to 2011, the destination of the food that is produced is not known. There is no rigorous way to determine how much local food is used locally (see also Harry Cummings and Associates 2005: v). Producers tend not to be vertically integrated through the whole chain; they often sell to brokers and distributors who import, export, process and sort again after storage. Before reaching a final market, the product may be aggregated, labeled for a third-party grocery chain, and further mixed and sorted after storage or if rejected and redirected from a market. In some cases, exported product may return to Ontario as a processed product, complexly as a frozen dinner or more simply in a shredded salad mix or other lightly processed product.

The research makes a general assumption that the Task Force vision entails shorter supply chains. Although in many cases short distance trips, often in poorly designed and partially filled small trucks and vans, has a higher environmental impact than long-distance transport of food, there are many reasons to shorten supply chains (nutrition, animal welfare and rebuilding local economies; see MacRae, N.D.a: 8. The development and support for city region food systems is part of a global effort to address metropolitan foodsheds (FAO N.D.: 10), and to recognize that regions may be uniquely situated to solve problems of agricultural economies and food insecurity. Lengnick et al (2015: 6, quoting Liverman and Ingram 2010) write that “regions have a number of qualities that, taken together, offer unique opportunities for cultivating food system sustainability and resilience.”



In 2016, the City of Toronto issued the [Food by Ward maps](#). This assessment maps some of the missing links such as community kitchens, community gardens, etc. However, such data has not been aggregated for the whole study area. The most promising information that met the scope of the CRFS project comes from the government offices in the regions or municipalities, and in some cases from large non-profits with a food focus (such as Ecosource in Mississauga/ Peel Region). The recent requirements from grant-making organizations for more detailed enumeration of impact from grantees has meant an expansion of material that can eventually be aggregated to provide a broader picture of the whole food system.

Many stakeholders use a crisis narrative to describe the situation. The story includes the rapid loss of farmland to development, the increasing rates of hunger across Canada, and the loss of all or more than half of key commodity crops like apples in several recent years due to unusual weather events. The Phase 2 report draws on stakeholder input to assess proposed solutions in terms of resilience; are innovations and change moving towards short-term solutions that cannot address the overall system problems, or do they establish a model or seed for widespread recovery and resistance to future challenge and crisis? IPES (2016: 13) provides a definition of resilience to guide these questions: “Environmental resilience refers to the capacity of an ecosystem to resist and recover from stresses, shocks and disturbances, be they natural events or impacts caused by human activity; Livelihood resilience refers to the ability of people to secure the capabilities, assets and activities required to ensure a decent living, particularly in the face of shocks (e.g. economic crises, environmental disasters).” Blay-Palmer notes (Blay-Palmer N.D.: 9) that this definition should be strengthened with the addition of adaptation as a key to resilience; a resilient system should be able to return to its original state or settle in a new dynamic equilibrium (that is, able to continue to change) after responding to shock or stress.

# Food Flows in the Greater Golden Horseshoe Food Systems

Following the framework set out by the CRFS Task Force, this report begins with an examination of system resilience in terms of the stakeholder input across the GGH focused on four key foods: carrots, apples, potatoes and chicken. The overall food flows are examined first through the lens of key areas of vegetable crop production in the Holland Marsh and the Greater Golden Horseshoe. The specific example of key food production and distribution is then examined for specific details and for any significant differences from the general supply chains. The rationale between the choice of these sectors is explained in more detail in earlier reports, as is the choice of the Greater Golden Horseshoe region rather than the narrower Greater Toronto Area. Case studies for beef and dairy are appended at the end of the section to provide additional information on commodity flows in the Greater Golden Horseshoe.

The Task Force identified four key foods that combine nutritional and economic importance for the Greater Golden Horseshoe. The key foods are carrots, apples, potatoes and chicken. There is a regular practice of rotation and crop diversity in the primary carrot production regions of the GGH; carrots, unlike the other key sectors, tend to be grown and marketed as part of a suite of products in a supply chain. The report first examines the overall GGH context for vegetables crops, introducing the general structure and practices of that system followed by specific information for the movement of carrots. The other three sectors (apples, potatoes, chicken, both eggs and meat) have some distinct characteristics and dedicated supply processes, and are addressed in the subsequent sections. These sections are followed by a look at case studies for beef and dairy, with a focus on sustainable production and alternative supply chains.

The examination of the GGH food systems as a whole proceeds from production to waste; the linear model is somewhat arbitrary, but provides the framework for subsequent lenses that include place-based clusters of activities, networked actors, and cross-cutting issues such as labour, price, bureaucracy, and waste.

## Production

The margin between a good production year and disaster is narrow; two windstorms (with hail) wiped out 600 acres of crops early in 2016. Farmers reported hail that left dents in trucks, damaging an estimated 2000 acres of crops ([Colby 2016](#)). Such sudden weather events can mean the difference between a good year and a disaster. Farmgate prices have stagnated since the 1970's, while the cost of inputs, labour and marketing have increased (see [National Farmers Union 2011](#)). The cost of inputs is a significant concern for growers.

“While the establishment of the Greenbelt may have slowed the decline in some regions and improved support for farm practices, it did not slow the overall decline of the number of farms or area of farmland in the GH and there continues to be uncertainty within the near urban area about the future of agriculture.”  
--Walton 2014: 2.37

A 2016 federal report reports that “In 2014, the top four operating expenses for agricultural producers were commercial feed, hired labour, fertilizer and lime, and interest payments” (AAFAAC 2016: 51). Producers spent a total of \$6 billion on commercial feed for animals alone. The report notes that the greatest increase in cost was commercial seed, a highly consolidated sector owned largely by transnational corporations like DuPont, Monsanto, and Dow Agrosciences. In 2012, Monsanto alone owned over ¼ of the global proprietary seed. ([ETC group 2012](#)).

## Land use planning issues

The Greater Golden Horseshoe is home to numerous zoning restrictions, including the protected areas of the Greenbelt, Niagara Escarpment, and Oak Ridges Moraine, but also industrial, residential and commercial zoning. The Greenbelt and other protected areas overlap in some places; the escarpment is a significant geological feature that begins near Niagara Falls, Canada, and snakes through the Greater Golden Horseshoe and through southwestern Ontario to the long arm of the Bruce Peninsula. The boundaries of the protected areas are not matched with each other, or with the Golden Horseshoe or the larger Greater Golden Horseshoe area. The three protected countryside and rural zones provide overlapping and sometimes contradictory stipulations designed first and foremost to protect environmentally sensitive areas. They also protect existing uses such as agriculture, while allowing certain priority uses such as aggregation extraction or designated development percentages for future population growth. The coordinated review included thousands of citizen and organizational submissions; the results of the recommendations are summarized in [\*Shaping Land Use in the Greater Golden Horseshoe\*](#).

Deaton and Vyn (2010: 141) write that, “There is no clear consensus in the literature as to the nature of the effects of zoning or conservation easements on the value of agricultural properties.” The protective zoning may also not have changed the general progress of change within the GGH borders, though it may have slowed the land conversions somewhat. A Golden Horseshoe Food and Farming Alliance report (Walton 2014: 2.37) shows that “While the establishment of the Greenbelt may have slowed the decline in some regions and improved support for farm practices, it did not slow the overall decline of the number of farms or area of farmland in the GH and there continues to be uncertainty within the near urban area about the future of agriculture.”

The increasing price of land and limited access to capital for non-conventional farmers has meant significant barriers for many new farmers. The value of land in the area varies between \$8000 and \$18,000 per acre according to several real estate studies (ReMax and Valco). However, many transactions are based on handshake agreements and may not be registered by these studies. Anecdotal reports of sales as high as \$24,000/ acre are common, as farmland is converted from agricultural to housing development. Speculation has increased with the growing pressure for new urbanized areas.

Growers who launched their business through the five year incubation program at [McVean Farm](#) through FarmStart, despite expertise and established markets, are often unable to make the leap to self-sufficiency. Many successful new farmers rely on support from parents to get access to land, either as part of an existing family farm, and/ or as down payment on a farm property (Miller 2016). These limitations ensure that barriers are almost insurmountable for marginalized groups (low income, communities of colour) who lack family wealth and may be more likely to be rejected from conventional lending options<sup>2</sup>.

The barriers of access to land and capital impede many urban agriculture projects as well. Public land rules can make access difficult, requiring a lengthy permitting process. Even urban farms of commercial scale can struggle to be recognized as farms that deserve the same rights as other farms. Many jurisdictions permit the use of public land to grow food as long as it is not sold, a rule that limits the interest in such projects for low income entrepreneurs. Hamilton has led the way in facilitating urban farming for commercial purposes at the city planning level. [Toronto Urban Growers](#) has recently released a map showing the considerable extent of urban agriculture sites in Toronto with hundreds of sites from Toronto, Hamilton and surrounding areas. Toronto has been removed from

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<sup>2</sup> In case this seems debatable, it is worth pointing out that the USDA recently settled the largest class action lawsuit in history. The suit was brought by black farmers against the USDA for racially biased lending practices that has removed millions of acres from the hands of black farmers since the civil war ended.

the Census of Agriculture due to a lack of data points based on existing definitions; however, a great deal of food is grown within city limits, as attested by the hundreds of gardens, greenhouses, beehives and orchards mapped in this important project.

### **Pressure from non-farming interests**

Interviewees from the agricultural sector speak of a frustrated sense that groups from other sectors—consumers, environmental groups, animal welfare organizations—are able to force changes that do not necessarily achieve their own social goals. A current issue is the problem of bee colony collapse disorder that has led to widespread die-off of bees, the essential pollinators of many crops. The theory that is most well-known is that the problem is due to the use of neonicotinoids, a large family of insecticides that may not have easy substitutes. Some research has indicated that there is in fact no connection to bee mortality when used properly (Scott-Dupree 2016) Other explanations for the disorder include stress from residential development and urban pressure, and from the transportation of hives to places where they are needed (rather than establishing hives in situ), as is done in some parts of North America.

### **Land Use Issues in the Holland Marsh and Greater Golden Horseshoe**

In order to add greater detail to the picture of land use planning, the next section focuses on the Holland Marsh, a key agricultural area to the city region, as well as Canada, with some of the best soil and the capacity to produce significant vegetable crops in intensively worked strips. Environmental concerns, development pressure, transportation corridors and the agricultural economy combine to make the Holland Marsh a place of intense negotiation and focus.

The Marsh (and Ontario) has seen a steady decrease in chemical inputs, as well as an increase in soil health practices like cover crops, longer rotation cycles, and composting. Farmers in the Holland Marsh area, with the support of the Muck Research Station, have changed and improved their practices regularly with new research findings. Many farmers spend considerable time in honing their techniques. As a sector agriculture shows a capacity and willingness to change which is an important asset for food production in Canada in responding to new pressures from climate change, volatile markets and changing regulations.

Gwillimdale Farms (just outside the Marsh) reports less need for spraying since they have gone to a complex rotation of carrots, onions and cash crops; they have identified certain crops that follow each other well (carrots after corn for instance). Their cover crops are a mix as well: tillage radish, crimson clover, oats and barley. This farm is also a leader in compost management, which they have been doing in windrows mixing cattle and chicken manure from a nearby farm with their own vegetable waste. They are looking into a state of the art vertical composter which will complete the process much more rapidly. They use all of the composted material on their own 3000 acre farm.



The [Muck Research Station](#) is unique in Canada; the closest equivalent according to Dr. Mary Ruth McDonald is a small research station in Quebec that works on organic soil without the extension aspect that directly supports working farmers. The Muck Research Station was instrumental in developing Integrated Pest Management techniques that allows growers to reduce chemical inputs. They provide reports from pest scouting. The scouts check random samples of fields for pest incursions and then the Station reports both to individual growers privately and to the local growers in general. The latter reporting is necessary because field parcels in the Marsh are small and close together, generally constructed of long strips of different products with no buffer of any kind. Farmers need to know if a pest population has spiked nearby as well as on their own beds. Likewise, pinpointing the area of infestation or disease allows direct treating of the crop (rather than the empty soil between the rows) based on their GPS mapping of the farm.

The team at the Station has also tested and developed some non-chemical responses to disease or pests, like the side trimming of carrot fronds to reduce a specific mold incursion. They have also done some variety testing for heat resistant varieties, as the number of hot days continues to climb with climate change.

The issue of appropriate technology was discussed by most producer interviewees. The photo above shows a machine used just outside the Marsh for transplanting onions; rotating drums drop the fragile seedling into their correct place on the row; GPS keeps these machines moving in a straight line, but human intervention is needed to keep it all moving smoothly, to adjust plants that did not fall obediently into the hole dibbled for them, tidy the furrows if they are uneven in spots, and to drive. The workers rotate positions so that no one person does the same task for too long.



Source: Onion transplanting at Gwillimdale Farms

One interviewee, describing the particular problems of getting machinery to work in the muck soil, discussed the complex and creative approach growers there take to machinery; like “macgyvering” (improvising technical solutions), they call it “farmering”. The machinery on the Marsh is distinctively different from other regions; the tires tend to be balloon-like to keep them on the surface; other customizations are required to keep all the components moving smoothly (like cutters for the soil or the conveyor belts). The HMGA occupies an office upstairs from the primary machine shop on the Marsh, where custom machines are repaired, shaped and assembled by the expert team from individual components.

### Farming the Marsh

Avia Eek and her husband Bill are part of the multi-generational farming tradition of the Holland Marsh. Eek's family was one of the first 17 settlers of the Marsh, arriving in 1934. The early settlers in the Marsh faced an undrained wetland with thick and tangled undergrowth and overgrowth of roots, which had to be cleared along with the canals that had to be created. The early settlers were mostly from the Netherlands, with experience turning flooded lands into fertile agricultural soil ("muck soil"). David Watson was an early visionary who invited William Henry Day, then at the Ontario Agriculture College in Guelph, to assess the area for possible drainage for future farming (VanderMey 1994: 3). The hopes were high even then for import substitution. VanderMey quotes Professor Day: "We look forward to a time when Holland Marsh will supply the head lettuce for all Canada during the summer season, instead of its being imported from California, Arizona and other American states." (1994: 6).

Bill Eek's family began with lettuce, celery, onions but competition from financially supported farmers in Quebec and the cost of packing made these industries less viable so they now focus on carrots. Once they have made a satisfactory arrangement with a packer, the carrots go to a packer who washes, sorts, bags and sells it for export or to the mass market chains such as the Canadian chains of Loblaws, Metro, or the transnational Walmart or Costco. Like most commercial scale farmers, they rely on migrant farmworkers from Mexico, Trinidad, Jamaica and other countries in the global south. Avia Eek is also the Councillor for Ward 6 (King Township in the Marsh), as well as sitting on numerous committees focused on food and agriculture.



The Marsh also benefits from the farmer-owned Bradford Co-op, which has about 180 shareholders with approximately 100 active members and works closely with the Muck Research Station. They purchase crop inputs and some equipment, run a large greenhouse and provide storage for a fee; they do not offer distribution services (unlike other farmer co-ops, such as [By the Bushel](#) in Peterborough, or dairy groups like [Organic Meadow](#)). The Bradford Co-op has a sister company, a packer that works

with both members and non-members. Matt Shepphard, the Co-op's General Manager, reports that the co-op returned 7% in 2015 in dividends to shareholders, a little over \$1 million total (interview).

Pesticide regulation is highly contested, with different actors criticizing different dimensions of the current approaches. Environmentalists, consumers and organic or alternative farmers focus on the potential detriments to environment and health from the use of these materials. Farmers and industry representatives focus on the approved levels that are understood to eliminate these hazards. The farm input sector is largely dependent on pesticides, herbicides, and other inputs and materials that are imported, mostly from the U.S. This means that inputs are sensitive to currency fluctuations.

The Bradford co-op returned 7% in 2015 in dividends to farmer shareholders, a little over \$1 million total

Agricultural sector leaders argue that because Canada provides its own testing of new pesticides and other chemical solutions, growers lag behind in responses to new pest or disease outbreaks. As pests adjust to existing solutions, Canadian growers report that they face crop losses greater than those in the U.S., as they wait for confirmation from Canada of a new product's safety. Although it is reasonable perhaps for a nation to prefer to confirm that new products correspond to their own safety rules, the growers argue that the timing would work better if it was integrated with U.S. testing rather than subsequent. Since the borders are open to the movement of goods and their associated chemicals, banning the use of the same chemicals in Canada seems perverse.

Although many farmers and farm representatives are concerned about the impact of increasing the minimum wage, labour remains only 15.5% of their expenses, vs. 84.5% for materials and cost (AAFAAC 2016: 71). These expenses are not created equal; inputs like pesticides and seeds often originate abroad or are owned by transnational corporations. The cost and attributes of inputs was a key topic of conversation for the farm sector.

For commercial farms, expansion is often the best way to stay ahead of shrinking margins. The increase in land prices, particularly near urban centres, creates barriers to land access for expansion or for new farmers (AAFAAC 2016: 54). Changes to land use planning (minimum distance separations for buildings and residences, new rules for buffers near designated natural areas) are seen to encroach on land available for farming. A new edge planning approach has been proposed which allows more careful attention to siting of housing, roads, and other non-farm infrastructure to maximize the remaining farmland in places like the GGH where urban and rural uses are overlapping and sometimes in conflict.

As an example from prior years, the Marsh is bisected by a high use multi-lane highway, the only expressway that connects the urbanized Greater Golden Horseshoe with Ontario to the north. Farmers working plots on either side of the highway, or driving to drop off machinery for repair, or to the Bradford Co-op for supplies, or to a packer or market, is likely to need to cross this transportation corridor using the limited number of underpasses for that purpose. Work on the canals and other infrastructure ([The Holland Marsh Drainage System Canal Improvement Project](#), a seven year undertaking) over the summer of 2016 threatened to close several cross streets simultaneously, effectively shutting down the agricultural economy for the duration. The farmers were able to advocate to implement a graduated closure of these roads instead.



A more coordinated approach to land use planning has been undertaken to review four plans simultaneously: the Growth Plan for the Greater Golden Horseshoe, the Greenbelt Plan, the Oak Ridges Moraine Conservation Plan; and the Niagara Escarpment Plan. Some municipalities have already undertaken Land Evaluation and Area Review (LEAR) Studies (e.g., Peel Region and Caledon) to identify prime agricultural lands and regional socio-economic considerations to harmonize planning around different needs. The new coordinated plans include a requirement for new infrastructure development to complete an Agricultural Impact Assessment (AIA) to assess the potential impact on agricultural activities (similar to the Environmental Impact Assessment model), as well as development and support for an “agricultural system”.

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## Environmental issues

The Holland Marsh is an area of intensive, high value agriculture abutting expanding urban areas and embedded in key watershed and natural areas. The growers benefit from environmental goods in the area such as the fertile topsoil and the flow of water; the overlapping stakeholder interests means they are also sensitive to their impact on environmental goods and services. The majority of the drainage system is managed by the [Holland Marsh Drainage System Joint Municipal Services Board](#), funded by the local growers and landowners at a per acre rate. *And the Swamp Flourished* by VanderMey (1994) tells the history of the swamp, and the collaboration that have been at the heart of the Marsh since settlers, mostly from the Netherlands, drained it in the 1920s.

The GGH includes watershed for urban areas, extensive wetlands and forests, and important geological structures such as the Niagara Escarpment and the Oak Ridges Moraine.

Attention to environmental goods can be uneven or irrational from non-farmers; growers report that they have been asked to further reduce their phosphorus run-off to protect Lake Simcoe, while farms are only responsible for a small percentage of that run-off. They say that most of the problem is non-point source pollution from residential areas, a diffuse origin which is harder to address. For many interviewees, protecting the environment seemed to be an obvious part of their work, as the environment represents capital necessary for them to continue to run their business. Programs like the

Alternative Land Use Services seeks to reward their stewardship by paying farmers for their contribution to environmental goods and services. One study calculates that benefit to be the equivalent of \$820 million annually to Canadian society (Tyrchniewicz 2007: 3).

The GGH foodshed occupies a significant area of environmentally sensitive lands that provide important ecosystem services. The GGH includes watershed for urban areas, extensive wetlands and forests, and important geological structures such as the Niagara Escarpment and the Oak Ridges Moraine. A study of the watersheds just in the Greenbelt (Molnar and Iseman 2012: 6) describes the Greenbelt’s 1.8 million plus acres: “It intersects four major watersheds and protects the range of habitats contained within them, from the headwaters and riparian forests, to the streams and groundwater reserves.” Assessing the impact of agriculture and food systems can be challenging. A recent report (Econometrics Research Limited et al. 2014b: 2) notes that, “There is no single or collection of standard and generally accepted environmental indicators that adequately capture the environmental impacts of the three systems [production, consumption, transportation].” Water is

recognized as a key environmental issue for agriculture, and the use in Canada is “substantial compared to other economic sectors” (AAFCAAC report G4).

Agriculture also provides important services in ecosystem protection and management. Wilson (2008: 1) provides estimates of the Greenbelt’s ecosystem services, estimating a total of \$2.6 billion/ year in value, an average of \$3487/ hectare. Wilson (2008: 11) assesses an array of ecosystem services, including water regulation, climate regulation, soil retention, nutrient cycling, waste treatment, pollination, habitat and recreation. Tomalty’s *Carbon in the Bank* report (2012) assesses carbon storage and sequestration for the same area, finding storage values of \$919/ hectare/ year for forests, \$429 to \$1360/ year for wetlands, and \$300/ year for agricultural soils. Wilson’s work (2013: 10) identifies a range of techniques for assessing the ecosystem services, including “1) assessing economic damages; 2) the willingness of individuals to pay for goods and services; 3) the willingness to accept compensation for losses”.

Although ecosystem stewardship is sometimes seen to be in conflict with agriculture, the problem is exacerbated by assumptions that environmental and agricultural needs are in different realms. There are many positive effects and synergies between ecosystem protection and strong agricultural systems. Walton for instance lists for instance biodiversity, habitat, wildlife corridors woodlot services such as windbreaks, reduction of soil loss, water filtration, and natural landscape preservation (Walton 2014: 5.1).

Some kinds of agriculture may contribute more environmental benefit; mixed use farming offers more biodiversity and pollinator options. Animals can contribute manure for future crops; small farm parcels can mean more windbreaks dividing farms and parcels, reducing soil erosion. Many windbreaks and hedgerows contain important pollinator attractor plants, further enriching the local agricultural and eco-systems. Graves et al (2015: 135) in their review of resilience in food systems note that “More complex systems have been shown to be more resilient.” MacRae et al. 2013: 950) cites studies that show reduced energy consumption from sustainable practices “usually attributable to the absence of synthetic fertilizers, particularly nitrogen, and synthetic pesticides.”

Graves et al. (2015: 144) argue that for questions of ecosystem protection through reduction in soil erosion, the type of agriculture may not matter as much as good soil management. The greatest opportunity for energy reduction in the food system may be in greater consumption of fresh foods (due to high levels of energy use in processing), reduction of storage energy (through local distribution schemes) and reduction of wasted food and its associated unnecessary energy consumption (MacRae et al. 2013)<sup>3</sup>.

## Networks

There are over two hundred networks and collaborations which have developed in the production end of the supply chain. Growers may be engaged with the Holland Marsh Growers Association (see inset text box), but they can also be involved with the local chapter of the Ontario Federation of Agriculture, the Ontario Fruit and Vegetable Growers Association, the National Farmers Union, the Canadian Horticultural Council, the local municipal agricultural committee, the Golden Horseshoe Food and Farming Alliance, and many others.

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<sup>3</sup> MacRae (personal communication) states that the Marsh is likely to disappear as the organic matter oxidizes. Depending on the timeline, this should be considered as a factor in long-term resilience, but further research in this area is needed.

The **Holland Marsh Growers Association**, the network for growers in the Marsh, provides services for about 126 farms, 7000 acres and 66 different commodities. They are involved with supporting and helping farmers to understand the complex and overlapping permissions that regulate the Marsh, Mott, the current Executive Director, reports that there are sometimes as many as twenty-two different jurisdictions that must give permissions for activities in the area. They work with other grower associations such as the Ontario Federation of Agriculture and the Ontario Fruit and Vegetable Growers Association, and growers may be involved with more than one organization, but also represent and advocate for farmers who work in the unique characteristics of the Marsh.

## Packing/ processing/ distribution

### Packing

Once product is harvested, the food flow engages a range of transport options, markets (from direct to export), storage (a service also provided by the Bradford Co-op) and distribution. Growers who seek to find innovative solutions, or to share ideas, may be involved with international colleagues as well for knowledge exchange as well as export deals. Christina Hambly at Gwillimdale Farm has drawn on exchanges with European colleagues to explore and implement with her husband and other family members the farm's various novel approaches to large-scale carrot production and packing, addressing agricultural techniques, waste management, and other innovations.



Greenbelt Microgreens greenhouse

[Greenbelt Microgreens](#) supplies micro-greens grown in minimal soil to retain organic certification status (which cannot be done in a hydroponic operation). The special soil mix with the correct nutrients and inputs for the growth of their delicate greens comes from Quebec; their machinery for mixing the final soil recipe was purchased outside Ontario as well. Many growers have responded to mass market demands for year-round supply by partnering with southern growers during Canada's off-season. These arrangements may be long-standing agreements with southern farmers, or even ownership of southern farm property. The nature and challenges to collaborations will be examined later; this gives an indication of the complex networks that farming engages.

For most commercial farms selling to mass market or exporting, there is an intermediate stage of processing (primary processing includes washing and grading) as well as packing. For primary processing (basic washing and sorting), some growers such as the brothers at [Smith Gardens](#) wash their own product, while others will bring them to a central processor and packer that handles the

washing and marketing. The practice of on-farm washing has faced increasing challenges based on environmental issues with phosphorus run-off. In addition, an efficient packing line will be larger than most farms can operate just with their own product. Sufficient volume is required to warrant the cost of managing a processing facility. Since regulations constrain grower processing of other farms' product, most growers will send their unwashed products to a packer who washes, packs and ships, either on to a distributor or to various markets. The Holland Marsh has between eight and ten packing facilities. The grower knows only how much of the harvested crop was "packed out" (that is deemed Grade 1 or higher in the case of the private standards instituted by mass market). The rest is sorted out for disposal (as compost or animal feed).

Packing can involve an array of bags to identify and market product for specific mass market customers, or to provide value-added information (for instance, selling potatoes in a bag marked "baking potatoes" with instruction for baking). Potato packers like Downey Farms (see photo) have created bags that designate potatoes for particular uses (baking, boiling, frying) as well as bags that identify the potatoes by variety. This represents a departure from the usual "white, red or yellow" potatoes, although consumers have recognized the merits of the Yukon Gold variety (identified in the taste). Packers can use bags that designate the farm (fairly common in the case of carrots), a shared label (a growers' co-op, or the packers' own brand) or a private label (such as the Weston "no name" brand). Packers arrange and pay for the design and printing of the bags prior to any legal commitment from mass market buyers. Failed designs are wasted plastic that must be disposed of. Packers "pay on pack-out", that is, they receive the harvested product but only pay for what is deemed marketable after sorting.



Storage infrastructure allows farmers to control when their product is sold and at what price, and to ship it when circumstances warrant. Farmers face frequent price collapses when the harvest of the product is at its peak; as many farmers necessarily have the product at the same time, the proliferation of product and competition drives the price down. For products like carrots that can be stored, if the infrastructure exists, growers or packers can introduce product to the market gradually to avoid depressing the price below their costs. The process can be an anxious endeavour however, as stored product is likely to have higher loss



when sorted, reducing the overall income from the crop. The science of storing vegetables has improved over the years. Sophisticated storage technology (as the Ontario Food Terminal now offers) solves some of this problem by maintaining stable heat and humidity; storage facilities now exist that even change the gas in the air to prevent fruit from ripening (“Controlled Atmosphere Storage”).



Source: White Feather Farms, Durham Region

One interviewee argued that the reason bunched carrots and head lettuce are no longer produced in the Marsh is because the packers charged too much to handle it. Specialization has meant that many growers rely on packers to market their product. The packer then has the authority to negotiate and settle a price on behalf of the grower, remove units or refuse loads based on quality considerations, and pay only when product is shipped to market. This can give undue power to unscrupulous operators. The relationship across these chains is facilitated by trust and good lines of communication that can take time to construct, and can be easily damaged. The dependence on middlepeople in the chain from field to store creates opportunities for conflict and struggles over dwindling margins. For this reason, some growers of sufficient size may invest in their own packing and shipping to avoid paying whatever the packers require. Even in the specialized sectors of livestock, an operation may occasionally retain some vertical integration, as in the case of White Feather Farms, a chicken producer in Durham that also grows, stores and processes feed for their own operation and stores and sells feed-grain to others.

## Distribution

Distributors have shifted towards just-in-time inventories and often rely on global supply chains. In such a market, Canadian sources are only one option, weighed against output from places with lower labour costs, better exchange rates for inputs, and price supports for growers as in the United States and the E.U. The price supports common in the U.S. protect U.S. growers but allow them to “dump” their surplus without suffering a loss, at prices lower than Canadian growers can afford. It has been pointed out that in relation to U.S. agriculture, Canada is in a position similar to food production areas in the global South, the recipient of abnormally cheap food that threatens local agriculture and is buoyed at home by subsidies that pay farmers the difference for dumped product.

[100km Foods](#) is a regional distributor focused on locally grown food. Paul Sawtell and Grace Mandano, the original founders and owners, keep their operations efficient and streamlined by purchasing to orders rather than speculation. The buyers take orders, purchase, arrange for pickup from producers, assemble orders and ship to customers in a short cycle of a few days. The distributors that practice just-in-time inventories have much more flexibility to supply the local food markets and to offer a wide range of products since they only bring the products in if a customer has ordered them. They can change the price list regularly depending on availability, creating a responsiveness to season, origin and availability which transnational companies cannot easily do (see case study in box).

Paul Sawtell and Grace Mandano left their pharmaceutical careers in 2007 and founded **100 km Foods** in 2007; they purchase from local producers with a focus on the region, and distribute to customers, mostly chefs, in the Toronto area. The majority of their 80 suppliers are within 100 km of the warehouse. Paul told the tour “you could drive yourself out of business if you went too far.” They organize the supply into four clusters with different pickup runs for each. The product focus is fresh, but they offer some basic value added products as well. Their mandate is for local, sustainable product.

They built their distribution business with the goal of making urban to rural linkages. The work began with a series of cold calls to chefs and producers; the latter were more skeptical, while the chefs were enthusiastic. They got their first truck in 2008. Like many local food businesses, they were “incubated” at Foodshare, sharing space and getting support from the vibrant and creative atmosphere at the Foodshare warehouse. Later, they got their own space, grew out of it, and in 2014 moved to their current location in north Toronto. They share the space with Fresh City Farms, another entrepreneurial business that trains people in intensive food growing for urban agriculture plots and supplies food through online ordering and home delivery. Sharing the space has meant reductions in cost and efficiencies for each. They received a grant that paid for 50% of their shared cooler.

100 km Foods now has ten trucks, 12 staff, and will have another 8 staff by June 2016. They store very little product in the warehouse beyond a day or two; they receive orders on Tuesday for Thursday/ Friday delivery, and Sunday for a Tuesday delivery, and purchase only what has been ordered. They strive to tighten the schedule, since they are competing with same day pick up options from the Ontario Food Terminal (though the advantage for 100 km Foods is that they harvest to order rather than on speculation). They plan to go to a four day delivery model in 2016.

100 km Foods currently supplies about 250 active customers, including retailers, hotels, universities, colleges, and restaurants. They hold events for the chefs to meet the farmers. They have found that even when a chef moves on, the restaurant will retain them as a supplier, indicating well-developed relations of trust that go beyond just the buyer. They offer product with the producer name, and marketing is tied to the individual farmers.

Mass market has offloaded some of the time required to manage seasonality by requiring vendors (packers or grower/ packers) to pay to access their online portal and to enter their product information themselves. Some local food market software has also moved the product entry function to the farmer. In general these are groups dedicated to increasing the supply and procurement of local food, but the online requirements can create a barrier to busy (or technologically disinclined) farmers. The Oklahoma Food Co-op has created an open source software for co-ops that uses online capabilities to create a virtual farmers’ market with reduced risk for producers and consumers.

Producers log in and post what they have and their prices. Consumer log in and place an order, which is then shipped to a central depot for pickup. The cycles of product listing to pickup at the depot range from one month to two weeks in general. Several co-ops in Ontario have picked this software up, including [Niagara Local Food Co-op](#) in the GGH. Other software has been explored, including the Provender suite which originates in Quebec, and the Local Food Marketplace software. Foodreach in Toronto has created a similar system for distributors to sell to community organizations that provide meals to people who face food security challenges.

Large scale distributors like Sysco and Gordon Food Services maintain warehouses and estimate “inventory turns” to gauge business success. Inventory turns are a count of how many times per month or year the inventory in the warehouse is completely replaced with new product (usually a mathematical calculation based on product value rather than a per unit assessment). The higher the turns, the more efficient the operation; if product is sitting in a distributor warehouse for months, paid for but not sold, this represents a negative to the bottom line. Purchasing managers of these organizations rate the “skus” (“stock-keeping units”, individual products by brand, flavour, size) by their performance in and out of the warehouse. Slow movers are likely to be trimmed (de-listed). Mass market maintains their own “Distribution Centres” (DCs) which aggregate in large volume and then send product out to individual stores.

Products must be available in large enough volume to supply many stores in a largely uniform inventory of products. Aggregation and centralization prevents distribution of regional product to regional markets. The practice challenges the large corporations to meet the new demands for locally grown product. The centralized system, relatively recent (within a few decades) but widespread in the grocery industry, is part of the rationale behind corporate or government precepts that define “local” as “provincial” rather than regional.

Mass market maintains their own “Distribution Centres” (DCs), or warehouses, that aggregate in large volume and then send product out to individual stores.

Sysco instead maintains Operating Facilities, warehouses which are able to purchase directly from local suppliers rather than going through a central purchasing department. The warehouse for Toronto is in Mississauga and products from local suppliers (Naccarato interview). are known to “cherry-pick” within a brand, carrying only the most popular flavours. This was particularly evident in the organic stream in grocery chains where the offering was narrowed to a few skus; carrots but not parsnips, bananas but not kumquats. This can affect specialty products, as well as less popular flavours within a brand. Before gluten and wheat-free became a regular consumer choice, people with gluten or wheat intolerance or celiac disease were quite challenged to find grain products except in natural food stores.

### **Food Service Distribution**

Food service companies like Compass and Aramark, or Cara Foods for the airlines provide prepared meals for institutional buyers. They purchase raw ingredients from distributors and/ or aggregate from other distributors, adding another layer to the distribution links in the chain. In some cases, they may also provide management staff for an institutional kitchen, while the food preparation staff are part of the institution. Meals on Wheels for instance is largely prepared meals purchased from companies that specialize in providing meals for seniors, offering a range of options for special diets. The meals are sold at prices comparable to a low-end restaurant meal and are delivered by volunteers (Miller 2013).

## Processing

Options for secondary or tertiary processing (e.g., baby food, frozen carrots or frozen meals) are limited in Ontario. The number of processing facilities has decreased in recent decades, although interesting innovations to address small and mid-scale have been developed in food hubs and other initiatives. The Advisory Panel for the Growth Plan found (2015: 95) that “The agricultural sector is experiencing a loss of supportive infrastructure and farm services (e.g., processing facilities) as the number of farm operations in the GGH declines.” The recent GHFFA 2016 report created an online asset map database for the agri-food sector in the GGH which shows a significant gap in fruit and vegetable preserving and meat product manufacturing (2016: 35).

“About 50% of the raw agricultural products produced in Canada [is] used as material inputs by the food processing industry” – AAFCAAC report

The rise of food hubs may remedy this challenge, particularly if the Ontario food hubs feature processing capacity as well as distribution (by comparison, the food hubs that have risen rapidly with USDA support are mostly focused on regional aggregation and distribution (Miller 2015, unpublished report). The processing option might not apply to a load that had been shipped for another purpose and returned due to quality issues or the expense of re-sorting and repacking, but could offer an alternative to compost or animal feed for product graded out in the initial sorting. In many sectors, processing requires specific varieties (as in cider) or a rapid and direct shipment from field to freezer (as with peas).

An overview of food and beverage processing in Canada shows that “about 50% of the raw agricultural products produced in Canada [is] used as material inputs by the food processing industry” (AAFCAAC: 8). Ontario overall has almost 40% of Canada’s food manufacturing (Walton 2014). Facilities in the province total around 3200 (Industry Canada 2016<sup>4</sup>; Synthesis 2010: 2). In 2003, MacRae et al. (2009: 127) estimated that about 2% of processors were organic processors and handlers. In 2017 Pro-Cert reported about 185 certified organic processors registered in Ontario, almost 6% of the total (<http://pro-cert.org/en/certification/directory>). Food processing and manufacturing is concentrated in the study area; JRG Consulting (2014: 2) notes that the Greenbelt alone can be credited with 60% of Ontario’s food processing and manufacturing jobs. The recent GHFFA 2016 report finds over 50% of these jobs situated in the GGH (the discrepancy probably mostly due to counting differences, although the processing sector has also lost jobs over the last decade). In the City of Toronto alone, over 1000 food processing plants (including bakeries and meat processing) were identified in the recent GHFFA asset mapping project.

The [Ontario Food Terminal](#)<sup>5</sup> (OFT) creates a unique opportunity for aggregation and distribution in the city region supply chain which is unmatched elsewhere in Canada (see Belanger in Knechtel 2008). Aggregation from local farmers and importers provides a one-stop shop for independent stores in Toronto and beyond. The OFT provides a source of product for regional food distributors, numerous restaurants, corner stores, online grocery providers, independent supermarkets and neighbourhood fruit and vegetable sellers who would otherwise be challenged to provide a full range of product. The terminal has two restaurants, a bank branch, truck brokers, and a machine shop for equipment repair. The warehouse display floors are refrigerated, and tenants have basement and office space.

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<sup>4</sup> See Industry Canada at: <https://www.ic.gc.ca/app/scr/sbms/sbb/cis/establishments.html?code=311&lang=eng>

<sup>5</sup> This material is taken from the interview and tour generously provided by the General Manager Bruce Nicholas and Manager Gianfranco Leo as well as secondary sources as noted.



5000 registered buyers and  
475 growers use the Ontario  
Food Terminal --  
<http://www.offb.com/home>).

The terminal was formed in 1954 to level the playing field, allowing smaller operators to compete with large chains and maintain their independence, and provide a consolidated market facility for farmers and distributors.

Smaller trucks are in and out by 7 a.m., ready to deliver to customers by 9 a.m. in time for retail opening. The presence of the food terminal in close proximity to the city is essential to the urban food economy. The competition and dealing at the market is fast and fierce; buyers are there the moment it opens (even waiting in line). Buyers have been known to wait to buy in the hopes that as the day wears on the sellers will become desperate and drop their prices. It is a game of chicken between people who have often known each other for decades, and know that they depend on each other's survival.

Mass market chains operate largely outside this supply chain, managing their own distribution centres outside the city. Loblaws has a distribution centre in Cambridge, Oshawa Foods in Oshawa, Sysco in Peterborough. York region as well is home to a number of such mass market warehouses. Deliveries for individual sites are assembled and sent out from these centres, although the chains occasionally supplement from the terminal if they run out of a product.

The terminal is a public/ non-profit partnership that is financially self-sufficient based on tenant fees. The Ontario Food Terminal consists of the warehouse tenants in permanent spaces inside the building, and an open air "farmers' market" where farmer tenants can drive up in their trucks and offer goods within the leased space (usually from boxes or bushel baskets raised on pallets and from the truck itself). A Canadian Urban Institute report (2004 6) shows that 30% of fresh Ontario food goes through OFT, and 475 Ontario growers use OFT. The terminal acts for them "as an important buffer against the increasing domination of the purchasing power of supermarkets." Currently the estimate for Ontario produce flowing through the terminal is 35% (Nicholas interview). During the season, some tenants will increase their Ontario product to 80-90%, some are at 70% year-round (using greenhouse product to maintain supply).

The OFT offers a kind of market stability that is rare; tenants have 30 year leases. 5000 registered buyers and hundreds of growers use the terminal (<http://www.offb.com/home>). Buyers range from corner "ma and pa" stores, to local farmers' markets, etc. Chain stores and food service industry use the food terminal to fulfill "shorts" (when a sale product has sold out at their own warehouses). The current sales volume through the terminal is estimated at \$2 billion; however, that is probably low; the majority of tenants have off-site warehouses as well and transfers between these sites is not registered as part of the flow of food through the terminal. Sales may be also made at the terminal but shipped directly from farm to store.

The OFT is not only linked to the conventional market but has made important arrangement to supply the local food bank distributors as well. The food bank distributors Daily Bread Food Bank and Second Harvest Food Rescue have rotated pickup days. They also sometimes cross-dock (personal communication): that is, they load donated product at the terminal or other donor location, and then deliver to each other's warehouses, with or without storage in between pickup and delivery to share surplus from one day to another. New food safety concerns and the rise of flea markets purchasing unsold produce has caused that supply for the food banks to decrease.

In a different approach, Foodshare has arranged with a large-scale buyer/ broker at the terminal to purchase on their behalf; as a result, these products go through various markets to low income and marginalized groups with the lowest possible mark-up. The terminal remains careful about the

implementation of technology; much of the activity remains face-to-face and manual; even the inventory is manual, with a coding system for pallets as they are unloaded for storage. Nicholas reports that they have no losses in the last five years, so despite the huge scale of the system (100,000 square feet of cold storage), the old school approach is working well. A recent extensive renovation has introduced better traffic flow, covered walkways.

A recent extensive renovation has improved the flow of traffic both into and out of the terminal, and within the terminal itself. The terminal has featured mechanized pallet trucks racing from vendor to vendor, and vendor to truck, endangering unwary visitors who strayed from the proscribed path. A painted area to indicate where pedestrians were intended to walk, with some posts to keep them in line. The walkway and loading dock alike were open air. Until this recent renovation, the concrete dock between warehouses and the truck-loading area exposed product and workers to the elements at all times of the year.

### **Markets (including export, mass market, food terminal, direct, distributor and donations)**

The Holland Marsh Growers Association (HMGA) describes the Marsh as the “soup and salad bowl of Canada” (Coppolino 2016). Jody Mott, the Executive Director of the HMGA, confirms that it is hard to say what percentage of crops in the Marsh go to specific final markets. The choice of markets is done at the individual farm level, varying with opportunities, relative prices north and south, weather abroad that affects their demand, and support programs at home that direct growers towards one market or another.

For large volume shipments, the options are limited: either mass market or export. The shipper may not know where the products are going until the decision is made and the exchange completed; even as the truckload arrives at the mass market dock, the load may be turned away for quality issues or because the scheduled unloading time was missed. A rejected load may go on to find the best pricing at the Ontario Food Terminal, usually a discounted rate. Depending on the fragility of the product, the load might come back to be stored, resorted and reshipped, but the cost of that process may not be worth the effort.

Limited options in mass market has created distortions in the marketplace. The powerful buyers in the grocery industry can dictate pricing, product and source; with access to the national and global supply chain, they can always find another producer, while the producer has only one or two market options at this scale of business. As the number of farms of larger size increases and the mid-scale farm numbers decrease (Miller 2016), there are more farms seeking high volume bulk sales, increasing dependency on the high volume options of mass market or export.

As Aitken notes, the standards are developed by private industry, not through government food safety requirements (2014: 119-120). It is unlikely that the supplier interests are considered as a priority, as the private corporations necessarily have goals of stakeholder dividends and profit levels rather than supporting the survival of specific producers. Producers report that the grocery industry standards are higher than government standards. If a shipment is refused based on the private standards, suppliers have no recourse; that is, they cannot claim adherence to the federal standards to prevent the rejection.

Private standards would seem to be acceptable except when considered in the broader common practices of commerce, where a customer cannot return a product if it can be shown that it meets the general quality standards. For instance, one can return a box of breakfast cereal if it contains a mouse, but not if it does not have as many raisins as you wanted or expected unless the manufacturer promised an exact number of raisins. To place these struggles in context, it is worth noting that the

supermarket corporations have lost ground in recent years, with profit margins dipping to 1.5% in 2014 from 2.8% in the previous 13 year average, so, like farmers, they are fighting for every margin point. The competition for the retail dollar has become increasingly cut-throat.

The farm sector often invests (through debt financing) in varieties, packaging, methods, and infrastructure as required by a mass market buyer; if the vendor is “de-listed”, they are left without a market, as well as the debt and infrastructure that cannot be shifted easily to other products. The uproar over the closure of the Heinz factory in Leamington was partly based on the dependence of the farm sector on these contracts, and the difficulty in shifting to another market or product. Farms that are designed to provide tomatoes for processing cannot easily switch to apples, or dairy. Costco, a transnational company that, along with Wal-Mart, has taken a significant bite out of market share for Canada’s mass market chains, is unusual in that they will not buy from a supplier if they are 50% or more of their business (interview). They are also known for good labour relations with unions and workers (<http://www.ufcw.org/2013/10/30/costco-an-example-of-the-union-difference/>).

The market opportunities shift annually; prices can be volatile, and respond to the global supply chain rather than regional availability. Price, labels, new diet fads, the failure or buy-out of loyal customers (or even just personnel shift), all change the market options and demands. Consumer variety preference (as in the shift to baby carrots, or increased consumer interest in “rainbow” carrots of purple, rose and other hues) can change trends rapidly, in a shorter time than farmers can change their crops, particularly if they work in perennials such as apples, strawberries and asparagus. The state of the economy can also affect market attributes; as the cost of living increases and wages drop or work becomes more precarious, households may spend more time working for money and less time preparing food.

A grower/ packer or packer weighs a complexity of considerations to decide where to sell a given product, including prior verbal agreements and historical precedent with the limited number of mass market buyers (four main grocery chains, including Walmart and Costco). Given the tight margins in fruits and vegetables, shippers are looking for the best price at an efficient volume. That is, although the best price might be attained from a high-end retail gourmet food store like Pusateri’s or even a high end restaurant, the cost of shipping a few cases direct to a retail outlet is not worth it. Export programs and free trade deals have made the U.S. east coast an excellent market according to interviewees, especially when the U.S. dollar is strong compared to the Canadian dollar. Canada’s food industry depends on the U.S. markets to the extent that a strong Canadian dollar can create significant challenges for Canadian producers.

The natural and organic supply chains may flow somewhat differently; there has been less focus on export and little government support. Even commercial-scale organic fruit and vegetable farms may organize the flow of product differently, although they still compete with imported organic and may also export when they have surplus over the regional demand. The term “commercial” is used to refer to farm businesses of a scale to be largely self-sufficient (requiring little or no off-farm income to survive), and providing sufficient volume to sell to distributors or multiple retailers if they choose. A farm could rely on direct sales (Community Supported Agriculture box programs, farmgate and farmers’ market sales) and be of a commercial size. For instance [Plan B Organic Farms](#), a successful organic farm near Burlington that operates a multi-farm CSA was launched in 1997 by three farmers. They draw from other organic producers as well as imported product to offer a subscription box program through multiple delivery points in the GGH from Hamilton to Toronto. In another case, [Pfennings’ Organic Farm](#) near Waterloo has over 100 acres of carrots as well as a diversity of other crops. They also draw from other organic farmers to supply markets year-round. They wash and bag on the farm, and sell mostly to independent retailers in the Greater Toronto Area. Until recently they also sold to mass market, but found that it was a small percentage of their revenue, and a larger percentage of their expenses. In general, producers and packers rely on a constant process of

estimating, negotiating and comparing market options; the catalogue of markets they supply are likely to be a variable mix from year to year, and from week to week.

The third party carriers for transport to market are likely to be the same companies. [Erb Transport](#) for instance is a transnational corporation serving the U.S. and Canada with 1500 employees and 1000 refrigerated units. Unlike some transport companies, they offer “Less Than a Truckload” (LTL) services, so they are likely to be a ready option for smaller scale supply chains like organic as well as for the conventional streams. Retailers occasionally carry exclusively organic (as in the case of the family-owned Goodness Me chain) or may offer a small sampling of organic (as in mass market) or mix them opportunistically depending on price and availability (as some independent and small stores do). Stores like the new wave of local food co-ops generally choose local first, but are likely to prefer organic as well whenever possible. Independent stores are often the first to respond to new trends and health demands (such as locally grown, nut allergies, or gluten-free diets), and have a broad range of suppliers generally with many that depend on LTL shipping.

Interwoven supply chains that create complex and interlocking webs make up the food systems in the Greater Golden Horseshoe. Alternative supply chains develop novel approaches to delivering specialty foods from field to plate, but are necessarily dependent on global supply chains as well for supplemental foods, infrastructure, software and other goods. Producers of world crops have also developed a separate and parallel supply chain (Aitken 2014, Cheng 2016: 71); it features a more limited number of buyers than crops like carrots and onions, and a larger degree of trust-based relationships.

The Holland Marsh area is a prominent source for world crops as well. It is home to one of the largest producers of Asian vegetables in the region, a shareholder in the Bradford Co-op with 12,000 acres in Ontario and 4000 in Mexico

The Holland Marsh area is a prominent source for world crops as well. It is home to one of the largest producers of Asian vegetables in the region, a shareholder in the Bradford Co-op with 12,000 acres in Ontario and 4000 in Mexico (Shepphard, interview).

Aitken describes this world crop supply chain.

The most complicated of relationships is between retail chains and the specialized procurement agents. Specialized procurement agents may be purchasing produce, directly from producers, from other wholesale markets such as the market in Miami or from other wholesalers in the GTA. They, in turn, sell produce via the OFT, receive orders and contracts to supply produce to retail chain distribution, provide produce to the food service industry and in some cases may deliver produce directly to retail supermarket stores, bypassing the retailers distribution centers entirely. (2014: 111-112)

Overall, Aitken notes the rise of independent food stores in the GTA: “In the GTA there are a growing number of regional grocery chains with multiple locations in the GTA but few or no stores outside the GTA. These chains source produce through both conventional wholesale and modern wholesale firms and are also less likely to work directly with producers or exporters outside of Canada than the national chains” (Aitken 2014: 139).

The difference between the organic and non-organic growers market orientation is decreased when the preferences are examined; many farmers interviewed expressed a willingness or desire to sell regionally if the markets, distribution and commitment by consumers was sufficient. On the scale of

southern Ontario, the recent report from Econometrics Research Limited et al. (2014a) found many products that were produced in surplus (and exported) that could be marketed more fully locally, through import substitution and particularly if consumers were also eating more nutritious diets.

In Toronto, the figures show that grocery stores command a high percentage of the sales, with convenience and specialty stores at around less than 5% of grocery and food store sales. The Canadian grocery industry has become highly consolidated in large supermarket chains, both Canadian and international. Consolidation among the top three controlled 87% of the industry a few short years ago (Toronto Public Health 2010: 10), but encroachments from Wal-Mart and Costco have whittled away at that control. The result of such consolidation can be an undue amount of control, leading to a demand-oriented culture that can create barriers for suppliers: “the quality and safety standards imposed by supermarkets and other mass retailers often require costs and levels of standardization that can be difficult for individual small-scale producers to meet.” (IPES 49). The consolidation has also created a market that requires such large volumes to enter that farms in the most common small to mid-scale range cannot rationally take that risk. Further barriers (and risk offloaded to the producers) occurs in the investment in infrastructure for required packaging without a guaranteed sale, and the risk that in the end the producer will be, as one producer described it, stuck with 300,000 bags that the buyer doesn’t want after all.

The food service sector is the largest and fastest growing of the food system sectors. In Ontario the sector is valued at almost \$41 billion (Statistics Canada 2015). Almost 12,000 food service locations were identified by the GHFFA asset mapping project in Toronto (including drinking establishments which offer food as well). The majority of these are restaurants, but take-out, mobile vending carts, school food programs, child care and boarding homes are included as well.

Farmers are reportedly increasingly turning to restaurants and food service, and maintaining or expanding direct sales through farmers’ markets. Anecdotal evidence suggests that farmers may be turning back to direct sales through farmgate, CSAs, farmers’ markets, pick-your-own operations, and agritourism. Farm Fresh Associations such as [Durham Farm Fresh](#) provide promotion and support for regional farm direct sales options, indicates a growing interest from consumers and commitment from producers to this alternative. York Region has recently completed a feasibility study to assess creating a similar York Region association.

### **Direct sales from farmer to consumer**

It is possible that the number of people cooking from scratch have increased but have shifted their buying to more direct sales: farmers’ markets, CSAs, small fruit and vegetable stores, even community and backyard gardens. Further research would be needed to confirm this hypothesis, although it is clear that direct sales have been growing. These tend to be under-reported in formal statistics based on digital reports, when the quantification of sales relies on the bar-code count at the cash register or in inventory tracking. Many purveyors of fresh fruits and vegetables do not have digital tracking of purchases (for instance, in Toronto’s Chinatowns, two of the largest in North America with extensive independent stores offering mostly fresh produce, or the Kensington and St. Lawrence markets with a wide variety of fresh produce purveyors). As noted earlier, the Ontario Food Terminal relies on largely manual tracking despite the large volume of food that travels through its corridors.

### **Institutional Procurement**

MacRae found twenty-four local procurement policies for institutions (which can increase the fresh food percentage) across Canada (2014: 108) reported in a 2009 survey, but notes that the number is low due to subsequent expansion of such programs as well as difficulties in accessing the information. Institutional procurement often proceeds along a different set of channels from retail; distributors



tend to specialize in this type of procurement, and to provide value-added service such as management of food services as well as supply.

In some cases, particularly hospitals, the food preparation has been entirely out-sourced; most of the kitchen infrastructure has been removed and the kitchen staff only “re-thermalize” meals that were prepared by a third party off-site. Institutions tend to define their procurement practices based on limited budgets and priorities other than food (such as patient care), and to lock their food service in with single providers through multi-year contracts (Miller 2016; the GHFFA has [an ongoing project](#) examining the potential to regionalize institutional procurement in partnership with three regional institutions in the GGH regions of Durham, Halton and the city of Hamilton). This gives them little power to demand changes, such as a shift to more fresh food or local food. It would be instructive to compare actual costs and health outcomes; if a patient receives better food and is able to recover sooner, would this offset the higher cost of running a kitchen to prepare meals from raw ingredients<sup>6</sup>? The U.S. and Canada project “[Healthy Food in Health Care](#)” has engaged 1000 institutions across North America “to source and serve foods that are produced, processed, and transported in ways that are protective of public and environmental health”.

## Retail markets

Retail represents a significant portion of the market for food. The following sections (retail, food and health, consumption and waste) examine these areas of the food supply in general to contribute an overall picture of the supply chain from field to waste.

**Table 8: Ontario food retail sales (dollars)**

|  |                |
|--|----------------|
| Food and beverage stores                                   | 16,836,184,000 |
| Grocery stores   | 12,709,054,000 |
| Supermarkets and other grocery (except convenience) stores | 11,924,109,000 |
| Convenience stores   | 784,946,000    |
| Specialty food stores                                      | 1,065,347,000  |
| Beer, wine and liquor stores                               | 3,061,781,000  |

Source: Statistics Canada Table 080-0020 Retail trade (2016)

The GHFFA identified almost 4000 food retailers registered or operating in Toronto<sup>7</sup>. About 10% of these are listed as supermarkets, while almost 65% are convenience/ variety stores. The latter are typically focused on snacks and tobacco, although the proximity of the Ontario Food Terminal means that these small independent stores often carry a basic offering of fresh fruits and vegetables and plants. About 35 stores are listed as “fish shops”, and over 100 as “butcher shops. These measurements are necessarily approximate; many stores diversify, carrying both meat and bakery, or acting as a bakery/ café; these outlets will show up in more than one category. Around 10% are listed as bakery or bake shop. About 20 7-Elevens are registered in this category, an outlet that primarily offers coffee, snacks and various dry goods and would not normally be thought of as a “bakery”.

The City of Toronto has engaged in asset mapping for healthy food retail, identifying areas of the city where low income neighbourhoods correspond to low availability of healthy food. The research

<sup>6</sup> Personal experience in one of the poorest countries in the world showed a case of cultural response to the problem; in Nepalese hospitals, the family of patients would bring daily meals, cooked at home, as they did not trust the hospital food to achieve the same results (or to meet caste requirements of purity no doubt).

<sup>7</sup> The GHFFA database includes businesses registered in Toronto that may be operating elsewhere; this will inflate numbers for Toronto, and possible other urban centres as well.



found that “there are four less healthy food stores for every healthier food retail outlet” (Toronto Public Health 2015: 5). Altogether, mapping by the Toronto Food Strategy team has identified 1653 healthier food retail outlets in Toronto (Food by Ward 2016).

Following the example of U.S. cities like Philadelphia, Toronto has begun to pilot healthy corner stores programs, offering some fresh and healthy choices at convenience stores that are often the nearest source of food in low income neighbourhoods. They have also launched a healthy choice option through the small convenience stores in the various subway stations, providing good food on the go for commuters. There were pilot farmers’ markets in Toronto’s subway stations in 2016.

## Consumption

The Canadian household allocation for food is not large and is dwindling. Although the aggregated numbers are large, Canada spends a disproportionately low percentage of household income on food, only 10% in the 1990s (Toronto Public Health 2010: 11). For 2013 in Ontario, OMAFRA reports that only 9.5% of household income was spent on food<sup>8</sup>, generally lower than similar countries globally. [One 2008 study](#) shows that European households are consistently spending over 11%, with Italy as high as 14.4% (Washington State University, 2008 ADD).

The following shows the amount by household spent on the top foods identified in the CRFS project.

**Table 9: Household expenditures on key foods in Ontario**

| 2014    | Amount spent in ON Household dollars per year | Price; Oct 2014     | Notes       |
|---------|---|---------------------|-------------|
| Apples  | 66  | 3.90/ kg            |             |
| Carrots | 25  | 1.66/ kg            |             |
| Beef    | 276   | 11.74/ kg           | ground beef |
| Chicken | 259   | 7.49/ kg            |             |
| Dairy   | 776   | 2.49/ 1 litre whole |             |
| Eggs    | 84  | 3.22/ dozen         |             |

Source: Statistics Canada 2014, Table 203-0038, Survey of household spending (SHS), detailed food expenditures, Canada, regions and provinces, annual dollars

The Consumer Price Index (Statistics Canada, Table 326-0021 Consumer Price Index, annual (2002=100) shows an increase of over 10% in the cost of food in Ontario from 2011 to 2015 (based on a set of basic food items tracked over time). However, household expenditure on food in Canada dropped slightly (less than 1%) between 2010 and 2014, despite rising food prices (Statistics Canada, Table 203-0023 Survey of household spending (SHS), household spending, by household type, annual (dollars).

## Food and Health

The Canadian income allocation to food is similar to the U.S., Ireland and the U.K.; this continues despite the impact of food on short and long-term health, education outcomes and other markers of well-being. The links between food and health are essential attributes that define the retail food landscape.

Toronto Public Health has found that “Alongside hunger, approximately one in three Toronto children (age 2-11) is either overweight or obese<sup>3</sup>. According to a 2010 report from Statistics Canada,

<sup>8</sup> <http://www.omafra.gov.on.ca/english/stats/economy/index.html>

children as a group are “taller, heavier, fatter and weaker than in 1981”, which may lead to accelerated “non-communicable disease development, increased health care costs, and loss of future productivity” (2010: 3). According to the 2014 Community Healthy Survey, only about 2.8 million people report consuming the recommended five servings of fruit and vegetables per day, despite the fact that the number is probably over-reported, as people will tend to over-estimate what they perceive as good behavior.

The uneven availability, access and distribution of healthy food, as well as culture-bound unhealthy eating habits, has led to a range of food related health problems shown in the table below for some of the GGH counties. Although this data was aggregated from some areas in the GGH, seven counties did not supply this information for the Community Health Survey, so the actual figures are likely to be quite a bit higher.

**Table 10: Incidence of some food-related health issues**

| Health issue                        | Persons            | Source   |
|-------------------------------------|--------------------|--|
| Overweight, Obesity<br>Adult (self) | 3459410            | Statistics Canada<br>Canadian Community Health Survey 2014 |
| Overweight, Obesity<br>Youth (self) | 82438              | Statistics Canada<br>Canadian Community Health Survey 2014 |
| Malnutrition                        | 168 deaths in 2012 | Tarasuk 2014: 6  |
| Diabetes                            | 545182             | Statistics Canada<br>Canadian Community Health Survey 2014 |
| High blood pressure                 | 1342191            | Statistics Canada<br>Canadian Community Health Survey 2014 |

Source: Statistics Canada, Table 105-0501; Tarasuk 2014: 6

Food access programs that focus on healthy eating are rarely linked to local food programs. [Community Food Centres](#)® have worked to connect health and local sourcing, and often provide healthy local food options for food insecure households, as do other community organizations. The interviews focused on food security however often showed that solutions prioritize fresh fruits and vegetables, regardless of the origin.

A recent study (Miller 2013) found that at least 350 Toronto agencies were providing meals and food, generally at no charge, to people in need, totaling millions of meals annually through the non-profit and charitable sectors (2013: 11). The recent Food by Ward asset maps show 116 community kitchens in the city, and 160,257 students served daily by the Student Nutrition Programs<sup>9</sup>. Across Canada, Food Banks Canada reported 500 food banks and 3000 food provision programs in 2016<sup>10</sup>. Food insecurity disproportionately affects children (approximately 1 in 6) and single parent households with female heads of household, 25% of food insecure households in Canada (Tarasuk 2011: 8, 10).

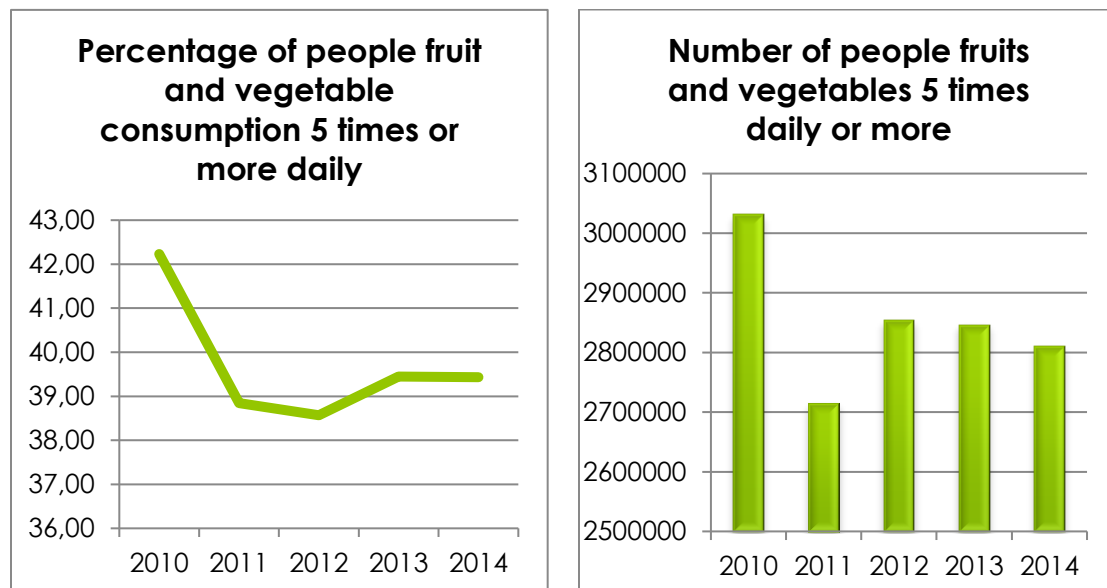
Recent Community Health Surveys show a slight drop in consumption, with fewer people in the Greater Golden Horseshoe reporting that they consume at least five servings of fruits and vegetables daily. The following charts are drawn from public health unit reports from 2010-2014 for the

<sup>9</sup> See <http://tfpc.to/food-by-ward>.

<sup>10</sup> Food Banks Canada 2016 website: <https://www.foodbankscanada.ca/Hunger-in-Canada/Food-Banking-in-Canada.aspx>

counties that generally correspond to the study area. However, the geographical boundaries may be different in some cases, so these numbers give a general idea of trends in the Greater Golden Horseshoe while the numbers are not exact.

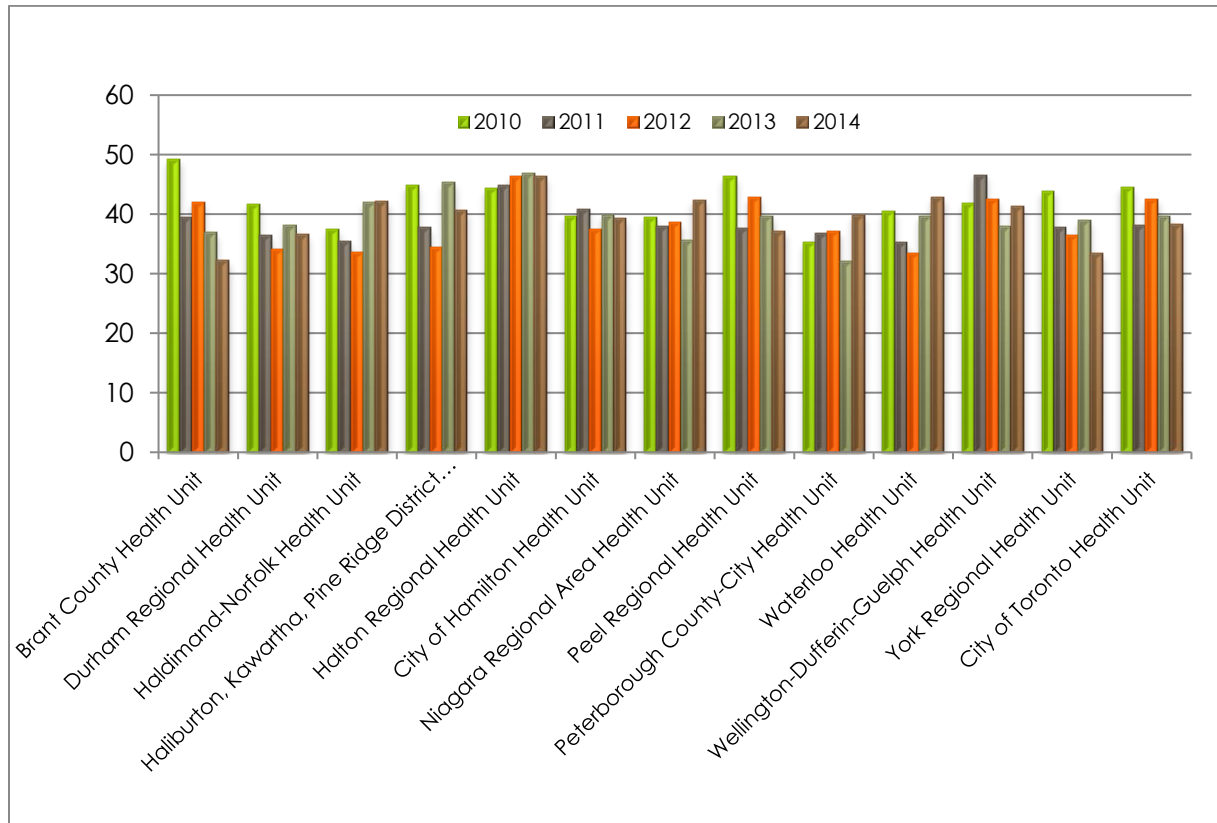
**Table 11,12: Percentage and number of people in study area who consume at least five servings of fruits and vegetables daily**



Source: Statistics Canada, Table 105-0501, Canadian Community Health Survey, Health indicator profile, annual estimates, by age group and sex, Canada, provinces, territories, health regions (2013 boundaries) and peer groups, occasional

These results vary somewhat across the study area. The following chart shows trends by health unit reporting.

**Table 13: Change between 2010 and 2014 of fruit and vegetable consumption as reported by study area public health units**



Source: Statistics Canada, Table 105-0501, Canadian Community Health Survey, Health indicator profile, annual estimates, by age group and sex, Canada, provinces, territories, health regions (2013 boundaries) and peer groups, occasional

Nonetheless, some polls do show an increasing tendency towards fresher and more healthy foods: “An Angus Reid poll in February 2011 showed that 76% of Canadians are making healthier food choices compared to three years ago. Eating more fresh food was cited as the most common way people are improving their dietary habits; 42% of respondents were taking that approach as compared to 38% who said they had reduced their salt intake and 36% who have cut down on fat” (Econometrics Research Limited et al. 2014a: 78). The shift to healthier food may also be a result of aging demographics (Walton 2014: 3.6).

A shift towards ethnocultural cuisine, which is often higher in vegetable ingredients, is predicted for the GGH, as 40% of Golden Horseshoe population are currently newcomers. However, one study shows that newcomer health tends to decrease in their first few years in Canada as they switch to their new country’s diet (Access Alliance/ TPH 2011: 38). Some increase in interest in ethnocultural foods may in fact come from urban people enjoying the diversity their city has to offer, although an estimate of that market has not been done. The Toronto Ward Museum has launched [Dishing Up Toronto](#), a project to collect and share the stories of migration to Toronto as told through food histories. The World Crops Project through Toronto Food Policy Council, Toronto Food Strategy and the Toronto Urban Growers, as well as the [Vineland Research and Innovation Centre](#) in Niagara, have worked to develop varieties and markets for ethnocultural foods in the region.

## Public health and nutrition programs

Ontario public health units, along with various non-profits and charitable foundations, are able to offer a range of support programs, from diabetes education to healthy cooking workshops. Recently, the Food by Ward reports from the City of Toronto show the availability of programs and organizations for healthy eating for all (<http://tfpc.to/food-by-ward>). Toronto Public Health is also working to link access to urban agriculture and locally grown food to health, in a Health Impact Assessment undertaken at the Black Creek Community Farm, which operates and engages people in a nearby low income neighbourhood (TPH 2015: 21).

MacRae et al. (N.D.b: 34), notes that "Food advertisements do increase consumption (Harris et al., 2009) and restricting what can be shown and when results in less. Chou et al. (2008) estimate a ban on fast food ads would reduce overweight in children 3-11 by 18% and adolescents 12-18 by 14%." Brazil, Quebec <sup>11</sup> and other countries have directly addressed food advertising and health, recommending that the best practice is to avoid advertised foods altogether.

## Availability of key foods sourced regionally

Of the top foods identified for the CRFS project, partly based on their contribution to a healthy diet, the following are average amounts available for Canadians by kilogram/ person/ year (Statistics Canada 2015).

**Table 14: Amount of key foods available in Canada**

| ITEM                      | Amount available, adjusted for losses (kg/ person/ year) |
|---------------------------|--|
| Apples                    | 6.88   |
| Carrots                   | 3.92   |
| Beef (boneless weight)    | 11.2   |
| Chicken (boneless weight) | 10.39  |
| Dairy: whole milk         | 7.15 litres/ person/ year                                |
| Potatoes                  | 68.22  |
| Eggs                      | 10.55  |

Source: Statistics Canada, Table 002-0011, Food available in Canada

Current intake however is different, and further differs from optimal intake for a healthy diet (see table below).

**Table 15: Current and optimal intake of key foods**

| ITEM                | Current intake        | Optimal Amount                                     |
|---------------------|-----------------------|--|
| Apples              | 8.0                   | 20.8 kg/ person/ year                              |
| Carrots             | 6.5                   | 22.8 kg/ person/ year                              |
| Beef, chicken, eggs | sufficient            | 1.5 servings (half cup each <sup>12</sup> ) / day) |
| Potatoes            | 37.4 kg/ person/ year | 48.6 kg/ person/ year                              |
| Dairy               | sufficient            | 3 servings (1cup each)                             |

Source: Desjardins 2010: 131, 135

<sup>11</sup> See for instance Dhar, Tirtha, and Kathy Baylis. "Fast-food consumption and the ban on advertising targeting children: the Quebec experience." *Journal of Marketing Research* 48.5 (2011): 799-813

<sup>12</sup> <http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/basics-base/serving-portion-eng.php>



Furthermore, food is not available equitably or evenly across Canada. While excellent food from a wide diversity of sources and cuisines is available for those who can pay, others who live on limited incomes or in under-served parts of municipalities face food access and food insecurity challenges. In Ontario 11.9% of people face varying levels of food insecurity, while the number rises to 12.6% in the Greater Toronto Area (GTA) (Tarasuk 2014: 28 Appendix F). The study (Tarasuk 2014: 28 Appendix F) shows that hunger varies between 10 and 17.6% in the Greater Golden Horseshoe. Food Banks Canada (2015: 3) reports that 358,963 individuals accessed food banks in Ontario in March 2015.

### **Regional sourcing, optimal diets**

How much of the food needed could be provided regionally? In an analysis of availability and optimal consumption in southern Ontario, Econometrics Research Limited et al. (2014a: 112 and following pages) reports that oats, cabbage, green and wax beans, carrot, strawberries, white beans, apples, sweet corn and potato and carrot production could all be increased in Ontario if an optimal diet was consumed (based on Desjardins et al 2010). At current consumption rates, additional production in cabbage, beans, strawberries, apples and potatoes would be needed for all Ontario consumption to be met through Ontario production. If the assessment focuses only on southern Ontario, then cabbages, beans and apples are also sufficient for southern current consumption levels, leaving only strawberries and potatoes in short supply to cover regional demands.

If Ontario diets shifted to an optimal diet (based on Desjardins et al 2010), only tomatoes are produced in sufficient quantities to provide for optimal consumption in Ontario. Of course, not all of these products are produced in sufficient quantity within the Greater Golden Horseshoe to serve that area's population. For instance, greenhouse production for tomatoes tends to cluster in the Leamington/ Essex County area and has not been widely introduced in the GGH. In fact, the Econometrics Research Limited et al. (2014: 116) report shows that the GGH area would be short over 150,000 tonnes of tomatoes if forced to rely on regional production for an optimal diet consumption.

### **Waste**

Waste is addressed as a key theme later in this report; a few notes will suffice here to summarize the effect at this point in the GGH and Holland Marsh food systems. These can indicate the final destination of products that cannot be sold, as well as trimmings and losses of marketed product along the whole supply chain.

Econometrics Research Limited et al. (2014b) estimates the total environmental impact of agriculture just for the GGH regions as over \$6 billion. Econometrics Research Limited et al. (2014b) calculates food waste across the supply chain at over 207,000 tonnes in the GGH. The results are shown as a percentage of the food system areas below.

**Table 16: Waste by supply chain sub-sector**

| Supply chain sector                  | Percentage waste | Tonnes (GGH) |
|--------------------------------------|------------------|--------------|
| Field                                | 9%               | 18659        |
| Packaging / Processing 18%           | 18%              | 37319        |
| Transportation /Distribution 3%      | 3%               | 6220         |
| Retail Stores 11%                    | 11%              | 22806        |
| Food Service / HRI (Institutions) 8% | 8%               | 16586        |
| Home 51%                             | 51%              | 105737       |

Source: Uzea 2013: 13; Econometrics Research Limited et al. 2014b: extrapolated from tables

According to Uzea (2013: 11), the Recycling Council of Ontario estimates that 30% of the non-hazardous waste stream in landfills is organic, and could have been composted or redirected. Although Toronto's green bin program has rerouted some organic waste away from landfills, there are many other steps that municipalities can take. Reduction of household waste would save municipalities the cost of processing organic waste at all. Vidoni (2011: 1) notes that "other jurisdictions in Canada, the US and the UK have more flexible regulations for the production of compost, and... this has allowed community-scaled programs to play a much more engaged role in the management of municipal waste." Composting in the backyard, probably the easiest and cheapest approach (MacRae 2016: 175), is not generally practiced or supported. A Master Composter program offered by the city of Toronto has been discontinued (Vidoni 2011: 37).

Recent opportunities reframe materials discarded by industrial processes as new raw materials for future processes. Producers and processors in the GGH have inaugurated various waste reduction or materials redirection efforts, including high volume composting that returns to the fields, increasing fertility and reducing input costs. Producers and suppliers have also established innovations around water use. Smith gardens, a large carrot producer north of Toronto, recycles carrot washwater in a closed loop system in one case. Maple Lodge has switched to air chilling in meat processing, and reports both financial savings and environmental benefits (see their [sustainability report](#)). The Ontario Food Terminal recycles the wooden pallets and composts vegetables, but they have had an increase in non-vegetable waste due to the increase in plastic packaging, tags and wrapping on vegetables. Even the plastic corner boards that come with some pallets are chipped up and recycled to other products.

## A Tangled Web: The Flow of Carrots in the GGH

The journey of a carrot from field to plate engages the entire mechanism of the food system, from the specifics of soil, environment and land use pressure to the tractor trailers and large-scale warehouses of the grocery chains, export brokers and southern distributor houses. The GGH is responsible for almost 209.73 million pounds of carrots produced annually (Econometrics Research Limited et al. 2014a). The amount comprises 60% of carrots produced in Ontario, and over 1/3 of the carrots produced in Canada.

Carrot production in Ontario is centred on the Holland Marsh, where the rich muck soil makes it feasible to operate the more expensive fruit and vegetable operations.

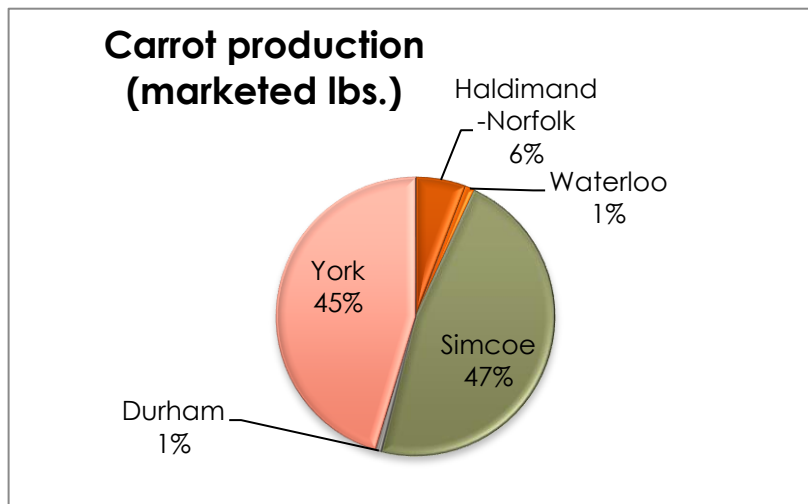
Carrot production in Ontario is centred on the Holland Marsh, where the rich muck soil makes it feasible to operate the farms requiring intensive capital and labour inputs. The Holland Marsh, approximately an hour north of Toronto by car, comprises 7000 acres of this precious soil. The watershed north of the city contains other significant wetlands that have also been drained and managed for agriculture. The proximity of expanding urban areas like Toronto and Barrie on the north end of the marsh area, combined with the facts that it is one of the major network of tributaries that form the watershed for Toronto, and that the area is a prime agricultural and economic profit center in Canada, creates a perfect storm of conflicting interests and goals.



Spring in the marsh 2016 (credit: Miller)

The concentration of production in the Holland Marsh means that the production regionally is undoubtedly higher than regional markets can accommodate. The focus of carrot production in the GGH is York and Simcoe regions, comprising the Holland Marsh and similar key muck soil areas north of Toronto.

**Table 6: Carrot production in the Greater Golden Horseshoe**



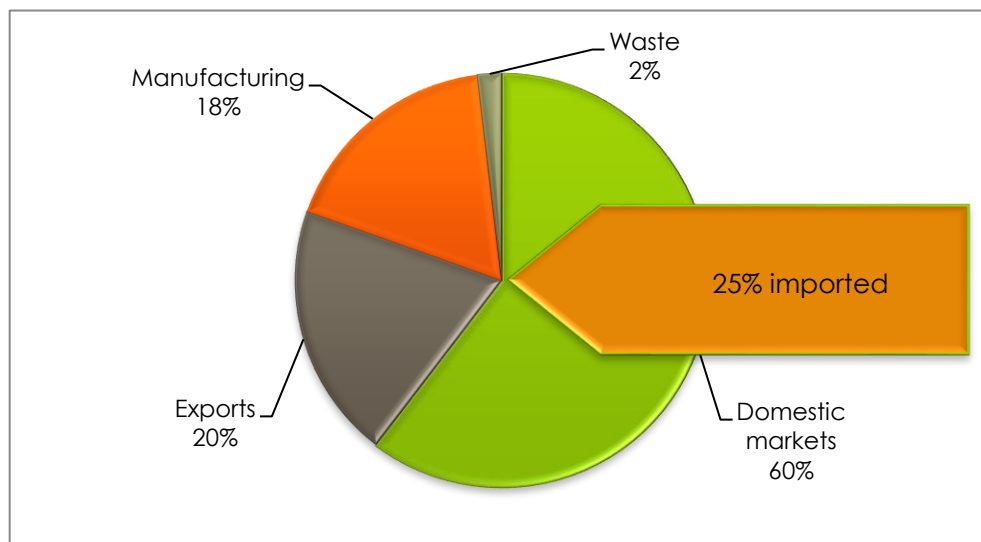
Source: Econometrics Research Limited et al. (2014a)

[Note that all tables on commodity production by sector and county are extrapolated from the Econometrics Research Limited 2014a report, which is based on the 2011 Census of Agriculture.]

Canada exports (approximately 20%) and imports (approximately 25%) carrots; Ontario is a net exporter of carrots. Carrots may be exported for processing. They may be removed to the U.S. to be trimmed into “baby” carrots or shredded for salad mix. The Smith Garden carrots, one of the largest carrot growers in the area, had this destination on the east coast, while another grower has sent carrots to California to be trimmed in the large facilities there when the California drought affected the U.S. harvest. These carrots may easily return to Canada in their new form.

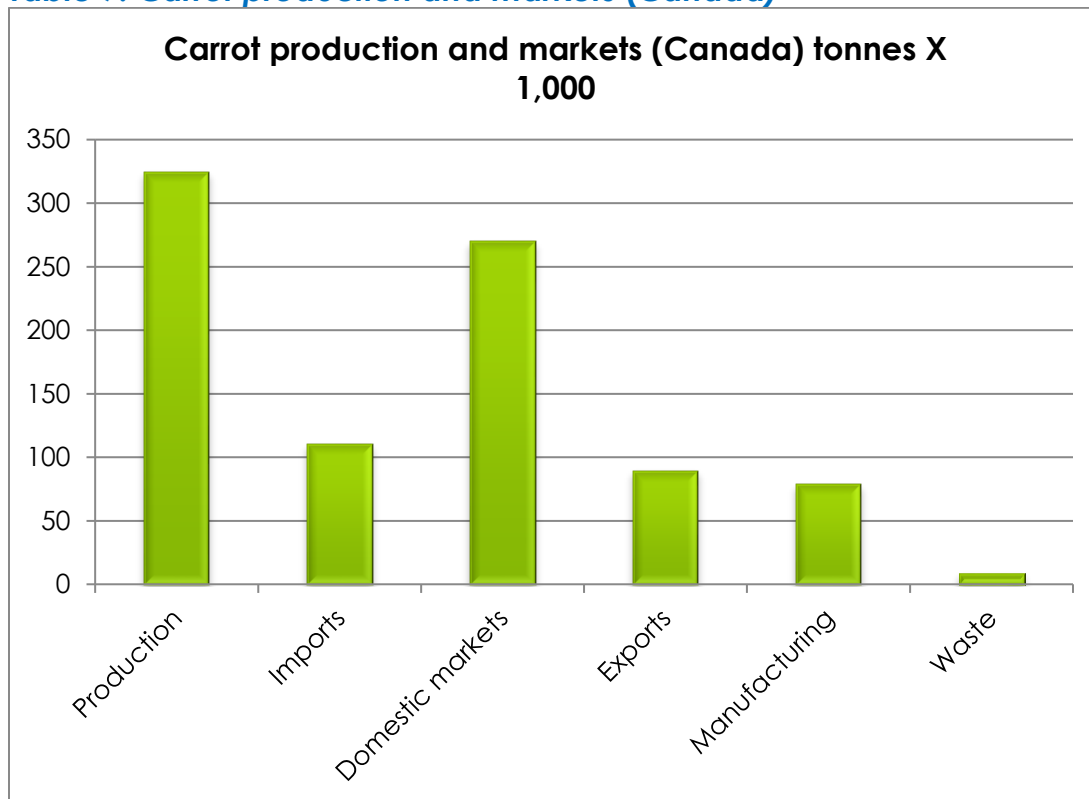
The flow of carrots and other horticultural products engage the movement of people and goods well beyond the GGH in paths that are complexly determined by price, availability, harvest results in other countries, currency rates, and access to infrastructure to move product along some channels and not others (storage, processing, distribution). In Canada, about 20% of carrots are exported, while 25% are imported (Statistics Canada, Census of Agriculture, Table 002-0010).

**Table 5: Flow of carrots in domestic, import and export markets in Canada**



Source: Statistics Canada, Census of Agriculture, Table 002-0010 Supply and disposition of food in Canada, annual (tonnes x 1,000)

**Table 7: Carrot production and markets (Canada)**



Source: Statistics Canada, Census of Agriculture, Table 002-0010

Consumption of carrots in the GGH can be estimated as close to 212.59 million pounds based on an average Canadian consumption of 3.92 kg/ person/ year (Statistics Canada, Table 002-0011, Food available in Canada). The carrots consumed in the GGH are not, of course, all produced in the GGH. A casual review at the carrots on display in supermarkets indicates that many come from the U.S., which represents almost 98% of carrots imported to Canada.

The DEFRA report in the U.K. (2006: 49) shows environmental impacts by commodity sector. For carrots, they report that fresh and bunched carrots have around .4 kg CO<sub>2</sub> equivalent per 600g serving in global warming potential, mostly from consumer transport to the home. The amount is higher for frozen carrots. Is import substitution possible to make the flow of carrots more direct, shorten supply chains, and avoid the intricacies of supply chains that may take the same carrot over the Canadian border more than once? How much of the local demand could be feasibly met with regional production? The difference between production and consumption of carrots is less than 2% of carrots consumed in the GGH.

What would be needed to make a more regionally production and marketing system function effectively for all food system actors, from input suppliers to consumers and waste processors? This report will build on the different perspectives to envision a whole system that regionalizes the food economy in a way that is inclusive of all stakeholders.

## Networks

The carrot and vegetable sectors are organized under fairly strong and effective organizations. Registered producers are required to join and be represented by either the [Ontario Federation of Agriculture](#) (OFA), the [Christian Farmers Federation of Ontario](#) (CFFO), or the National Farmers Union. The majority join the OFA, which reports 36,000 member families across Ontario. Organic and family farmers (small to mid-scale) are probably more likely to join the NFU than large conventional



producers. The CFFO reports membership of about 4000. In addition to these organizations, farmers are likely to be members of local agricultural organizations and committees (including chapters of the provincial and national groups), and sector organizations like the Canadian Horticultural Council. Further discussion of food system networks is in the section on collaboration later in this report.

## Summary

These maps of the challenges, flows, innovations and barriers in key food sectors lay the groundwork for understanding the GGH food systems. The flow of a single carrot from seed to bag to the consumer's plate to the final deposit of fronds and ends in compost or trash is complex and not unidirectional. Carrots may take a circuitous trip, even crossing national borders more than once, before they reach their final destination. Numerous considerations and strategies guide this trajectory through the webs and flows of the food system. Carrots describe an ever-changing route through prices, available distribution, storage, transport, consumer demand and preference, climate impacts here and abroad, grading changes and currency rates.

These sections have reviewed the key food systems areas in the GGH from field to plate as they determine the flow of carrots and other fresh produce from inputs to markets to consumption to compost and materials redirection from the food supply. The following sections focus on the remaining top food identified by the CRFS Task Force: apples, chicken (meat and eggs), potatoes. Short case studies for beef and dairy are also provided.

## Apples: Commodities for Health and Profit

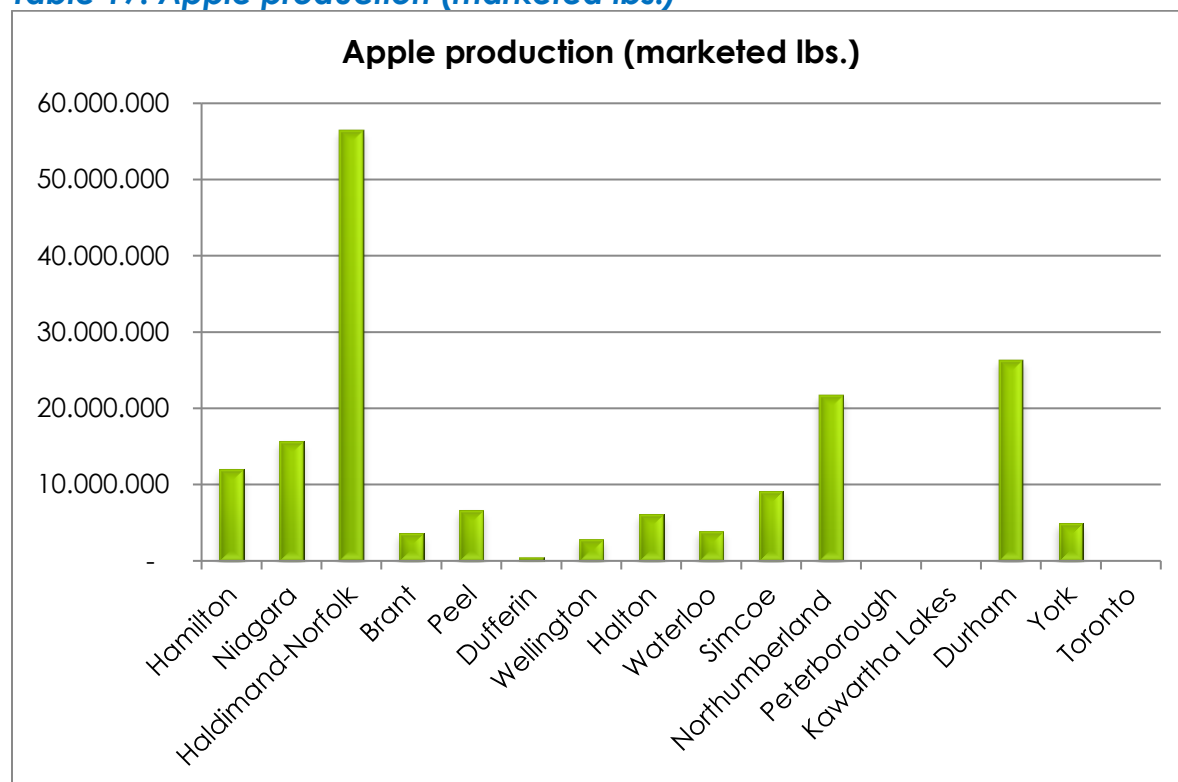
The following section examines the apple sector, another CRFS Toronto key food highlighted by the Task Force. In terms of health implications, and familiarity of the food across multiple demographics, apples are an excellent place to explore sustainability and resilience in the GGH food systems. Apples are an example of a supply chain with many of the characteristic attributes, challenges and alternatives described above. The apple sector also has unique characteristics, with distinctive supply chains and networks. These networks and the innovations in the sector can offer salutary examples and ideas for other supply chains.

Fruit trees are perennials, with an expectation of at least twenty-five years of harvest (longer for the semi-dwarf varieties) and high start-up costs. An error made at the beginning cannot be rectified by planting something else the next year. Kelly Ciceran, Executive Director of the [Ontario Apple Growers \(OAG\)](#), described apples as one of the hardest crops to grow (interview). The supply chain begins in nurseries in the U.S. and Canada. As with other commodities, inputs may come from an Ontario supplier (who may be buying from the U.S.), but high tech equipment tends to come from farther afield; the research showed that much of the equipment, particularly for innovative marketing or processing projects, is brought from Europe. Packaging can come from a company in Brampton or import, depending on price.

The new high density methods permit close plantings pruned tightly like grapes, allowing more rapid shifts to new varieties to meet consumer preference, reduced labour costs, and high quality. With around 1000 trees per acre, the start-up costs have increased. In 2014, Statistics Canada estimated a total of 15,939 acres of orchard in Ontario, with the majority in the central, central west and eastern regions of southern Ontario. McIntosh and Gala represent over 30% of the acreage. Apples are regularly imported, representing over 50% of apples in Ontario. The varieties are the same as those grown in Ontario orchards: Empires, Galas, and others. (OAG 2015: 12).

Production marketed in the research area can be identified by county or region (note that Toronto is included in York Region by Statistics Canada, because the numbers are deemed to be too small to report separately due to confidentiality issues). Production in the GGH represents 43% of Ontario's apple production, clustered at the edges of the research area:

**Table 17: Apple production (marketed lbs.)**



Source: Econometrics Research Limited et al. (2014a)

Ciceran notes that apples and pears are the only fruit where the market is by variety rather than general name. Cherries are cherries, but a Honeycrisp is not an Ambrosia. The new varieties may be “managed varieties”, that is, a proprietary variety like Ambrosia is managed for price and supply. For instance, Ambrosia was identified in Canada; it is now grown in the U.S. but cannot be imported into Canada. Growers pay fees to use the variety, and pay a portion of the cost of marketing it; they commit to producing a pre-determined volume as well. The OAG partners with the Vineland Research Station in the Niagara area to develop new varieties, as well as other provinces and government departments. The OAG spends a considerable proportion of their budget on research into pest and disease control. According to the OAG’s annual report (2015: 7), Ontario production and marketing in 2014 and 2013 was as follows:

**Table 18: Ontario Apple Production and Market Destination**

| Market           | Amount (millions lbs.) |
|------------------|------------------------|
| 2014             |                        |
| fresh            | 270.7                  |
| orchard juice    | 21 (grunder)           |
| other processing | 36.5                   |
| 2013             |                        |
| fresh            | 293                    |
| orchard juice    | 61.7                   |
| other processing | 44.6                   |

Source: Ontario Apple Growers Annual Report 2015

Statistics Canada shows a trade deficit for Canadian apples (and regional market opportunity), with 23,982 metric tonnes exported, and 200,087 metric tonnes imported. Even accounting for some varieties that are hard to grow in Canada (like Pink Lady), there may be considerable opportunity for import replacement. Consumption in the GGH, based on average consumption data, is about 51.7 lbs./ per capita, totaling almost 453 million pounds for the GGH alone. Production therefore trails consumption by about 283 million pounds, a promising amount for new and expanding apple growers. These numbers are necessarily general; as in other sectors, the commodity may be exported for processing and then imported back for sale, suggesting further opportunities for economic development farther up the supply chain in Ontario.

**Martin's Family Fruit Farm** is an orchard and packing operation in the region of Waterloo. The farm has been in the family since 1820 when the current managers' great grandfather purchased it. A Yugoslavian exchange student persuaded his grandson, Leighton Martin, to try apples, judging that the particular conditions there would be ideal. They began with 100 trees, and now have 700 acres. Leighton still helps run the place, along with sons and several grandchildren.

Martin's is in a sub-sector that has faced tremendous pressure from apples grown from elsewhere, either BC or from beyond Canada where labour costs were lower. Many orchards have folded in the last 10-15 years. Volatile weather made the situation worse; in 2012, almost all the apples were lost through a late frost on the blossoms. In 2015, about 50% of the crop was also lost to frost damage. Martin's was able to remain in the business, and is now seeing a surge in demand based on the interest in local foods. By mid-winter they will have run out of most varieties. They have made shifts and new investments, including changing the way they manage the orchard. The trees are now planted close together, grown on wires, and trimmed tightly; new varieties have been brought in. Over the last ten years the high density planting has helped them survive.

They pack according to orders as they come in, ensuring a better quality product. The packing facility is on the farm, so the apples are stored right off the tree with minimal travel, ensuring less bruising than orchards that must ship to packing facilities. They do also contract with other growers, mostly within a couple of hours of the farm. They work with 16-20 other growers, including some Mennonite growers. The contract growers range from 20-500 acres in size. They have worked with some of them for 30 years.

(Continued next page)



(Case: Martin's Family Fruit Farm continued)

The packing line is complex, allowing for a range of types of packing. The pre-sort line moves the apples with rolling brushes out of the bins past human workers who sort for decay. Then they will be sized for today's market needs; some will be sent back to storage to await demand for that size. At that point, they might enter the line the next time as presorted and go straight to the next step. The apples go through additional cleaning and drying, then waxing. The waxing makes up for the removal of the natural coating that occurs during washing. They are weighed and loaded into polybags or boxes by size.

Their market is almost entirely in Ontario; export markets are used as back up for them, only for products (sizes or varieties) that are not selling locally. Steve Martin told the tour "we see local as all the growth we need for years to come." Although organic apples are hard to do in southwestern Ontario, they use IPM, and avoid pesticides that might be an issue in the EU. They maintain a fairly large on-farm store as well.

Martin's recently built a processing plant for dried apple chips; unlike most apple chips which are deep fried or freeze-dried, these are just plain dehydrated apple slices with no additives. The new value-added product has turned out to be a successful addition to the product offering that has been welcomed by large retailers. The chip line also reduces waste on the farm by providing another potential stream for surplus product. As for the growers they contract with, they have been able to offer them more returns. Steve's father worked with the Mennonite growers to set up their own high density orchards and grow new varieties. Now there are 18 of them participating, mostly with around 10 acres.



Martin's is a grower and packer that aggregates from about thirty-five growers into their storage, packing and processing facility in the Waterloo region. In order to build the supply chain, Martin's has worked with partner growers to invest in high density practices in Ontario.

Martin's has made the calculations that show that orchards as small as ten acres can make a living if storage and packing is available through a facility like Martin's.

Steve Martin of [Martin's Family Fruit Farm](#) noted that before the current strategies were developed, the Ontario apple sector had lagged behind the rest of the world; Europe and Washington State switched to high density fifteen years before Ontario. Processing equipment was also outdated, with a high percentage of manual labour working inefficiently. Labour represents about 65% of the total cost. Automation in processing has meant almost the same number of jobs but triple the production. Human labour is also required for picking and pruning, although the high density planting decreases the cost. Martin estimates that 70-80% of current production is high density; they have been leaders in the move to high density in their own and others' orchards. In addition to the reduction in labour costs, Martin explains that the fruit that grows closer to the trunk of the tree also tastes better.

High density orchard, Ontario; credit: Hannah Renglich



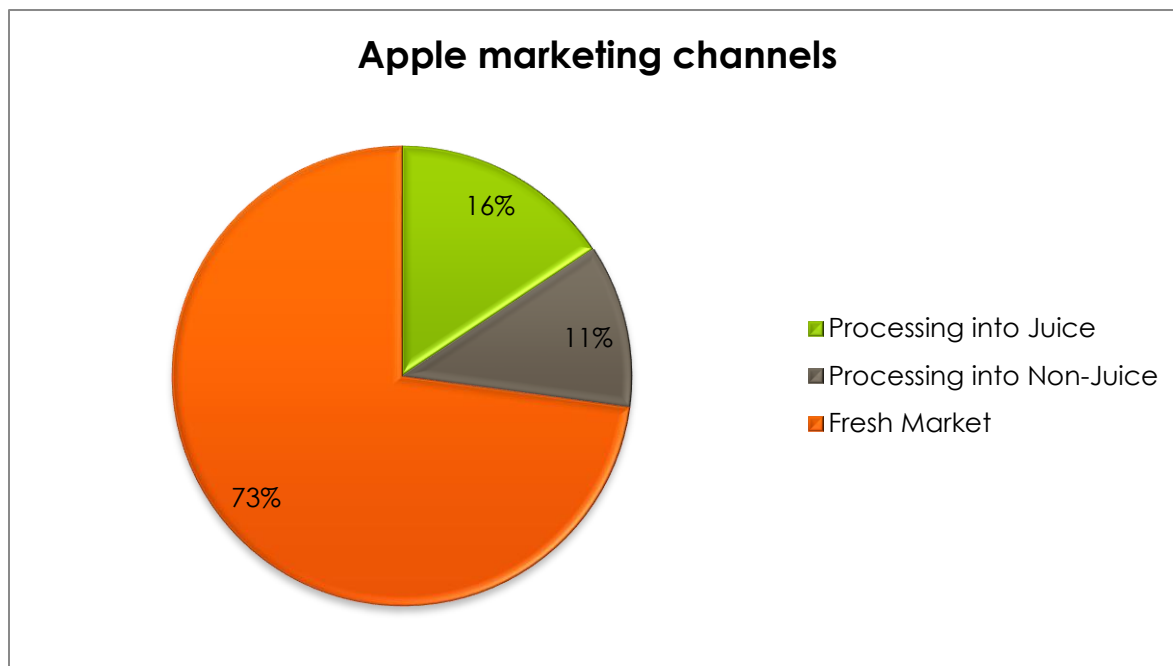
As in other commodity sectors, apple growers are paid on “pack-out”; that is, anything that is sorted out for not meeting the requirements for sale will not be paid to the grower. Growers pay various fees to the packer, including storage and packing fees. Generally, growers receive lump sum payments after the product is sold for whatever price the packer can command from mass market. As in other sectors, the price is pooled so that growers are paid equitably based on an average rather than the final destination of each piece of fruit. This means that if most of one growers' apples happen to be shipped for a flyer ad (therefore, at an unusually low price), the difference is shared out across all growers. The growers may also pre-sort; the goal is to have 99% pack-out of apples that reach the facility.

Some packers pre-sort before storage. Martin reports that in general the sector is moving towards “tree-run” in which everything is picked and stored at once (rather than grading in the field as has been done in the past). The facility packs to order; the packing line is designed to sort size and return apples that have not been ordered back to storage; the line gently moves the apples along to avoid

bruising, with human checkpoints to pull out damaged fruit. Their goal is 80 to 90% graded number 1 on pack out. Any damaged fruit can go to juicers like Golden Town, a company from Quebec with a plant in Thornbury, or to Martin's new apple chip processor. Generally produce that cannot be used for processing is composted or fed to animals.

The provincial Ontario Ministry of Agriculture, Food and Rural Affairs shows the percentage of each marketing channel for apples below:

**Table 19: Apple Marketing Channels**



Source: OMAFRA, Ontario Apple Production, Price and Farm Value by Marketing Channel, 1994-2012, <http://www.omafra.gov.on.ca/english/stats/hort/applebymc.htm>

Martin's supply chain continues from the packing plant to a number of potential markets which vary with each season. As in other sectors, the market is constrained by the consolidated buying power of the big grocery chains, that allows them to dictate varieties, price and packaging. As a balance to this uneven playing field, local apples have become highly sought after; their main market regionally is still mass market through the distribution centres and central warehouse of Loblaws, Costco, and others. As Ciceran commented, apples are the poster child for local food (interview). Bure et al. (2015: 13) provide an important caution to this: "Although consumer surveys consistently indicate that consumers are interested in buying local and organic fruit, their buying behavior in-store does not always reflect this interest." Martin's has experienced the shift in buying power as sales increase at Costco and have slipped at the Canadian grocery retailers. They also sell to food service distributors like Flanagan's, Gordon's and Sysco, and to a few dealers at the Ontario Food Terminal.

Martin's stated preference would be to sell everything regionally; the market opportunity is there, and could be met by local production (interview). Export is generally accessed for surplus product. Certain varieties like Empires have become hard to sell locally but can find a ready export market; changes to the U.S. relations with Mexico may open a market there as well. Martin's has also diversified, reducing the vulnerability to changing markets. They have a bustling farm store that sells many apple varieties in bulk, bushels, and bags. The store also purchases a range of other fruits and vegetables from other growers as well as the Ontario Food Terminal. Martin's recently built an apple chip processing plant as well, a significant financial investment and risk that has paid off in sales as

well as a secondary market for product that cannot be sold as fresh (generally between 10-20% of the crop). The chips are all natural, with spices added but no sugar or preservatives. Since most apples for processing are exported, the new apple chip factory represents a significant innovation. The product has been sold through the farm store as well as the big supermarket chains.

The new “ugly fruit” line at Loblaws has opened an additional market for seconds; however, the seconds have historically gone straight to the juice market (like Wellesley, or Golden Town in Quebec or Thornbury). Apples that cannot be sold as fresh but are better than juice apples and can be sold to a processor for apple sauce or pie filling. Sorting for the “ugly fruit” market requires a new approach. Martin remarked, consistent with other interviewees, that there was some concern that the ugly fruit market would cut into the top grade sales rather than increasing sales overall. As noted above, the “ugly fruit” may be diverted from processing rather than providing a new market for product that would otherwise be composted or used as animal feed.

As in the case of carrots and Holland Marsh crops, Martin’s uses scouts to locate incipient pest problems. They also track temperature and moisture to reduce spraying as much as possible and predict or identify pest outbreaks before they are out of control; even without environmental reasons, farmers recognize the huge cost of spraying and reduce it as much as possible. As in the case of carrots, apple growers struggle to compete with growers in the U.S. that can use products not yet approved in Canada. The practice is a fine art, to reduce as much as possible while not missing the signs of a problem that can eventually ruin a whole crop.

## Environment and the apple sector

The environmental impact in energy for apple production is largely in cultivation and consumer shopping, followed by storage and packaging according to a study in the U.K. (DEFRA 2006: 47). Some innovation around packaging has occurred; the Vineland Growers’ Co-op developed a clamshell package made from recycled drink bottles, although it is currently not listed on the website catalogue (Bure 2015: 2).

The environment is a crucial part of the supply chain; apple growers watch and track the weather patterns and predictions in considerable detail. Uneven weather patterns have a disproportionate effect on apple growing leading to uneven production; late frost wipes out the blossoms before fruit is set. Frost can affect only the lower part of the tree, hugging the ground, or have an impact on one region of Ontario and not the nearby ones. Almost all the apple crop was lost in Ontario in 2012, and about half in 2015. 2010 also saw considerable loss. These crop failures represent an increase in crop disaster, matching the reports in other sectors as well. Growers can diversify with other crops or increase vertical integration and access to product from other regions as Martin’s has done. Since the apple bloom occurs in a fairly narrow range of time, a single late frost can affect the entire industry. Other sectors can explore frost resistant or late varieties, as well as cover, irrigation or mulches to reduce the impact on plants, benefiting from nimble marketing that can respond to changes quickly.

The unstable production in recent years has meant a greater reliance on price supports like Apple Crop insurance (covering production losses) and Agri-Stability (covering margin declines from a recent average) (OAG 2015: 13). The report notes that claims almost equaled the number of growers in every year since 2010. Government funding also contributes to growers who deposit into a risk management plan account.

## Innovation

Cider represents a new processing opportunity that is expanding rapidly (with concomitant growing pains). The sector is in a growth and development stage in which stakeholders across the supply chain are negotiating new ways of interacting. New cider processors have blossomed across southern

Ontario, while varieties and seasonal availability at the supply end may not have developed to match the new market. Cider-makers are looking for familiar base varieties like McIntosh and Ida Reds, but also unusual varieties like golden russets that might not be common in the fresh market (Ciceran interview).

The rise in cider has coincided with a series of poor crop years, which has meant that when cider processors who did not have their own orchards sought for spring apples for a craft beverage market that is seasonal (summer), the local apples were already gone. The Craft Cider Association is working, among other things, to develop contracts with growers for this new market (Ciceran interview). The advent of contracts would be new in Ontario; as with most commodities that are not supply managed, the grower and packer do not know the price ahead of time; growers will know payment levels only when they receive the cheques based on whatever the market offered that year.

## Networks

Key networks have helped to shape and manage the sector, including the Ontario Apple Growers (OAG). The OAG grew out of the Ontario Apple Marketing Commission, which had a standard marketing board structure, with price controls, marketing and research/ development services. They restructured in 2004 to form the current organization with a focus on government relations, promotion, research/ development and grower education. They are funded by a \$25 per acre fee paid by grower members. Membership is mandatory for growers with ten or more acres, and voluntary (non-voting) for smaller orchards (for a flat fee of \$200). They currently have 180 growers with ten or more acres. Rather than relying on a supply managed system (with prices set by a central board), prices are averaged through the packing process, so that growers share the impact equally from price slashing or windfall profits. Apple growers work with each other through the packers and the sectoral association, and with other horticultural groups, as well as with government for the labour program, research and development, and support payments.

## Summary

The apple sector shows an important ability to adapt and respond to changing conditions. Martin's offers an examples of successful partnerships across many climates and many farm scales, as well as diversification to provide a range of markets to respond to different crop years, and value-added options to process fruit that cannot go to the fresh market. The new high density orchard practices combine with value-added innovation to reshape a struggling sector into a robust and resilient source of a food that can be key to a nutritious diet.



## Chickens and Eggs Come First in Ontario

This section reviews the chicken and egg sectors in Ontario and the GGH. Chicken was identified as a key food by the CRFS Task Force due to its contribution to a nutritious diet, as well as its place as a supply managed commodity. Supply management provides price support, supply controls based on demand, border tariffs to restrict imports, and limits to exports. The program provides considerable security for poultry farmers in Canada, increases the stability of the sector and enhances the likelihood of investment in future activities. Chicken also represents a common food that crosses cultural preferences in the GGH diverse demographics. The research found that there is some overlap in the model and sometimes in businesses for chicken and eggs, so they were both included in the assessment.

Chicken producers in the GGH accounted in 2014 for almost 178 million kg of meat, while consumption in the GGH is around 287 million kg. Eggs are also produced in deficit to consumption, by over 535 million dozens of eggs annually in 2014. About 5% of eggs are also imported, according to one interviewee; 3% of chicks are imported for the broilers as well. Overall, 17% of hatching eggs come into Canada from the U.S. without a tariff charge.

In 1963, Hubert Schillings parents, who were farming in Port Perry, bought the farm where his family now runs an egg production operation, grain processing and storage, and grainfields, as well as an on-farm store. Schillings' father immigrated from the Netherlands to Ontario in 1951. In 1975, Schillings finished high school and was asked by his parents to stay on the farm until the relatives from the Netherlands left. Somehow he never left, and has been working on **White Feather Farms** full-time since then.

Initially they had a grading station, as well as layers and cropland. They graded their own and other farms' eggs. They would keep any they needed to meet their sales, and return the others to the producers. His first ten years he spent on the road, making egg deliveries three days a week in Oshawa, Bowmanville, and Whitby.

Once the quota system came in the 1970's, they took that on, and stopped delivering eggs in 1984. They decided to focus on production, recognizing that they would have needed to expand the grading operation to make it pay. They have kept the license however, and now grade for the farm store so they can provide their own eggs. White Feather Farms comprises a more vertically integrated operation than many egg farms, with three barns, 1500 cropped acres, the grading facility, grain elevator, dryer and a feed mixing facility (digitized with specific recipes and mechanical processes). They grow flocks of pullets as well as managing the layers (rather than buying the pullets from another operation). 90% of the pullets go into their own two barns for laying. Large operations tend to grow their own pullets, which gives them control over what goes into the laying barn, and reduces the trucking needed for the operation. However, White Feather Farms is now the only one in Durham Region that does it that way.

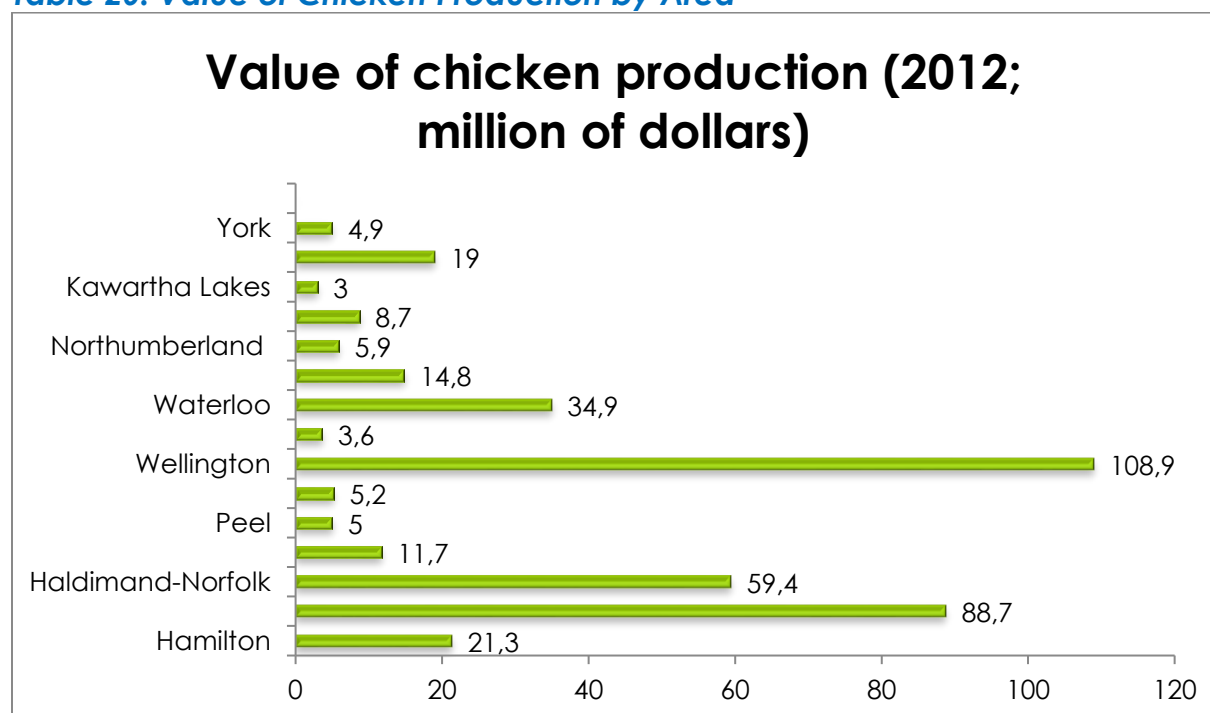
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### Case: White Feather Farms continued

In 2003, they switched the Port Perry farm to broiler production. The feed for both types of production (chicken for eggs or meat) is processed at the Durham location. The vertically integrated operation has grown with changes in the egg and chicken industry. The diversification can bring a measure of resilience and adaptability to pressures and change, but might be hard for a new egg farmer to replicate given the cost of quota, new infrastructure, land and the need to get permission for a new grading station. The lack of widespread grading station has thwarted the development of egg farms in some regions. The success of the Schillings operation suggests that some of the barriers to diversification should be reconsidered.

The poultry industry makes a significant contribution to the GGH economy. Although urban expansion creates pressure on livestock sectors to move to more rural areas, considerable concentration of chicken and egg production remains in the GGH. In total, 51% of Ontario chicken production and 30% of egg production occurs in the GGH. The Chicken Farmers of Ontario (CFO) report that chicken production in 2014 contributed \$819 million to the GDP, and 11,409 FTE jobs (2013: 1). They calculate that the revenue from the sector commands a 2.29 multiplier, circulating more than twice in the local economy (Ibid).

**Table 20: Value of Chicken Production by Area**



Source: Chicken Farmers of Ontario 2013

Inputs to the sector contribute to the multiplier effect. 23% of the value from Ontario's feed mills went to the sector in 2012, representing a total of \$342 million to feed manufacturers. The CFO reports that chicken producers purchased 10% of the 2011/2 soybean crop and 8% of the corn crop

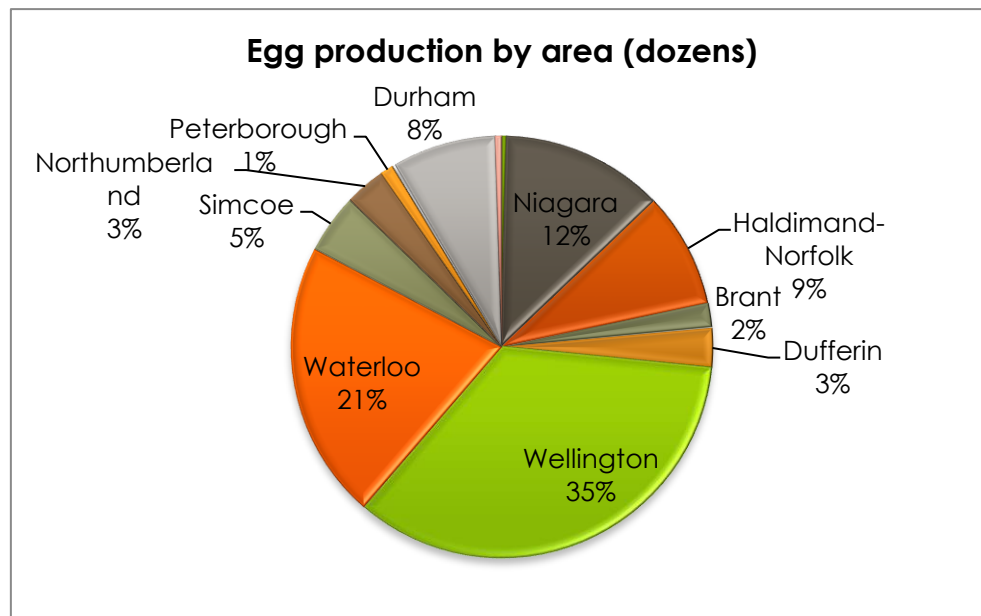


in the same period (2013: 8). 19% of soybeans crushed in Ontario went to Ontario chickens (that is, out-of province soybeans are crushed for the chicken industry as well as a portion of the local crop). The flow of inputs is not always straightforward; one farm produces their own soybeans, but sends it by the truckload to a processor in Hamilton to remove the oil to process it for feed-appropriate soy meal; a truck takes the beans to Hamilton and brings the processed soy meal back.

For organic chicken producers, inputs like organic feed represent a significant portion of the cost of production. Processing and chicks are the other main costs. Organic certification has not been developed for small scale production, which can create barriers as well (as in the case of one producer who has only 1000 units of quota). Smaller farms can face challenges with raising capital as well, as Farm Credit Canada and other conventional lenders may consider the operational revenue too small to fit their lending requirements.

The chicken and egg farmers that were interviewed maintain acres for grain production as well as the barns for chickens. The grain can be sold into the supply chain or used as feed at the farm. Chicken and egg farmers experience greater scrutiny than other sector operators on the basis of environmental impact (processing the manure) and animal welfare. Care around biosecurity ensures that if a disease does appear in a barn, measures can be prompt and effective to contain an outbreak. The problem is serious, as disease containment measures affect not only the immediate operation but others within a certain radius. Biosecurity measures mean that the closed system is not open for the public in the way that a field of carrots might be. A change of clothing, especially boots, will be required to enter and exit any operation. This fact contributes to what one farmer mentioned was a somewhat lonely occupation. Automation has meant that one or two people can run the whole operation, with a team to help clean out between cycles. Biosecurity means that chicken farmers do not readily visit each others' farms, for fear of bringing contaminants from one to the other. Egg production is concentrated in two counties, Wellington and Waterloo. The table below shows the distribution by region in the GGH.

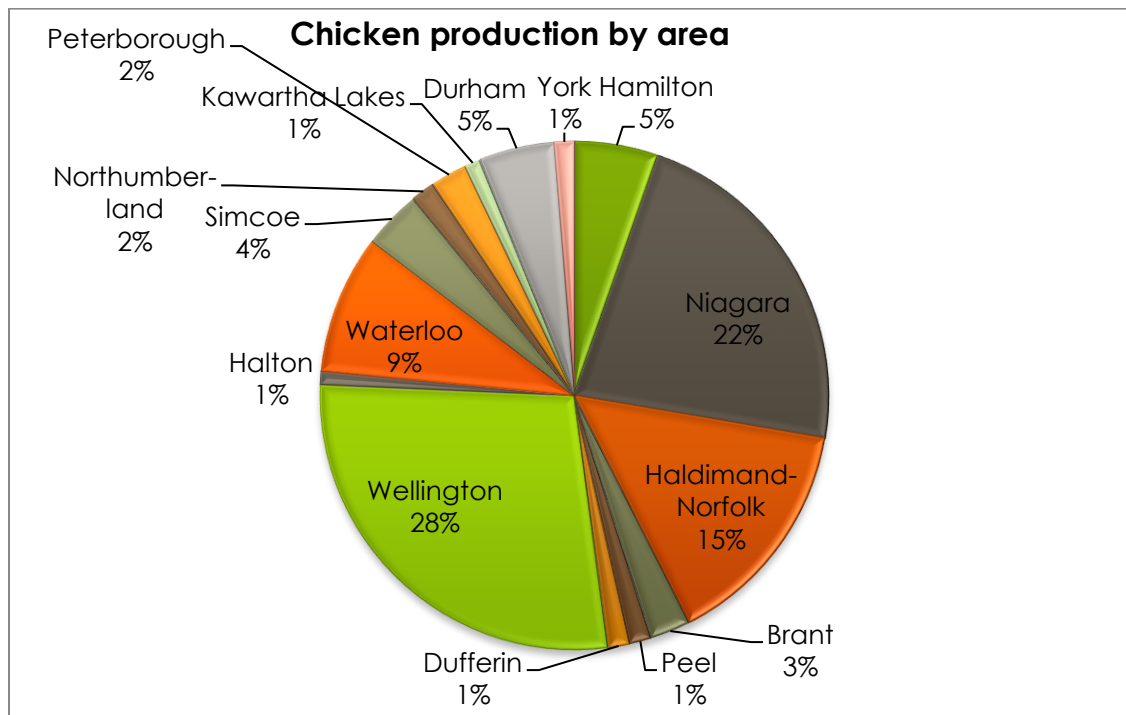
**Table 21: Egg Production by County**



Source:  
Econometrics  
Research Limited  
et al. (2014a)

Similarly, chicken production is focused in these two counties, as well as in Niagara.

**Table 22: Chicken Production by County**



Source: Econometrics Research Limited et al. (2014a)

The concentration depends even more than fruit and vegetable production on the availability of processing infrastructure. Long distance shipment to abattoirs tends to result in injured animals that cannot be processed for food, and increases the stress levels of the transported animals. The availability of processing plants however does not exactly correspond to production levels. Niagara has more processing plants (three) whereas the highest production area in Wellington has only two. Haldimand, third in production, has one, whereas Peel, with 1% of production, has two. The lower numbers with greater production are presumably larger plants, or at least plants that process more over time.

Many factors of course affect the placement of abattoirs, including municipal regulations, density of housing, and history of regional production. Over 200 Toronto sites that process meat at various stages are listed in the GHFFA asset maps. These are not all abattoirs; some are taking portions of carcasses and processing them further for specific markets. Toronto, although no chickens are produced formally within the City, still has abattoirs in the area known as the Stockyards, historically an area on the urban fringe with a concentration of meat processing facilities, now an area of densification and residential development. Although the integration of industry, retail (supermarkets, box stores) and housing is a powerful model, it is not supported by planning trends; it would be difficult to replicate in parts of the city that are not already zoned industrial. Although the area is diverse, it does not meet many of the qualities associated with a livable city as promoted in the new coordinated plan review; the area is not easily accessible to pedestrians, and has little green or community space. However, the industrial zoning has permitted a plethora of new craft breweries (four so far) and one distillery (which uses organic and local ingredients for its gin and other alcohol). There is some irony in the fact that this new development, which may make this area one of the highest rates of craft beer per capita in Toronto, is in and near the Junction area that was alcohol free until 1997.

Consolidation has meant more specialization. As described in the case study, one egg farmer reported that in a few decades, their business had gone from the model of a vertically integrated producer, grader, purchaser and regional distributor to a focus on production and feed; most producers no longer do their own feed either. This Durham area farm still grows their own pullets as well, working in a cycle using three barns (one for chicks, two for laying chickens). For eggs, two main grading stations still exist in the GGH: Burnbrae and Grey Ridge who together operate five plants in Ontario that process 90% of Ontario's eggs.

The cycle from farm to store is rapid; one farmer sends his eggs for grading on Monday and Thursday, and the eggs could be in the grocery store by Friday. Like chicken, most of the eggs are sold provincially but some go to inter-provincial trade. In most cases, eggs sent to the grading station are pooled with other eggs; a farmer cannot send them off to be graded and get the same eggs back to sell. The Durham region egg producer described in the case study has retained the grading license for sales through the farm store.

The cycle from farm to store is rapid; one farmer sends his eggs for grading on Monday and Thursday, and the eggs could be in the grocery store by Friday.

## Supply Management

The sectors are under supply management, beginning in the 1970's for eggs, and the 1960's for chicken. Supply management is designed to match domestic demand with supply, and controls the level of approved export. Nonetheless, a considerable amount of supply managed product is permitted in imports from the U.S.

Schillings reports that there are only 350 egg farms in Ontario with quota, representing about one third of all Canadian egg farms. In Durham region including the Schillings' operation, there are still seven egg farms. Supply management is a national initiative that sector farmers in a given province must agree (by vote) to implement. Chicken and egg producers have quota that determines the volume they can produce. In Ontario the program is supported and managed by the [Chicken Farmers of Ontario](#). One 2013 report (Oved) estimated that for a new egg farm of the average number (about 25,000 laying hens), the cost to start up would be about \$7.5 million just to purchase the hens.

The price for chicken is determined for an eight-week period based on the price of feed (which varies as a commodity based on transnational price fluctuations). The program protects the producers from violent price shifts and competition from other areas that have lower costs of production. Supply management creates stability for a food producing sector that permits long-term planning and infrastructure investment. The arrangement also contributes to stable succession, as the next generation sees the value in entering a stable business (although if the young farmer wants to enter a different sector, they face similar barriers to non-traditional entrants, and the cost of, if necessary, buying the quota from their parents can also be prohibitive).

Quota can be used as an asset base for loan capital, which has allowed supply managed producers to invest in land and other infrastructure where other sector producers struggle to access capital. However, the quota system has created barriers for non-traditional new entrants. The cost of quota, if units are available, is very high. The high price of quota (and the fact that it is rarely sold at all) adds additional start-up costs to the already prohibitive cost of land.

The recently launched [Family Food and Artisanal Chicken Programs](#) have redressed this to some extent, allowing entry under specific circumstances (e.g., for Chinese silky breeds and organic) and regularizing the practice of unregistered chicken and egg production practiced by farmers who use the manure on their fruit and vegetable crops, and sell small amounts through direct sales at farmers'

markets, CSAs and farmgate sales. The program brings these production sites into standard food safety regulation and also permits northern Ontario farmers to re-enter the sector. Loss of infrastructure led northern farmers to sell their quota to large southern Ontario farmers; the program allows northern farmers to rebuild regional chicken and egg production.

### **Chickens in Halton**

On one typical farm in Halton Region, John Opsteen and family raise approximately 350,000 broiler chickens each year, on a rotation of 8-9 weeks to grow, followed by a full clean out of the barn, then another cycle of birds. Within this farm family they have also created partnerships that have eased the succession process. There are two separate farms. Each brother is in a partnership with one parent; over twenty years the brothers have been able to take over the management of the farms, and be supported by the farm without the high capital requirement to buy the valuable land and quota.

Although Opsteen runs an average operation on this farm, with just two barns, two levels each, some producers have as many as 16 barns. The cycle of production for chicken farmers is around two months from bringing in the chicks to processing and barn clean-out. Barns are open for broilers; caged birds are only used in the egg industry. The barns can be automated to control temperature, air circulation and correct levels of feed at different stages of growth; the systems can be integrated through computer control, or manually in older barns. Opsteen owns quota specifying the weight in chicken that he can produce each year (rather than the number of units).

To sell the chickens, Opsteen contracts six months in advance with Maple Lodge; the price is set uniformly for all chicken producers through the Canadian supply management system. The Opsteen family moved their product to Maple Lodge when their former buyer began to require producers to buy the feed from them in order to be allowed to process there. Maple Lodge offers a bonus if the chickens meet their own specifications (higher than required), or if the loss rate on chickens sent to be processed is lower than average. Maple Lodge also owns the hatchery in Niagara where the Opsteens get their chicks.

Hubert Schillings of White Feather Farms reports that they use ten different feed formulas in the course of the cycle from day-old chick to the end of laying; their operation is unusual in growing the laying hens themselves, and operating a broiler business at another location not far away. For broilers (chicken for meat) they use five different feed formulas. The formulas vary the amount of protein, calcium and energy available. For meat birds, all standard farms use open barns with food and water brought in through a piping system that controls feed amounts and is raised and lowered depending on the height of the growing birds. Chicks are brought in from hatcheries; the hatcheries generate another \$140 million in GDP (2012 numbers; CFO 2013: 8). For egg producers, there are only two hatcheries, one in Brighton and one in St. Mary's.

Marketing for broilers is done by the processors. About 60% is carried out by Maple Leaf and Maple Lodge. Another 15% goes to Cargill for MacDonald's. Small processors continue to survive to cover the rest of production. The destination of one producers' chicken may be unknown to producer or to processor, as generally meat is aggregated at the processing level. However, chicken producers can contract with large buyers like Maple Lodge to plan several months in advance. These relationships can be armslength or somewhat integrated. For instance, Maple Leaf has specifications now for feed, and requires producers to buy the feed directly from them. From the processor, the product can go to mass market, food service, and other markets.

Grading stations likewise aggregate and market eggs from numerous producers. Schillings noted that the processors tend to specialize with a few large customers, with one selling to McDonald's and the other going to Tim Horton's (two large fast food corporations). Even though the price is determined through the supply management program. As in the case of vegetable packers, the producer is paid after the product is sold. Generally supply management means that marketing is mostly within or between provinces (Ontario is a net inter-provincial importer of chicken). Chickens can be exported, and one farmer noted as a problem that the U.S. has been processing and sending "spent" hens (that is, hens that have passed their laying stage, after about one year) into Canada.

## Innovation

Recent innovations include the transition to enriched cages, which will provide more space, and opportunities for three key behaviors for the birds: pecking, roosting and nesting. There is significant debate about which bird housing systems are best. Although free run has been popular with consumers, Schillings argues that it results in more residual manure. High levels of dust and ammonia in the air create an unhealthy environment and challenging workplace. The manure in the cage barns is removed regularly and composted to be returned to the fields, leaving the barns clean and the air fairly pure.

Maple Lodge reports savings of \$52,982 annually, as well as 275,000 litres of water daily with their new air chilling system.

The large corporations (processors and restaurant chains) have the ability to make significant changes in their environmental impact, and some have done that; there has been a move to air chilled processing for meat to reduce water use, and other measures.

Maple Leaf reports reductions in energy use, water and a 91% waste diversion rate in 2015 (Faveri, presentation). Maple Lodge reports savings of \$52,982 annually, as well as 275,000 litres of water daily with their new air chilling system. [King Cole Ducks](#), an alternative poultry operation in the GGH that is fully vertically integrated features breeding stock, hatchery, primary and secondary processing and an on-farm store which ensures full traceability for all their duck products. They have integrated various sustainability practices, reducing waste, composting the manure and creating more efficient water management systems. Change for established farmers in many sectors, including livestock, is difficult, since their capital may already have been invested in existing infrastructure.

## Networks

As with other sectors, chicken and egg farmers can participate in networks representing the region, like the Greater Toronto Area Agricultural Action Committee (GTAAAC) and the GHFFA, as well as sector-specific councils and associations. John Opsteen chairs the Halton Region Agricultural Advisory Committee. These positions have given him a chance to represent farmer and sector interests in the development of a regional official plan, as well as the new provincial coordinated review.

Hubert Schillings is the district representative with Chicken Farmers of Ontario (the board that sets production levels under the supply management system), and has been on the code committee developing the regulations and process for transition to enriched cages. Representatives from the Canadian Food Inspection Agency (CFIA), Ag-Canada and the grocery industry also sit on the committee. On the marketing side of things, consolidation has meant that corporations like Maple Lodge have considerable power in the marketplace and policy development, alone or through various sector organizations.

## Change and challenges

Producers, including poultry industry representatives, noted that, despite these networks, they still face a challenge in getting their point across and getting structural response to their demands, although some of that has changed with the coordinated review. Changes in agriculture (such as free run methods) are perceived to be driven by the big supermarkets redefining themselves but not consulting farmers on the best approach to achieve the goals of animal welfare. In other cases, like restrictions on composting manure on-site, there is a sense that environmentally motivated positions (particularly consumers) drive change regardless of science or actual environmental services. Similarly, the increase in hydro costs may help Ontario manage and reduce energy use, but for producers the immediate impact is an increase in one of the main costs of operation for chicken or egg producers.

These instances suggest that having a voice is not enough for stakeholder groups; they need to be embedded in planning for change in such a way that their concerns are addressed as well as voiced. In one case, a chicken producer pointed out that in a place where the urban expansion and the demand for single family dwellings is encroaching on new areas, and natural heritage areas also are given priority, the only land available for conversion by default is farmland. Lack of coordination can mean that a mid-size farm faces piecemeal by-laws and regulations, some designed with urban areas in mind and not applicable to farms (or constituting unnecessary barriers) and other challenging simply due to a lack of harmony across different jurisdictions: municipalities, regions, towns and protected areas like the Greenbelt. Given the size of most viable farm enterprises in southern Ontario, it is likely that farms will have non-contiguous parcels to make up the land they need. These parcels may not all be under the same set of rules and regulations.

The livestock sectors offer a canvas where the stresses and fractures between different stakeholders—rural and urban, environment and working landscape, animal welfare and economic efficiency—seem to become more clear and more divisive; yet it is also a community that may have some of the best keys to resolution and mediation between conflicting interests. The recent consultation and development of code to transition to the enriched cages for egg-layers is one example of the kind of successful collaboration for change that can lead to long-lasting improvements that work for all stakeholders and preserve the food sovereignty of Canada. The Artisanal Chicken Program is an important example of careful consultation that has led to significant and constructive change.



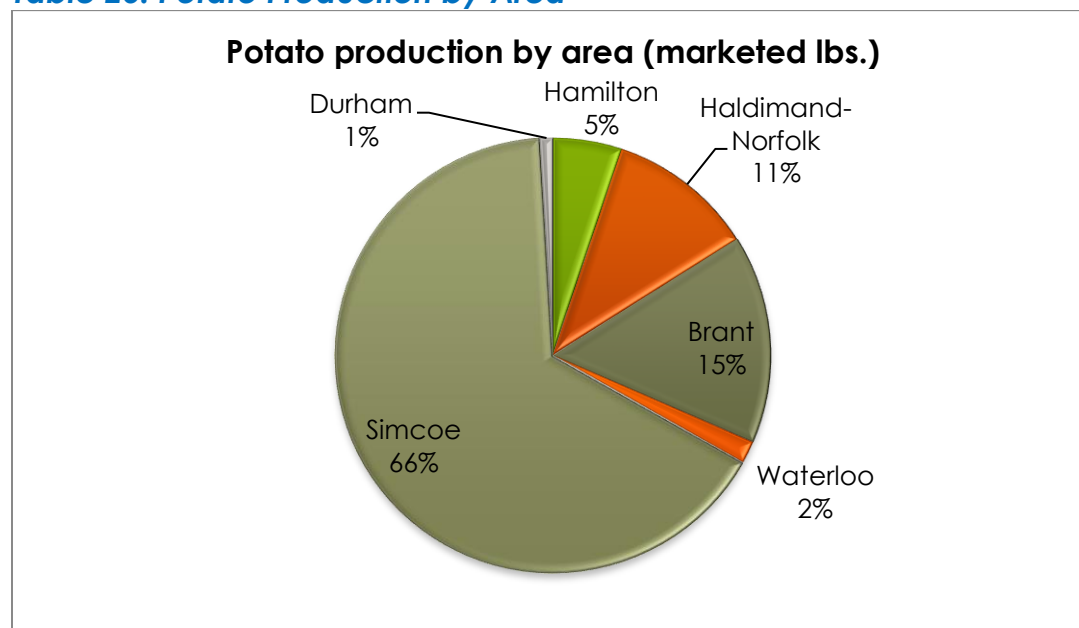
## Potatoes: Problems and Possibilities

The CRFS Task Force also identified potatoes as a key sector to observe for the flow from field to market to waste. Although they are less essential as a contribution to a healthy diet, potatoes are a significant commodity in the study area, and are common in the cuisines of many cultures in the GGH. The following section examines the flow of potatoes from field to plate, showing the flow of a product without supply management protections, and with considerable pressure from a globally constituted supply chain. Potatoes also command less brand and variety awareness than apples, and offer fewer possibilities for premiums based on flavour or origin. However, some growers are working to change that, as the research shows.

Although the Statistics Canada tables do not provide availability for fresh potatoes as a whole, they show that 22.27 kilogrammes of white fresh potatoes were available per person annually in 2015 in Canada. This is in addition to the availability of frozen, chips and other processed product, totaling almost 46 kilogrammes more per Canadian annually in 2015. Although the optimal diet (Desjardins et al. 2010: 132) recommends an increase from 37.4 kg to 48.6 kg in intake, there are clearly more potatoes available than are needed to meet Canadians nutritional needs. Nonetheless, the intake of potatoes in Canada is only partially met through Canadian potatoes, and even less through regionally grown potatoes. In addition, the high level of processing that corresponds to most of this intake (which has been translated into a fresh equivalent for this calculation) suggest that the optimal diet would require a shift in processing from chips and French fries to a lower fat, lower salt and lower sugar option. Increasingly, even potato chips, which traditionally are a snack featuring salt and oil, have added sugar or sugar substitutes as a key ingredient in both flavoured and regular chips.

In the GGH, Simcoe County is by far the largest source of regional production. The availability of a packer/ distributors and excellent soil no doubt contribute to this concentration.

**Table 23: Potato Production by Area**



Source: Econometrics Research Limited et al. (2014a)

Although there are many similarities with carrots, the sector wrestles with significant competition from regions outside the province, and none of the protections achieved by supply management. As in other sectors, supply comes from outside the farm; seed potatoes come mostly from Canada, and some from the U.S. Replanting from on-farm is said to encourage disease, resulting in a separate

industry dedicated to seed potatoes. Research and development is dedicated to identifying new varieties and proprietary varieties that can be sold for value-added attributes of flavour, use or nutrition.

The flow of potatoes is divided into two separate sectors, table potatoes sold as fresh or frozen and chip potatoes sold for processing. Most table potatoes grown in Ontario go to provincial markets, while a large percentage of chip potatoes go to the U.S. processors such as Frito-Lay and regional chippers in Pennsylvania. Growers tend to ship to packers as in the case of carrots; since the market differentiates by variety (unlike carrots), the packers provide packaging intended for specific markets. Half of the production is table potatoes, while the other half is for chips. The chip processors in the GGH include Frito Lay in Cambridge, Super Puff Snack Foods and Old York Potato Chips, both in Toronto. In the case of chip potatoes, growers will have contracts with mass market buyers or processors that includes price (which can be changed at the time of purchase) and other terms and conditions.

Import replacement in Ontario could focus on fresh or chip potatoes; frozen potatoes depend on a variety that is hard to grow, and face fierce competition from big companies like McCain (a company that began in New Brunswick but is now a transnational company).

Trevor Downey manages **Downey Farms**, a large potato growing and packing operation near Shelburne, north of Toronto. The business began in 1924 by his grandfather, who started with just 100 acres. At that time there were at least thirty potato growers in the Shelburne area, all selling direct to their markets. There were sales to Frito, as well as various distribution options as well. Then farms started selling off, changing hands. The Downeys eventually bought the Highland Potato company for distribution; they were already packing at the current operation. Then they moved into selling to Harvey's for their fresh cut fries, then Swiss Chalet, and chain stores. They also sold to Schneider's in Cambridge (west of Toronto) for potato chips, an operation that was eventually sold to Hostess.

Downey's father worked with his brother (Downey's uncle) to manage the business after the grandfather's time, with the brother running the farm and the father running the packaging and marketing. Trevor Downey's brothers have worked on the farm but most of them did not end up staying in the industry. Once Loblaw's (the supermarket corporation) built their distribution centre in Ajax, they began to work closely with them. Swiss Chalet had gone national and regional volume was not enough to supply on that scale, so the corporation switched to suppliers in Prince Edward Island (PEI), Canada's east coast.

Continued next page

### Downey Farms case study continued

The Downey's business was owned for a short period by a hedge fund in Boston that was planning to build the largest limestone quarry in North America, but public outcry convinced them to curtail their plans. They sold the company back to Trevor Downey, and the land to a farmland investment company called Bonnefield. Trevor Downey continued throughout these changes to manage the operation (the Downey brand was never changed even when the owners changed; the potatoes were still sold under the Downey name).

In order to supply the supermarkets with consistent year-round product, they have alliances throughout North America, drawing potatoes from one growing region after another as the harvest time comes. Leamington in the southwest is first, followed by Simcoe, then Walkerton. He works with growers in Quebec, New Brunswick and as far east as PEI. Once the Canadian product finishes around May, he can draw from California and Florida partners. The small potatoes are sorted out and go to the Cohn Farms for processing in the Holland Marsh, or into the new "Naturally Imperfect" line at Loblaw's.

Recent marketing has moved towards specific varieties, characteristics and proprietary brands. They are assessing the "Masquerade" brand, that grows well at 7000 feet in Colorado. They have the packaging and branding for the "Petite Merlot" potato, and others under their "Bistro Fresh" label. They work with the University of Guelph on field trials. Their newest addition to the business is a nearby piece of farmland as they explore re-entering the farming side of agriculture.

The potato sector faces familiar problems with mass market power; they can develop a beautiful package for a specific potato variety but because there are no binding contracts, no guaranteed volume or price, the development of branding is at the grower/ packer's own risk. Even the new "Naturally Imperfect" line at Loblaw's has required packers to invest in new process and infrastructure to sort and store cosmetically imperfect potatoes for the new market, rather than using them for compost or animal feed. Although technology continues to develop, creating greater possible efficiencies in many sectors, the growers or packers still have to amass the capital to buy the new equipment for new markets. As some growers have the technology that reduces their cost, and others cannot afford it, the sector becomes a kind of arms race, with growers as resourceful and expert with machinery as they are with soil.

The packer sorts and packs the potatoes, and can refuse to pay for any that are graded out in that process. They manage the flows of product by selling some as soon as it is harvested, and bringing in storage potatoes once the short-term ones are cleared out (around October). The growers store the potatoes, controlling temperature and humidity, before sending them to the packer for final sorting and packing to send to market. The packers maintain relations with growers in the U.S. to be able to supply product continuously to mass market, where the buyers prefer not to have to change vendors at the end of the season. This preference drives imports as many large producer/ packers will contract or even buy land farther south to maintain year-round availability for the mass market buyers.



Potato packing plant in Ontario

Despite the advance planning needed to grow and pack potatoes, the price is dependent on the whims of the global market; if mass market buyers cannot get the price they want from local growers, they are free to search the world for a better price. As in other sectors, there is a danger of having a load of fresh product rejected at the mass market Distribution Centre dock, after the sale has gone through and the packaging is approved.

Farmers/ packers are required to pay a \$1000 “handling fee” as well as the cost of picking up the load and bringing it back. As several interviewees noted “you are only as good as your last load”. Loads exiting from a packer are inspected at a variety of points to reduce the chance of refusal, culminating at a final inspection station before the load leaves the warehouse. The opportunity to build up long term trust has clearly been eroded by inequitable consolidation of power in the grocery industry. The destination of rejected or delisted potatoes is lost product, whether it is fed to pigs or the bags ripped open and resorted. As with other items, there is no appeal or complaint process, as the mass market buyers are not dependent on the survival of individual suppliers; there are plenty of suppliers, and only a few buyers. Despite the official regulations, growers can find their prices undercut by other growers who are not following the food safety regulations. Even if buyers do not take the cheaper product, they may demand that the certified growers match the lower price. In general, buyers prefer a short list of suppliers to facilitate their work. A grower can be identified as a “preferred vendor” who is most likely to get the order, but the status can be changed at any time, and the grower will need to find other markets. Growers have also turned to new markets; Downey is launching an organic line of potatoes, and has a number of specialty varieties to offer as well.

Although consolidation has made alternatives for marketing scarce, there is some indication of a shift back to allow individual chain stores to buy from producers in their region. This may be in response to the awareness of the consumer demand. Since regional producers may not have the scale to sell to mass market warehouses for multi-store distribution, but may find a ready market with local consumers, eroding the sales at the supermarkets. One group of nine Sobey’s stores, a national food retail chain, formed the Hometown Grocers Co-op to buy regional product that was not available through the central distribution centre (the large warehouses where multi-store chains aggregate and ship out product to their branded stores).

Local food has been a challenge for the landscape of consolidated grocery; products that are aggregated at the Distribution Centre cannot be easily returned for sale in the region where they were produced; “local” can mean “provincial” or even “Canadian” for these stores. The Canadian Food Inspection Agency had until recently defined “local” as within 50 kilometres (clearly unachievable for a full complement of fruits and vegetables). Now the definition has been expanded to include the whole province, as well as fifty kilometres over the border to the next province or territory. At this other extreme, consumers are now expected to believe that lettuce from Thunder Bay, Ontario that is sold in Ottawa, Ontario is “local” (a drive that is almost 1500 kilometres by truck).

The potato industry can have a level of farm traceability in the farm code on the boxes. As distributors that focus on regional food (like 100 km Foods) expand further, this traceability will be essential for sales to a market more interested in branding by origin.

The potato sector in general shows some significant challenges, with a slow erosion of protections that came first from the barriers to long-distance shipping of a heavy product, and also from cross-border protections which have been eroded by free trade agreements. There seems to be some market share depression for the potato as well due to consumer trends (e.g. the anti-carbohydrate diets).

## Networks

Membership in the Ontario Potato Board (OPB) is mandatory if the grower works more than five acres of potatoes. Don Brubacher, General Manager of the Ontario Potato Board, explained that OPB services include negotiation of contracts with high volume chip potato buyers, assistance with government regulations, advocacy to the government on behalf of the sector and research into new varieties (for price premiums or disease resistance).

On the fresh side, the OPB tracks market price and gives suggestions but cannot regulate the price as they have in the past; there are no binding contracts in the case of table/ fresh potatoes. Given the lack of supply management to control volume, the OPB has found that a regulated sector price was not flexible enough to allow producers to respond to competition (by dropping their price). As a seasonal product, the potato sector is also dependent on the Seasonal Agricultural Workers Program for labour. Other producer associations that the OPB works with include the Canadian Potato Council, the Ontario Fruit and Vegetable Growers Association, and the Ontario Agricultural Commodity Corporation which covers non-supply managed commodities.

## Summary

The potato industry is an example of the result of lowering provincial and national border protections and managements of a sector, and permitting consolidation of markets to a narrow field. The innovations in packaging and variety show the possibilities for taking a fairly undifferentiated product, and developing characteristics (branding, taste, or nutrition) that may command a premium and help the industry compete against other growing regions.



## Case Study: Beef

Although not named as top foods, beef and dairy were identified for case studies that can highlight the possibility of innovation. Beef can be a key source of protein, and is a significant part of numerous cultural cuisines. Beef also makes an important contribution to the agricultural economy in the GGH. The following section examines beef through the lens of an alternative operation, [Field Sparrow Farms](#), a relatively small operation that focuses on direct to consumer and some retail sales.

**Field Sparrow Farms** is located in Kawartha Lakes, at the outer north-eastern side of the study area. The farm is a diverse operation with crops, chicken, and cattle. Crops and animals are rotated in a precisely planned schedule to maximize the use of manure to replenish the soil for future crops. The Bakkers integrate their organic crops and livestock to create a full rounded enterprise that provides many of the inputs to its various products. The cows and chickens are both pasture-fed, part of a holistic management approach that began with Allan Savory and others. Their market is largely in Toronto, a couple of hours drive to the south and west. They began in 2004 working on an education-focused farm with the rare Kerry breed, a small hardy type of cattle. From there they got their first cattle for their business from a nearby Mennonite farmer, a certified Angus, and, after a year or so of working on leased land, bought the land they currently farm.



Photo credit: Nathan Payne



### Case: Field Sparrow Farms continued

Field Sparrow is unusual in selling most of their product through farmers' markets; it is processed into frozen packages, and sold at farmers' markets in Toronto and other places. They also offer a Community Supported Agriculture program (CSA), with regular deliveries of subscriber boxes at the farmers' markets where they sell their product. In the 2015/ 2016 season they ran out of product in February, so clearly there is room to expand if not the capacity. As with many organic farmers who sell direct to consumers, there has not been a need for them to pay the fees to certify as organic, though they are leaders in the field. Sarah Bakker is part of an effort to develop a second tier of organic certification that can apply to smaller farms, and to offer a cost-effective path to certification for these farms as well.

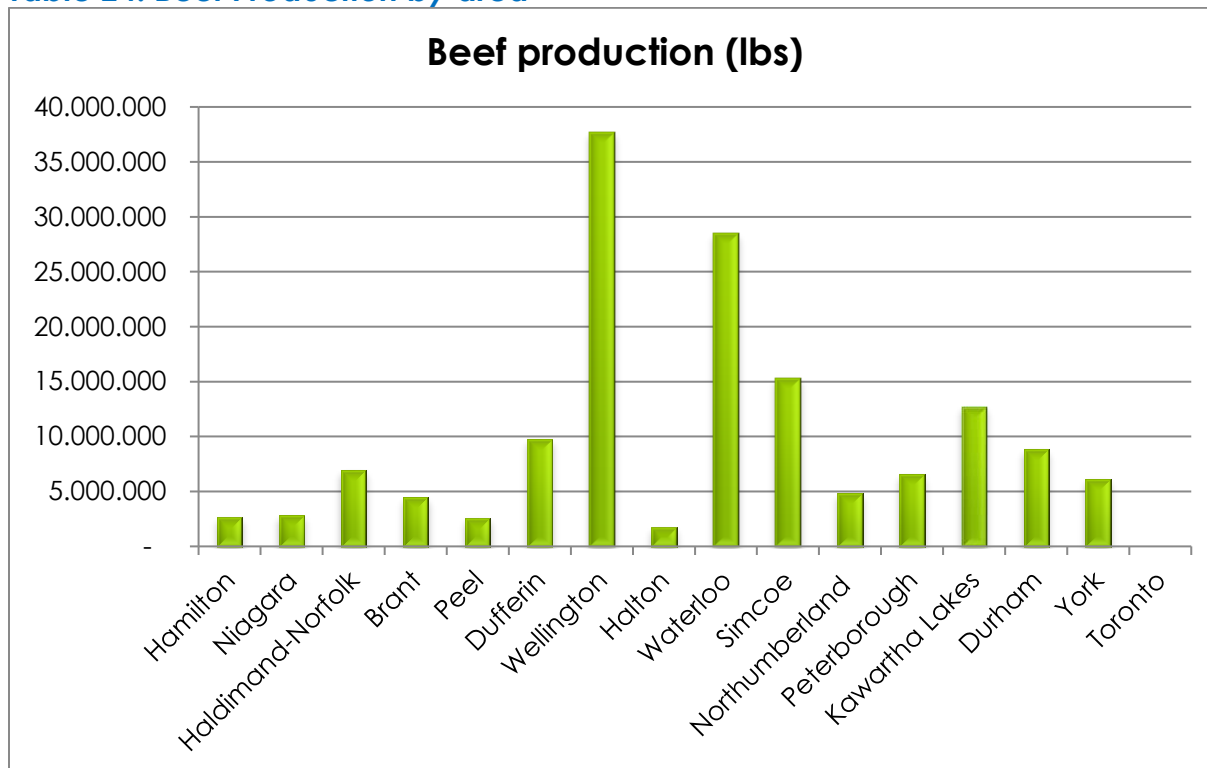
At their size and capital access (very limited for small or mid-scale farms relying on organic methods), the crucial questions revolve around breeding; which cows will be processed for sale, which will be kept for breeding. Unlike larger operations with more surplus money or access to capital, expanding the herd is a five-year process of breeding and hoping for the right mix of males and females. With \$20,000 in capital, they could have the herd they want immediately, but that capital is not available to them through savings or lenders (who tend to assess organic and small-scale commercial production as "high risk"). At this point, the herd is not large enough to address genetics and closed herd breeding, so the focus is on gradual expansion.

In the meantime, they buy "stockers" (younger animals that are then fed to the right weight to be processed); this is unsatisfactory compared to developing their own herd, as it ties their money up in these cows; as Bakker says, you have all that money wandering around in the field.

The Bakkers have addressed their risks by diversifying; they recently invested in one thousand units of chicken quota; they have in the past purchased to sell other kinds of meat from farms with similar values and methods. Although the focus is direct sales, Field Sparrow also sells to a few retail stores, including the Big Carrot in Toronto that has in-house butchering capacity and can buy a large piece of cow or whole chickens rather than pre-cut packages.

Beef production in the research area is concentrated in the more rural regions: Wellington and Waterloo. The urbanization of the GGH can create problems for livestock operations; non-farmers have been known to object to the smells and noises associated with livestock. The growth in residential development will tend to stimulate livestock operations to move farther out from urban centres. Nonetheless, production is considerable in the GGH, and infrastructure remains as well for processing and distribution. The table below shows an amount equivalent to 31% of Ontario's beef production. Ontario is a net importer of beef; consumption in the GGH exceeds production by almost 404 million pounds annually.

**Table 24: Beef Production by area**



Source: Econometrics Research Limited et al. (2014a)

The beef industry is not supply managed; since the cows are generally moved from one farm to another at each stage of their life (calf to stocker to finisher to sale barn or abattoir), it might be challenging to coordinate price across the sector. Origin is also a challenging question; which stage of the cow's itinerant life represents its "origin"? In the beef industry in general, the decision of when to process an animal is dependent on the process of growth and age rather than market rates; a farmer whose cow is ready for slaughter when the prices crash, as happened recently with the mad cow disease scare, has no recourse. Only the bigger lots can manipulate a herd to time the slaughter when prices are more appealing. With the strong U.S. dollar, export of live or slaughtered animals has become a good business decision. The table below shows the flow of cattle in Ontario for 2011.

**Table 25: Beef production and markets (2011)**

| Item for commodity movement           | Amount (head X 1000) |
|---------------------------------------|----------------------|
| Ontario total supply (head X 1000)    | 4386.9               |
| Supply minus imports                  | 4144.3               |
| Ontario total imports (international) | 23.7                 |
| Ontario total exports (international) | 96.2                 |
| Ontario interprovincial imports       | 218.9                |
| Ontario interprovincial exports       | 28.3                 |
|                                       |                      |
| Beginning inventory                   | 3508.1               |
| Ending inventory                      | 3500.2               |

Source: Statistics Canada, Census of Agriculture Table 003-0083

## Networks

The Field Sparrow farmers are involved with a network of actors across the food chain; Sarah Bakker works at the National Farmers Union (Ontario); Henry Bakker has taught sustainable agriculture and holistic management at Sandford Fleming College. Sarah Bakker also has sat on various boards, and was instrumental in the development of the West End Food Co-op, a retail co-op in Toronto that focuses on local and organic products. Field Sparrow has become a leader in carving new paths for beef in production, marketing and policy during a time when the industry struggles with import and out-of-province competition, changing requirements for abattoirs, and depressed prices that have put many producers out of business. For the industry as a whole, in addition to the farm organizations like the OFA, there are sector-specific groups and councils like the [Beef Farmers of Ontario](#), and the [Organic Council of Ontario](#). A network of feeder cattle co-ops, supported through the [Ontario Feeder Cattle Loan Guarantee Program](#), provides loans for cattle farmers to get feeder cattle (calves raised to a certain weight, and then sold to farms and feedlots to be raised to slaughter weight. These cattle are sold in the name of the co-op and the money is applied to the loan.

## Summary

This brief overview gives the general framework of an industry that is important to the Ontario economy, but not under supply management. The lack of protection can leave producers in a dire situation in case of sudden widespread disease or loss of available infrastructure (such as the abattoirs that closed when the regulations changed recently). The Field Sparrow Farms case shows the potential for innovation and the establishment of a successful family business in the sector that relies on the premiums for regional and organically grown product, direct sales to reduce margin loss to middle people, and diversification of product into grain, chicken and cattle.

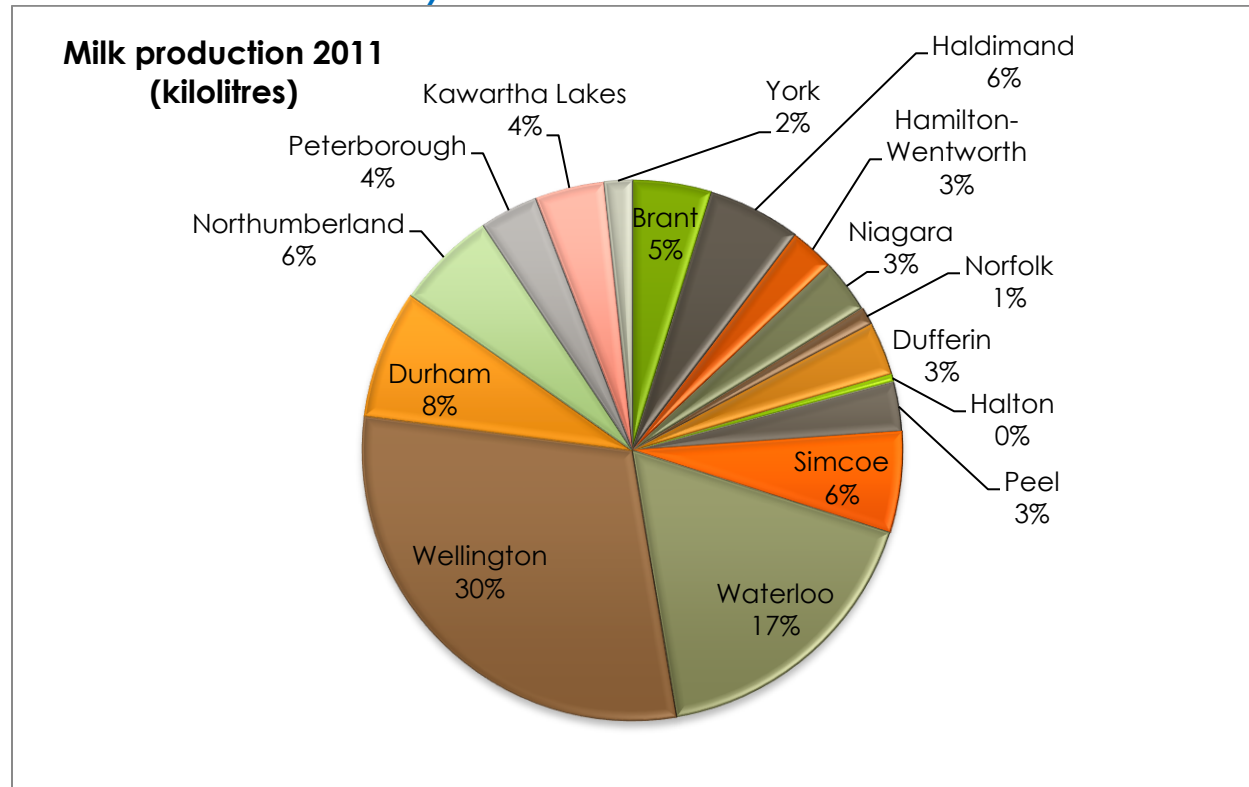
## Case Study: Dairy

Dairy was identified as a key food for case studies highlighting both supply management and the opportunities for innovation. The dairy sector is an example of a supply managed sector that has spawned innovation for various reasons. While innovation in chicken has resulted in alternative programs within the quota system such as the Artisanal Chicken Program, supply management in the case of dairy has meant efforts to work within as well as outside the system to establish alternatives. Innovation has also been constrained by a lack of recognition or approval by the mainstream industry groups and a lack of access to quota.

Milk production in the GGH has represented between 27% and 28% of the provincial production from 2007 to 2015. Wellington and Waterloo account for almost half of that production; as with other livestock sectors, this is consistent with the tendency for animal-based sectors to thrive farther from urban centres or suburbs.

Organic Meadow struggled for years to get the permission to sell their milk as organic through the supply management system, with a slight premium from the Dairy Board (which sets the prices for milk). Other alternative dairy producers have taken a different route. Mapleton's Dairy has built and expanded their own on-farm frozen dairy and yogurt processing plant which now produces for outlets across Canada. Sheldon Creek likewise took the risk of investing in on-farm processing to do low temperature pasteurization and traceability; all the milk from Sheldon Creek comes from their own cows, whereas milk that goes through the supply management system is aggregated and not traceable to source farms. For organic dairy, the line is cleaned and run separately to ensure the organic standard is met, but the organic dairy stream can also draw on farms all over the province and beyond, and is not traceable to single sources. High profile efforts to get permission for sales of raw milk have so far been thwarted, but there are many loyal devotees who continue to hope for access to product with the original characteristics of milk from the cow (including any benefits and risks of unpasteurized product).

**Table 26: Milk Production by Area**



Source: Econometrics Research Limited et al. (2014a)

### Case: Sheldon Creek Dairy

The De Haan family (parents) emigrated from Holland in 1950 and in 1953 they launched the **Sheldon Creek Dairy** farm. The farm began with 300 acres just east of Shelburne and west of the Holland Marsh, and a few cows. Maggie was one of the first cows, and her genes have continued into the present milking herd of 55 cows. The farm is now operated by a multi-generational team with 11 workers and 6 full-time employees. With loans through the Farm Credit Canada, they were able to buy nearby farms and expand to the current 450 acres. They have learned to live with high debt in order to install the processing equipment, and told the tour that they have “too much pride to give it up”.

They built the processing facility right on the farm, processing only their milk. Under supply management, this is the only way besides certified organic to maintain complete traceability, since milk otherwise goes into a common pool. 60% of their milk is processed right on the farm, while 40% goes to the Dairy Farmers of Ontario to enter the common pool.

The De Haans believe in minimal processing to preserve the nutrients as much as possible. Since they control the processing, they are able to pasteurize (as required) at a low enough temperature (73 degrees for 16 seconds) to maintain the valuable enzymes.

### Case Sheldon Creek Dairy continued

Sheldon Creek Dairy does not homogenize, leaving the fat globules to float to the surface with their valuable vitamins. They pack in glass to avoid leaching from the standard carton. They also have a grant to install a heat reclaimer to recover heat from the system.



They report that people who have not been able to digest other milk are able to drink the Sheldon Creek milk. They found a new market in the growing Muslim community as well, since the minimal processing works better for their home cuisines. For sales, they rely on a distributor (although they also have an on farm store). They find that stores are selective, and will only carry some of the products rather than the whole line. Sheldon Creek products include milk (regular and dark chocolate), ice cream, eggnog, and yogurt: plain, flavoured, and Greek-style. They even have a delightfully pink "Strawberry Milk" for the summer season.



## Case: Mapleton's Dairy

**Mapleton's Dairy** is owned and operated by Martin de Groot, Ineke Booy and family. The farm was an early pioneer in organic dairy in Ontario. The farmers emigrated from Holland in 1980. The milk goes to on-farm processing of organic ice cream which is sold across Canada. They have about 70 dairy cows, mostly Holsteins, and a variety of other animals. The farm has 600 acres of certified organic land just north of Waterloo.

They are committed to the health of their animals, the land and the people they feed. Their milking machinery is self-milking; that is, the cows can choose to enter when they are ready. The sophisticated machine can milk the animal, keep track of production by individual cow, and even open the gates to send the cow out because she has been by too recently (they receive some food in the milking lane, so some of them will enter even when they do not need to be milked). Their philosophy has meant that further innovations have been added to the basic requirements of certified organic dairy husbandry. Now the barn has semi-transparent sides, filling the space with diffuse light.



The barn is likewise automated to allow the cows to go outside whenever they want. They could spend all day outside, but they don't. The farmers have found that the bovine preference is for the cool air and westerly light in late afternoon and early evening. The cows also have gentle back-rubbers in the barn that they can activate by standing under them. The barn is softened with many feet of composting manure which must be turned regularly. The heat it gives off, even in winter, is palpable; because it is composting rapidly, there is very little smell. The composted manure from the barn is largely sufficient to be used as fertilizer for the fields.

Mapleton's goes beyond the barn in their environmental commitment; they have a large array of solar panels feeding renewable energy onto the grid and generating income. They use heat from the wastewater in the dairy to heat the on-farm store and office. The farm is an expression of the beauty, elegance and comfort that can come from elements that are also good for planet and people.

These case studies show the possibilities for dairy production that can thrive without endangering the protections of supply management for dairy producers sending their milk through the established channels. These innovations require special approval from the milk marketing board to permit them to keep their milk out of the general pool. The examples indicate entrepreneurs who may have been more willing to take risk with new methods and capital outlay. They have succeeded in establishing successful and thriving businesses.

This first section has presented material in terms of the flow of several key products across the entire GGH food system. The next section examines the city region food systems from a place-based perspective. The GGH is divided into distinct jurisdictions (regional, municipal and others). These can be independent entities within the province, and then within Canada, or they can be embedded as a municipality can be part of a region (e.g., Whitby and Oshawa cities, part of Durham Region). The geographic and demographic nature of each area can differ considerably, although they are generally all within an hour's drive of Toronto or Hamilton, the two largest municipalities in the GGH.

Some areas, such as Peterborough and Kawartha Lakes contain significant rural area, both natural and agricultural. Other areas are sparsely settled but contain mostly farmland, as in the case of the Holland Marsh that straddles King township (York Region) and Bradford West Gwillimbury town (Simcoe County). The jurisdictional boundaries can mean that the assets and permissions that support the agricultural economy, or address food insecurity, can vary, although any regional or municipal plans should not contradict plan at higher tiers. Given the complexity of plans and the variability of interpretation of terms, the result is considerable diversity. In addition, average income, the existence of rules against severance that constrain residential spread in single family homes (sprawl), protected natural features like the Niagara Escarpment (A UNESCO World Biosphere Reserve), and the presence of champions and organizations to move some agendas forward has led to distinct assets and character in each area's food systems.

The next section examines several regions to compare and contrast these assets and character. The regions and municipalities to be assessed are: Halton Region, Peel Region, the City of Hamilton, Niagara Region, York Region, and the City of Toronto. The two perspectives (GGH flow and GGH region) will establish the key issues shared by stakeholders. The project seeks to identify these issues to highlight common ground and places of agreement, and to make recommendations for ways to strengthen the food systems that provide the greatest benefit possible for all stakeholders. Although the issues are often raised in narratives of conflict that pose one stakeholder group's point of view in opposition to another, the research shows many shared values and goals, and opportunities for agreement. These opportunities provide a guide to initiatives that can improve the resilience and sustainability of the food system and can at the same time include everyone in positive change.

## Place-Based Food System Analysis

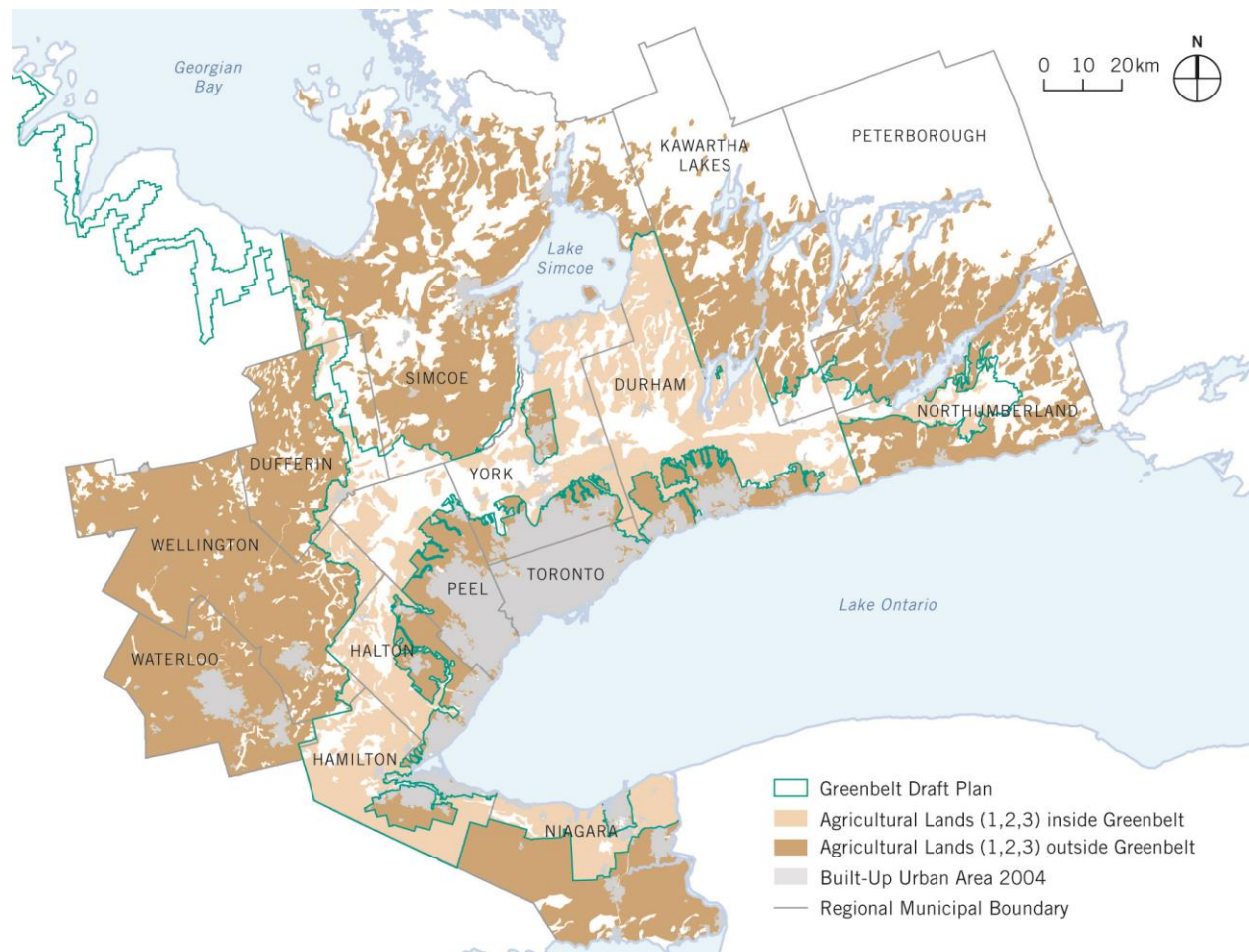
This section examines regional clusters of activity that address food system needs across the value chain. In many cases, where provincial or national systemic change is lacking, regions and municipalities have pioneered solutions that could be replicated more broadly. The research was only able to examine a few of these in the GGH; it is likely that there are many more examples of coordinated local change in GGH regions and municipalities. The place-based analysis focuses on Halton Region, Peel Region, the City of Hamilton, Niagara Region and York Region, returning to the City of Toronto at the end. Each was found to have unique characteristics which impart specific strengths and needs, as well as challenges. The assets and innovations of each cluster is analyzed in terms of complex indicators later in the report.

Halton Region, Peel Region, York and the City of Toronto are all part of the Greater Toronto Area, as is Durham Region. The following map shows their relation as well as the lower tier towns and cities within the regions.:



Source: Creative Commons license

Hamilton and Niagara are farther south on the Greater Golden Horseshoe:



Source: Neptis Foundation 2014; <http://www.neptis.org/publications/neptis-commentary-draft-greenbelt-plan/chapters/what-are-greenbelts-shortcomings>

Together these make up the “inner ring” municipalities in the GGH. The map above shows denser urban areas as well (Toronto, Hamilton, Waterloo). These inner ring areas tend to face concentrated pressures from all uses including agriculture, processing, industrial areas, natural areas, aggregate extraction and housing development.

### Halton Region<sup>13</sup>

Halton Region covers an area of about 370 square miles on the southwest corner of the Greater Toronto Area. Halton Region, like many of the regions of the Greater Golden Horseshoes, straddles the urban-rural fringe, with an urbanized southern area and a rural area in the north, and four municipalities within the region: Oakville, Halton Hills, Milton, and the City of Burlington. The current (2013) estimate of population (from [Halton Region](#)) is 518,311. Average income is relatively high in the urban areas as shown in the following table:

<sup>13</sup> Verbatim quotations in this section are drawn from Nicholas Godfrey (2016) report to FLeDGe. Godfrey was the research assistant and transcriber for the CRFS Toronto project.



**Table 27: Average household income, Halton Region**

| Average income per household (2010) |           |
|-------------------------------------|-----------|
| Halton:                             | \$119,403 |
| Oakville                            | \$142,490 |
| Milton                              | \$106,743 |

Source: Statistics Canada, National Household Survey, 2011; from [Halton Region website](#).

Halton has been able to bridge the urban-rural gap in many ways, promoting the region as a source of food for those who can afford it, and mobilizing charitable giving to purchase from local farmers to address food insecurity. The cluster of activity that is Halton Region spans issues from preserving farming to ensuring everyone gets to eat. It is clear from interviewees that collaborations drive the innovations and solutions in Halton Region, and that these collaborations combine public, non-profit, charitable and private concerns and activities in a way that has created a resilient web of food and agriculture.

Halton Region was particularly notable for innovations that link food security concerns with local farming, in a complex, rich and fairly stable network of organizations. [Halton Food for Thought](#) for instance, launched about twenty years ago, works to develop healthy eating programs in Halton schools, working with about 112 schools as well as numerous other partners. For distribution, they help schools access various distributors as well as local farmers. They are part of the Ontario Student Nutrition Program Network. They have other agency partners through this network, such as [Guelph Food and Friends](#).

The schools who cannot arrange to work with local farmers buy from Gordon's, Flanagan's, and the new [Ontario Student Nutrition Services](#) for dairy (accessing milk from the local dairies). Through [Nutrition for Learning](#) in Waterloo, they can help farmers work through a checklist that allows them to sell to the schools even if they are not GAP certified (a requirement for many schools). Nutrition for Learning has a warehouse and can also aggregate and deliver for local farmers to the Halton area. Halton stakeholders are also discussing the possibility of establishing a food hub in the northern part of the region to aggregate and distribute to various programs and markets. Chris Burr, executive director of Halton Food For Thought noted "To try to get up to Acton - it's at least an hour with no traffic. The geographic size of the region is not as compact as Toronto, and that falls into bulk purchasing and getting things into multiple sites [...] This is where the northern food hub comes in."

Halton Food for Thought has staff that supports the recruitment of volunteers to run the programs. The majority of funding is from the Ministry of Child and Youth Services. They are currently in every high school in Halton, and run programs in many elementary schools now as well. Their network goes beyond the region to connect with agencies across Canada who are working for national food and national school food policies. They also participate with Feeding Halton, and have links to the new [Halton Food Council](#).

Food Councils are unique in their collaborative mandate and capacity; even with limited resources, the Halton Food Council has accomplished many important objectives. The founding of the Council was driven by several agencies, including Halton Food for Thought, Feeding Halton, [Food for Life](#), Oakville Sustainable Food Partnership and Open Doors St. Christopher's. They engaged partners in agriculture from the beginning. Halton has completed a community food assessment and environmental scan, identifying assets and activities in the region. The Council held consultations like the Food Forum in 2009 before forming and creating a mandate for the Council.

Halton Region created an internal Food Systems Networking group with staff from waste, health, planning and purchasing. They also launched an informational “Local Food Day” for staff; they had 250 staff go through in a two hour window of time.

The Regional government is an active part of the collaborations in Halton. They have an Agricultural Community Development Fund to fund agricultural projects that are in line with the official plan. They have a representative on the Halton Food Council; internally, the region created the Food Systems Networking group with staff from waste, health, planning and purchasing. Not only do they share information about the work they are doing, they launched an informational “Local Food Day” for staff; they had 250 staff go through in a two hour window of time. Municipal staff supports the Halton Region Advisory Committee, and has initiated an “Agricultural Liaison” position. By the summer of 2016, they had a preliminary draft of the Rural Agricultural Strategy for the region, matched to the pillars in the Golden Horseshoe Food and Farming Action Plan (part of the GHFFA overall plan).

Halton Region has one set of partners to work on waste (including environmental non-profits), and another set (public and non-profit entities) to work on urban agriculture linked to community housing. Halton Community Housing Corporation is committed to expand their residential agriculture program to have a garden in every housing complex. The region is working on the collaborative development of a food strategy as well, and looking at food insecurity in workplaces. Halton also has a Fresh Food Box program, subsidizing access to fresh, healthy food, and is developing a program to support food skills development for community groups who want to provide food skills training (a train the trainer model).

Other regions have similarly created regional strategies that match the GHFFA Action Plan, cementing those goals, developed in a rich multi-stakeholder process, both across the GGH and within specific regions. The interest in creating parallels to the non-governmental GHFFA plan are significant, given that each governmental tier in Canada must also ensure that their plans and strategies are in line with provincial policy statements and plans.

The relationship between Halton Food for Life and Feeding Halton shows an innovative and significant approach to food security. Food for Life is a food recovery agency, aggregating and distributing donations from local supermarkets, and processors like Maple Leaf and Maple Lodge, and farmers. They have created a co-location hub for similar organizations, including Halton Food for Kids and Feeding Halton. They also work with Eden Food for Change. Food for Life has benefited from generous donations from farmers, facilitated by Feeding Halton. One local farmer provided 35K of sweet corn, and another donated their 300 chicken exemption (which allows for a certain amount of production without a quota requirement). Like other food security organizations, they work with their colleagues to distribute as efficiently as possible. At the time of the interview, the cooler was full of squash from the Waterloo Food Bank.

The interviewees explained that they have trucks on the road at least once a week to share surplus with other regions. Their development of regional links has been developed partly due to their lack of access to the Ontario Food Terminal, where they have been told that donations are designated for Toronto’s Daily Bread and Second Harvest. They focus on perishable donations, creating a flow of food that is healthier than many food banks can achieve.

In addition, the collaboration with Feeding Halton has allowed Halton Food For Life to use funding to purchase from farmers as well as to build relationships for donations. Feeding Halton is managed by Meaghan Richardson, who has roots in the farming community. Her networks have facilitated



partnerships with regional producers. The collaborating organizations have created unique links between thirteen regional farms and the local non-profits that combine donations and purchased food to provide a largely fresh, healthy flow of food to food security agencies.

Although they do not have a solid definition for local yet, the partners do estimate that about 20% of their food comes from local farms, mostly during the growing season. For their product from wholesalers or retailers, the origin can be unknown. Even if the farm origin is noted on the box, the journey, circuitous or not, to their warehouse is not tracked. Feeding Halton has launched new farmers' markets in low income areas, noting that they maintain prices that allow people to access the food and retain a sense of dignity and ownership. The robust combination of procurement, donations, and well-tuned logistics for distribution means they can even work with farmers on production planning for the next season. The stability has also meant that, building on two food security forums, they have created a food security alliance to collaborate on further efforts. They have received funding from the Ontario Trillium Foundation to develop collaborative activities with this group.

Halton is home to other forms of innovation as well. One local farm rents to young farmers to help them get started; a restaurant ("Noble") in Oakville has been established that focuses on local food. A local high school with a food and agriculture focus ("Specialist High School Majors": SHSM) has visited others schools to help them to develop aquaponics and hydroponics programs (developed in partnership with Foodshare in Toronto). Some activities actually benefit from the proximity of farms to urban areas; the Local Food Map helps consumers find their way to farm stores and pick your own operations; one program will drive people to the farmgate as well. Farms have invested in agri-tourism. There is at least one abattoir, facilitating the production of local meat.

Halton has built on a diverse collection of assets to strengthen the agricultural economy, and engage the agricultural assets broadly in the community through promotion, financial support, policy development, collaborations and the creation of unique links to food security solutions. The key to Halton's success in these ventures includes the diversity of assets, the availability of diverse farms that can sell direct to consumers (some research has linked agricultural diversity to dietary health of households: IPES DATE: 2), and the willingness and capacity to collaborate across organization type (from private farms to non-profits and charities, to public departments).

In addition to program innovation like regional procurement for food security programs, Halton has established key alliances, committees, a Food Council and staff position that entrench regional food and agriculture links and create a framework and structures for this work to thrive and expand. The participation of government has provided greater stability than organizations that rely on community efforts can achieve. The cross-sectoral links, as well as structures (like logistics, and the Food Council) that facilitate exchanges within sectors ensure a robustness and stability that has allowed Halton to take leadership to develop food and agriculture solutions.

Stability of labour and funding has come from the regional office as well from dedicated staff, committees and an investment fund established for local agriculture. Availability and success of consultations and information sessions with regional staff, community members (Food Forums on food security and to assess the need for the Food Council) have all contributed to cross-sectoral engagement and network strength among diverse stakeholders.

Support for regional agriculture that has promoted farmgate purchases diversifies markets for farmers in the area, and creates opportunities for diversified cropping, increasing resilience to climate shocks or crisis in one sector (as in the impact of the mad cow scare on the beef industry). The development of promotion and infrastructure for direct sales means that Halton is capitalizing on the proximity of urban markets to the rural production areas. To an unusual extent, Halton Region

has knitted together agricultural, non-profit, charitable and public assets to create solutions across the supply chain.

## Peel Region

Peel Region is also in the Greater Toronto Area, east of Halton Region. The population is larger (almost 1,3 million) with two cities (Brampton and Mississauga) and one town: Caledon. The Region covers 1258 square kilometres (about 485 square miles). Median after tax income is high: \$68, 251, with low income at 12.6% of the population (all numbers from the 2011 census).

The [Mississauga Food Bank](#) has shifted from a food bank approach towards more systemic solutions to hunger. Chris Hatch, the Executive Director, reports that they have just launched an aquaponics facility which will produce forty heads of lettuce weekly, as well as the fish to provide a protein source for distribution. They report considerable dependence on donations; only 11% is purchased food. Unlike the Feeding Halton example, their purchases go to staples like rice and milk, as well as frozen fruit and vegetables. They have not yet figured out a strategy to connect agriculture and their procurement despite their strong logistics system. Their focus is logistics; they have a sophisticated system (Link2Feed) that tries to improve the quality of food through a fully automated system that uses barcode tracking. They distribute through forty-eight agencies.

The Mississauga Food Bank uses the Link2Feed software to keep track of each individual accessing the system, and to provide online ordering for the agencies. Like the other organizations using Link2Feed, they have a rich data source on who is accessing the system. The software was first used in southwestern Ontario (Sarnia, Chatham, Windsor) but is now used in in other Ontario food banks, as well as in organizations in Nova Scotia and Quebec. The Mississauga Food Bank Executive Director has even been flown to Houston to tell an organization there about it. These successful food bank organizations highlight the difference in scale between the 400,000 people they reach each month, and the hundreds of people that a Community Food Centre © reaches. While all interviewees recognize the advantages of engaging people to grow food and feed themselves, they recognize the gap between the current level of hunger (immediate need) and the necessary infrastructure requiring years to develop that would allow food banks to close.

The battle to end food banks has turned acrimonious but the debate seems misdirected; diverting resources from food banks for the long-term development of more systemic change tomorrow or next year leaves many more people today without access to food. Solutions should ensure that the transition away from the food bank model (which no one defends as a satisfactory response to hunger) does not further harm the most vulnerable in society. As many people in the food security sector have pointed out, the solutions rest in the realm of poverty and the economy rather than food access; if people who access food banks had a guaranteed income or at the least access to a credit system like the U.S. SNAP program, a transition to a new relation to food for community members through various community organizations, schools and public health units would be much more feasible. These solutions would also provide additional support for regional agricultural economies,

particularly if matched with programs like the [Double Up Food Bucks](#) programs in the U.S. that double the value of SNAP coupons if they are used at local farmers' markets.

Peel Region like Halton has emphasized links between the regional government and agricultural stakeholders. The Agricultural Advisory Working Group (PAAWG) is ongoing, and coordinated by a paid staff person. The committee's role extends beyond consultative in their authority to dispense funding for projects in agricultural areas, and to support technical studies like the ground-breaking Land Use Evaluation Review and the Edge Planning Report. These two reports anticipate provincial strategies that are now part of the new coordinated plans. The Working Group, established in 1997, is one of only two committees of council. The Peel Region Federation of Agriculture has made significant contributions to policy-making, particularly in land use policies.

[Ecosource](#) in Mississauga (Peel Region) has implemented, animated and maintained an impressive array of six community garden sites and one urban agriculture teaching garden in the area. Partnerships are critical to maintaining the gardens, engaging participants and increasing the overall impact. For instance, one community garden has a partnership with the Ontario Early Years Centre and the Language Instruction for Newcomers to Canada (LINC) classes. The City of Mississauga is a leading partner on Ecosource's community gardens initiative in Mississauga. The City of Mississauga supports the implementation of community gardens and neighbourhood gardens in places like schools. Ecosource's Iceland Teaching garden (based at the Iceland arena) began as a partnership with the University of Toronto Mississauga and [Eden Food for Change](#). Ecosource hosts over 1000 visitors to the Iceland Teaching Garden each year and grows over 1000lbs of produce that is donated to local food banks. Ecosource hopes to grow their urban agriculture program and if all goes well, start a medium scale urban farm that can be used for demonstrations, engagement and as a training centre. Ecosource supports other food related initiatives in a variety of ways, including local food procurement projects with school boards across Ontario, the Advanced Teacher Training program, and program areas such as aquaponics, waste reduction and food systems training.

Ecosource is a relatively large charitable organization, able to reach thousands of people for a range of environmental issues, including food and urban agriculture. Their size and capacity has allowed them to conduct significant longitudinal measurements of impact that includes a survey "to better understand the impacts of community food programs on physical and mental health in Mississauga" ([Ecosource 2015 Annual Report](#): 3). Ecosource identified that their community gardens have positive nutritional impacts on their participants'. Additionally, the community gardens have reduced the cost of fruit and vegetables in gardeners diets. Their collaborations are broad and multi-sector; they are stable enough to be able to make long-term commitments to partners. Partners extend beyond the borders of Peel, including the World Crops project (at various sites around the GGH facilitated through the City of Toronto and the Vineland Research Station) and a local food literacy partnership project with Sustain Ontario's Edible Education Network. Each garden project is built through a community asset-based approach, where community and partner meetings inform the garden design for a garden project that fits that community's needs.

Peel Region has a separate food security task force as well that works with the poverty strategy group. A representative of Ecosource attends the PAAWG meetings; the local Federation of Agriculture and the Ontario milk board (Dairy Farmers of Ontario) also hold positions. Through the staff person, the committee is connected to wider networks such as the GHFFA. Although the voting members of the committee are volunteers, the robust quality of the committee (built into the structure of the regional government, with access to some funding authority and a proven ability to

move things forward) gives this network stability and power that more ad hoc committees cannot command.

Peel is also part of the [Headwaters Communities in Action](#) project, which extends into Dufferin County. In both areas, larger urban farms are part of the strategy. Headwaters was involved with Toronto Region Conservation Authority's [Albion Hills Community Farm](#) on public land. The farm has thirty-five plots, and is designed as a working farm that offers educational opportunities. The plots are managed by a range of individual businesses and non-profit organizations. A key to all these projects is the permission to use public land to create goods for market; in some urban cases, urban agriculture projects have struggled to move out of the charitable model into market gardening due to proscriptions against selling goods produced on public land. The Albion Hills Community Farm model embodies the TRCA's agricultural strategy, which has recognized the importance of nurturing working landscapes within conservation areas. The strategy is also carried out in the [Black Creek Community Farm](#), McVean Farm (an incubator farm managed by FarmStart), the Downsview Park plots that are managed by [Fresh City Farms](#) for training and markets. The strategy has been modeled at the [Living City Campus](#) at Kortright as well.

The Halton organizations focus on emergency food provision but seek to increase the supply of healthy fresh food, and to redirect their purchasing dollars towards regional producers. Other organizations such as Ecosource focus more on food programming that gives people the tools to eat better. These organizations advocate for better income levels so that people can make their own choices to buy good food. The goals reflect the Community Food Centre© model, but are also the focus of other community organizations as well. The result may be a greater emphasis on urban agriculture rather than the logistics of moving food from rural production areas to urban consumers.

Various measures to link consumers to local food options has also begun to diversify markets for local producers in the Region of Peel, including a local food map.

## Niagara Region

Niagara Region is a large, relatively sparsely populated area. The region covers 4802 square kilometres (1854.20 square miles) just over the U.S. border at Buffalo, New York. It contains some of the most southern agricultural land and climate in Canada. The population as of 2011 was 431,346 (Statistics Canada, 2011 census). 2012 Household median income was lower than other regions of Ontario at \$68,410 ([www.niagararegion.ca](http://www.niagararegion.ca)).

Niagara Region presents a novel set of assets and challenges. Although convenient for visitors or new residents coming from denser populations just over the border in the U.S., the area is much more rural than Halton or Peel, with small municipalities but no significant urban density. Until the recent loss of infrastructure for processing, the region was home to stable and multi-generation tender fruit farming that benefited from one of Canada's most southern climates. The loss of processing has meant a shift from tender fruit (such as peaches and cherries) towards the lucrative wine grape production, or other crops. The rural character remains, with the usual pressures from residential sprawl, and transportation demands. The regional office has been able to focus on agricultural issues, completing their own agricultural action plan in 2006, and a local food action plan in 2008. A more recent plan built on stakeholder consultations reflects the larger GHFFA action plan. They have found that hundreds of people will show up for consultations on local agriculture. The Niagara School Board includes agriculture-focused curriculum.

However, although the region can report excellent commitment and action for agriculture, the organizations working on food security seem to face greater challenges with staff stretched thin and organizations scattered over the region. Local groups like the Bridges Community Health Centre and

the Fort Erie Food Security Alliance (now Citizens Against Poverty) have worked to convene food banks and to participate in broader system change. The community health centre provides information to encourage more healthy eating, while other groups have launched community gardens. The network has explored a community food hub for the region, as well as a Community Food Centre®. They have struggled to access the funding for these projects; they were deemed to have insufficient population for a Community Food Centre®. These are approved, supported and facilitated by [the central organization](#) (Community Food Centres Canada) Food security staff and project coordination has been transitory or non-existent; the area has not been able to create stable funding or coordination to achieve some of the shared goals. Significantly, the existing food security networks have not been officially supported by public departments as in other regions.

Various projects have been explored in the region but not yet implemented, from institutional procurement to community kitchens and aggregation in community food hubs. The new Garden City Food Co-op, a member-owned grocery store, hopes to establish their store in downtown St. Catherine's to fill a much needed demand for better food access there. Like many of the non-agricultural projects in the region, they are in the development stage, working hard to access the funding needed to implement their plans. These projects are vulnerable to volunteer burn-out or staff changes that remove champions from an organization. Without a central organization or formal government commitment, these goals will continue to face significant barriers. As the GGH continues to grow in population and urban development, these problems will become more significant; in the long run, the region is likely to develop systemic solutions and formal decision-making and planning structures as it has already done for agriculture.

## City of Hamilton

Hamilton is unique in the GGH in being a single-tier entity that has both rural and urban areas; this means that rather than navigating the complexity of multiple tiers of decision-making nested within each other, all planners and policy-makers take direction directly from the provincial plan through the Hamilton official plan and by-laws. The diversity and centralization has enabled them to create innovative regulations that integrate agriculture into the urban/ rural design.

The streamlined hierarchy has made their decision-making more rapid and directed than other areas. They have been a leader in developing a strong strategy that links urban issues with agricultural needs, spear-heading the development of rules for on-farm processing and marketing, as well as urban agriculture.

According to the 2011 Census, population in Hamilton is 519,950, with median income of \$78,520 per census family in the same year. By 2014, the median income had increased to almost \$85,000. The land area is 1138 square km (439.4 square miles). The city is located on the center inner arm of the horseshoe, on Lake Ontario (west of Toronto).

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The City of Hamilton has completed extensive planning and by-law development focused on food and agriculture, a process that began in 2003. They are a leader in identifying prime agriculture lands through a review by a planner of 13,000 sites in the municipality. They had their rural Official Plan completed in 2012, and developed zoning regulations in line with that. Their regulations permit



agriculture-related buildings (unusual for rural planning), value-added infrastructure, agricultural zoning for on-farm processing, breweries, cideries and wineries. The regulations permit various forms of retail within agricultural zones. In order to distinguish agricultural from industrial, they have restrictions on size, setbacks, minimum lot areas. For instance, restaurants are not permitted on farms. The new rules permit agriculture in any zone except an industrial area. They have also provided important permissions to facilitate the development of farmers' markets.

Their position on marketing and value-added agriculture models some of the new strategies that have been proposed in the draft coordinated plans. The Hamilton regulations permit urban farms like the new [McQuesten Urban Farm](#) at a minimum of 0.4 hectares. Below that size, the produce cannot be sold on-site. McQuesten Urban Farm focuses on food security. Volunteers learn to grow food, reap the benefits of working together, and increase their access to healthy food.

The city council has also now adopted a food strategy, with the support of the Board of Health and input from Economic Development, Community Services, Housing, Public Works and Public Health (the latter was the lead department). They are one of the three leads in the GHFFA project exploring institutional procurement of regional food, in their case for a long term care facility. Mohawk College in the area is also leading the way in exploring institutional procurement from regional producers. The independent authority to make whole region land use planning decisions puts them ahead of planning for other regions and for the province; it can also create some problems for the coordinated review when it is in conflict with the City's existing land use plans.

Although the protection of agricultural economies has been well-developed and coordinated across the area, the focus has been on building a strong agricultural economy; the plans have not moved necessarily towards linking agricultural success with improved food security in the area.

One result of the disconnection between food security solutions and agriculture is that Hamilton food security organizations tend not to engage agriculture; they focus on food donations, excellent distribution and logistics for food banks and donors, innovations in distribution to increase dignity and reduce stigma, and engagement through community gardens and gleaning.

Although stakeholders have considered aggregation through a food hub, the project has not moved forward. The food security projects are quite dependent on volunteers and unstable funding from grants and donors. Nonetheless, they offer important assets in multi-year tracking of clients, professional logistics systems for efficient pickup and delivery, and distribution infrastructure (warehouse, trucks).

A recent shift has come with the designation [Neighbour 2 Neighbour](#) in Hamilton a new community food centre by Community Food Centres© Canada. Most community food organizations waiver between food bank functions and Community Food Centre© functions (including Community Food Centres© themselves, which often provide meals and food without charge). The relationship seems more dynamic than conflictual.

The support for urban agriculture and marketing from urban farms creates some opportunities for the integration of farming and food security; institutional procurement can pave the way for the redirection of public dollars for food security towards the agricultural economy, as Halton has done.

**Hamilton FoodShare** is another organization that has created a sophisticated logistics and tracking system, and also uses Link2Feed to track clients and agencies. Although their supply chain is also largely donor-based, they recognize that their streamlined logistics and distribution system could be applied to regional purchases as well, creating a hybrid model. Their vision is to keep gathering quality food and enhance this with strategic bulk purchases while continuing to maintain the rich longitudinal database. These databases can be mobilized to begin to identify the impact of increasing the flow of nutritious food, and the changing needs of the populations (allergies, diet-related illnesses, etc.). They represent an important and under-utilized asset in the sector. At this point organizations like Hamilton FoodShare have not been able to access the resources that would allow them to fully benefit from the data they are able to collect, and to develop more evidence based research to show the impact of their efforts.

The new McQuesten Farm is an excellent step towards mobilizing the new urban agriculture regulations to meet food security goals. It remains to be seen if the planning in place can go further to create food system solutions that integrate the agricultural economy with procurement for institutions and food security organizations. The interest and will exists among stakeholders; the political will is needed to meet all the opportunities in Hamilton's food system.

In the same region, [Environment Hamilton](#) began to focus on food in 2004, and has initiated or worked on various hybrid solutions like a Good Food Box program, a fruit tree gleaning project and a local farm map. At one point they had funding to purchase at the Ontario Food Terminal and from local farmers, focusing on Ontario product for the box program. Without funding to negotiate suppliers and deliveries, they buy instead from a local wholesaler, and rely on volunteers to keep the program running.

**The independent natural food store chain Goodness Me**, with ten stores mostly in the GGH began as a health promotion and education initiative launched by a family facing diet-related health challenges. The stores are owned and operated still by the founding family (Jacks), and are leaders in innovation in alternative grocery. Their early activities featured a popular radio show on food and health by the founder Janet Jacks in addition to the store itself.

They still incorporate education into the business, with regular workshops and classrooms at the stores. Goodness Me is now a family owned chain which began in Hamilton and now has stores as far north as Barrie. Their focus is health and organic, which means that for many products, especially processed products, the flow to the shelves comes from the U.S.

They have begun to invest in vertical integration to address missing links in the supply chain for their priorities. The group is launching a distribution centre to aggregate for the stores, with a commercial kitchen to reach economies of scale for preparation of their healthy deli offerings. Goodness Me even has online ordering available for distribution to homes. Most recently, they also included a farm in their chain, although the initial 2016 year proved challenging (as it did for many farms).

Goodness Me stores do not prioritize local unless it is organic as specified by their food health guidelines. They are nonetheless a key asset to the development of knowledge and access to ingredients for healthy eating for consumers who can pay. The success of their model can suggest strategies for local procurement and community stores that could provide links to other food system goals like strong agricultural economies, and access for all.

As an example of mid-scale infrastructure, the Goodness Me chain is a precious commodity in the GGH; the mass market chains have purchased many independent chains in the last few decades, leaving only a few: Longo's, Bruno's, Farmboy, Rabba, Sak's, Market Fresh and Highland Farms. Galati Brothers has now closed, and Market Fresh has also closed many stores. These independents are crucial to a healthy food system, diversifying the market options and filling that crucial market need for mid-scale farms between the high volume, high risk sales to mass market, and the low volume, potentially costly sales to direct market.

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## York Region

York Region offers an important counterpoint to the Hamilton context. It covers a large region (1,762.17 square kilometres (680.38 square miles)). It stretches between Lake Simcoe and Toronto, and is part of the Greater Toronto Area. The 2011 census population was 1,032,524, with median income at \$89,100 at the time of the Statistics Canada, 2011 National Household Survey.

York Region encompasses diverse rural and urban areas, with embedded lower tier jurisdictions (nine municipalities) and challenges in linking interests across the whole region. Just north of Toronto, it is the focus of urban sprawl and urban flight, prime farmland (with some of the unique farmlands of Holland Marsh and other highly fertile areas), and protected areas that overlap and in some cases conflict. Speculation continues even in the protected areas, where developers purchase in the hope that the protected areas will be eventually released for development. In the meantime,

the developer leases the land to local farmers, with the usual results in lack of investment or stewardship that come from short-term leases (Miller 2016).

New small-scale farmers to the area seem to face a plethora of challenges, from lack of access to land to regulations that are geared to large-scale farm businesses. The collaborations and strengths noted earlier in the Holland Marsh show the possibilities for coordinated efforts around local food production that can serve as models for the whole region.

The area features a wide variety of farms, from the businesses large enough to sell to mass market or to export, and others focused on direct sales. However, the infrastructure to connect consumers to regional markets is reported to lag behind other areas, perhaps because the economic interests in the area (from export and mass-market oriented agriculture to CSAs) are so diverse. From interviewees across the board, it is clear that solutions and innovations abound in York but are carried forward piecemeal; broader regional planning for food systems is still needed on a multi-year basis with stable staff and resources.

York Region maintains an Agricultural Liaison Committee, with representation from agricultural and food security interests, and staff that support the committee but are not dedicated exclusively to agriculture. They have recently initiated the development of an agri-food strategy. They also support initiatives from the [York Region Food Network](#). They were involved with the York Region Farm Fresh feasibility study completed recently that explored the creation of more direct links between rural production and the nearby urban markets.

The York Region Food Network is an organization with a food security focus, though not a food bank. The Network focuses on systemic solutions like poverty reduction. They work with various other community groups and agencies, and lead the local Student Nutrition Program. Although the alliance represents a structure for cross-sectoral planning, the volunteer and grant dependence reduces its effectiveness. The Network does not have core funding, and programs start, shift, and wane depending on the funding. In addition to the York Region Food Network, the York Region Food System Alliance has been active in the development of a food charter. The working group included municipal and regional representatives, as well as community groups, academics and farmers.

## City of Toronto

The City of Toronto stretches over 641 square kilometres (a little under 250 square miles). The population is over 2.5 million and climbing. Median income is \$75,270 (2014).

Although considerable focus has been given to Toronto in the section on food access (see below), there are several other important sectors and innovations that increase Toronto's sustainability in food. As the recent [Food By Ward](#) mapping shows, Toronto is home to community gardens, community kitchens, urban agriculture projects, and other key food and agriculture assets. With almost 12,000 food service outlets from fast food to gourmet restaurants, street food trucks and school food programs, almost 4,000 food retailers, and over 1000 food processing sites, food is a significant part of the economy, featuring a healthy percentage of the food related jobs and businesses in the GGH (GHFFA agri-food asset mapping project 2016). The City of Toronto estimates that there is one healthy food outlet for every four less healthy food retailers. Although the number of outlets that feature local food has not been measured, the presence in media, on menus and promotional material suggests a significant interest in regional sources for food, especially during the main harvest season.

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A consumer could shop at a farmers' market every day, and spend much of the year eating at different restaurants that were buying local food and beverages. A holistic perspective shows tremendous volunteer, organizational and municipal staff energy focused on people growing food for themselves, eating more healthy food, and helping other people grow, prepare and share food.

At the same time, businesses are situated in the larger economy, and from the point of view of the whole system (including fast food restaurants and mass market), the majority of food businesses continue to purchase depending on price rather than origin. The assets exist in the Toronto area to change this dependency however. Independent stores, corner stores that carry produce, chef and non-chain restaurants benefit from the food terminal, and can easily access significant quantities of local food (regional production) during the growing season, and to a lesser extent year-round. New flows and sources are being created to feed the growing market for world crops as well.

In the mid-scale, the seeds of a robust food system exist in the shorter supply chains from farmer to consumer, and farmer to regional (non-national or transnational) market or distributor. However, from field to plate, mid-scale food systems still face gaps in infrastructure in distribution and processing. The large horticultural farmers in Toronto's nearby fertile marsh farmland state a willingness and even preference to sell locally and regionally, but report a lack of distribution and knowledge of the markets that would make that feasible for them. Alongside and in competition with new and existing regional supply chains, that meet many criteria for the food system that this project envisions, the global supply chains access capital and infrastructure that are currently beyond the resources of regional production.

Toronto and the GGH region are home to innovations and promising changes that are the foundation of a more regionalized system that can reduce the food system vulnerability to climate and global economic shock, and increase the resilience of the city region food systems. One key to building this stronger regional food system may be to link the three flows outlined above: urban agriculture/ community food projects, independent food businesses and mass market. Although urban agriculture and community food projects generally have a food security goal, the development of these projects tends to focus on charitable solutions (rather than increasing low income access to healthy food through affordable market mechanisms). Urban agriculture must be able to enter the marketplace as it does in Hamilton. Regulations should facilitate the integration of urban agriculture social enterprises with hunger reduction, as the Black Farmers Collective seeks to do.

Important businesses have arisen in the Ontario Council of Alternative Businesses (now Working for Change). Many of these social enterprises are food-related businesses that are built and owned by marginalized groups, as in the case of The Raging Spoon, a worker owned catering business run by psychiatric survivors. Larger urban agriculture projects that are run by and for members of a food insecure community, as with the Black Creek Community Farm, can represent significant innovations that bring disparate food flows together for a stronger system overall.

Toronto is also home to important networks that link and strengthen innovations in the mid-scale, and link urban agriculture to wider food systems. This activity should be reinstated in the census of agriculture, which currently does not report on food growing activities in Toronto at all. The Toronto Urban Growers has mapped urban agriculture in the city, and worked closely with the city to expand access to urban land for communities to grow food. They have also enumerated school gardens across the city, activities that could potentially be more integrated into the Student Nutrition Program



activities. Like urban agriculture, school food projects tend to rely on a combination of donations, public money and volunteer efforts; with the right constellation of support and infrastructure, these food production opportunities could also be part of a thriving urban economy.

Other jurisdictions demonstrate the possibilities of urban agriculture on a larger scale; Ecosource in Peel Region looks forward to their urban farm legacy project. Durham Integrated Growers (DIG) is a network of urban growers of different scales, including one plot with five acres for production<sup>14</sup>. Hamilton has the new McQuesten Farm downtown. The potential for urban agriculture to take leadership in feeding the city of Toronto is supported at the city level by the urban agriculture action plan (*growTO*), and the Toronto Food Policy Council. There are already over 100 food growing plots on land owned by the city. MacRae et al (2010) explored the potential for 10% of vegetables required by the city to be grown there. The action plan notes that the development of a successful urban agriculture system requires more than land and committed growers; infrastructure to clean, pack and process the fruits of the city are also essential (*growTO*: 16).

The Toronto Food Policy Council has been a ground-breaking innovation that has inspired other cities and stimulated important progress in developing a sustainable and resilient food system in Toronto and the region. It was launched in 1991, and was instrumental in the city's food charter, passed in 2001. Toronto Food Strategy, a team also in the City of Toronto Public Health that works closely with the TFPC, was launched in 2010, and the Toronto Agriculture Program began in 2013. Representatives also participated in the recent [Milan Urban Food Policy Pact](#) development process. The Pact is currently signed by 142 cities from around the world, including Toronto.

At the mid-scale, the city has begun to link regional production and distribution to community food organizations (that provide meals free of charge) through the FoodReach project incubated by the Toronto Food Strategy team (see food access section below). Initially, the project relied on the food terminal and an aggregator with a global supply chain but the inventory of available foods could turn to more regional production as the project becomes established. Other regions have begun to examine the model as it applies to their own flows of food to food insecure groups.

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<sup>14</sup> See additional information on DIG at this Nourishing Communities report: <http://nourishingontario.ca/blog/2016/12/11/dig-durham-integrated-growers-for-a-sustainable-community/> .



Plots at Fresh City Farms, Downsview Park

## Key Themes from CRFS Toronto Primary Research

The following sections review key themes that arose during the primary and secondary research. These were reviewed and discussed by the Task Force, and were used to guide the interviews. Several themes were identified as critical issues during Phase 1:

- Food flow (local production to local markets)
- Quality of jobs in all food system areas
- Waste flows and end points
- Democratic engagement in food system decisions/ policy
- Education for all food system areas

These were incorporated in various ways into the Phase 2 research. The question of food flows was addressed by the identification of the top food (carrots, apples, chicken, potatoes) and the analysis that traces the pressures, options and barriers that determine the flow of these products in the GGH. The other themes were addressed during the primary research as threads connecting most stakeholders and sectors. As connecting threads in the food webs, these themes offer the possibility of collaborative work towards the vision of a healthy and sustainable food system.

Several additional themes emerged during the primary research and are also addressed in this section. These include land and transportation, prices and costs, bureaucratic processes, and food access issues.

The final set of themes that emerged as crucial and determinant for stakeholder activities included:

1. Waste
2. Land and Transportation
3. Prices and Costs
4. Democratic engagement
5. Education
6. Bureaucratic processes
7. Labour and decent work
8. Food access issues

Waste was identified as a food system area in the original framework and is addressed first. Land, transportation and cost issues were common themes, particularly for agricultural stakeholders, and are addressed next. Democratic engagement and education were also identified in Phase 1 as key issues. For the secondary research, it was found that data for these two topics had not been aggregated, so the issues were addressed as part of the interview questions. However, the results on these two topics remain preliminary, and are well suited to further research.

The final topics, (bureaucratic processes (“red tape”), labour, and food access) raised issues on which stakeholders took strong and sometimes conflicting positions. The analysis reviews these positions to determine grounds for agreement and collaboration. Identification of common ground can allow the system to address some of the challenges without engaging strategies that have negative consequences for some stakeholder groups. In this way, the analysis seeks to mediate between conflicting perspectives to point out shared goals and values that move beyond the conflicts. This approach lays the groundwork for the later sections that examine the keys to successful collaborations for positive change.

A final sub-section looks at the cross-cutting themes of vulnerability and risk as an additional assessment for food system activities and proposed changes. This is included to address climate

change, economic shock, and other stressor effects, as well as to provide additional information for the section on innovation. The research showed that highly innovative actions can succeed that were undertaken at great risk on the part of the business, organization, or individual. The test of risk and vulnerability is an additional way to plan for change: can such inspiring examples be recommended for common action or policy support when they are high risk? Are there systemic ways to reduce the risk if the action promises to make beneficial change across the food system and across stakeholder groups (that is, would policy or other supports reduce the risk)?

Each section is used to identify a small number of complex indicators. These are measurements that go beyond simple counts of food-related examples (number of farms, community gardens, etc.). These proposed measurements identify resilience factors such as longevity, security of tenure, diversity of options and other characteristics that are key to long-lasting sustainability.



Bradford Co-op, Holland Marsh area

## 1. Waste

Waste was found to be a critical issue which is only beginning to emerge as a focus for practice and assessment in the study area. Information and active groups are so far limited but the issue has gained recognition with organizations like the Provision Coalition and the collaborative project on waste at the University of Guelph. Across all food system areas, waste can be a significant area of impact both on the environment and on the finances of businesses and households.

Econometrics Research Limited et al. (2014b) calculates food waste across the supply chain at over 207,000 tonnes in the GGH alone. The results are shown as a percentage of the food system areas below.

**Table 28: Waste by supply chain sub-sector**

| Supply chain sector                  | Percentage waste | Tonnes (GGH) |
|--------------------------------------|------------------|--------------|
| Field                                | 9%               | 18659        |
| Packaging / Processing 18%           | 18%              | 37319        |
| Transportation /Distribution 3%      | 3%               | 6220         |
| Retail Stores 11%                    | 11%              | 22806        |
| Food Service / HRI (Institutions) 8% | 8%               | 16586        |
| Home 51%                             | 51%              | 105737       |

Source: Uzea 2013: 13; Econometrics Research Limited et al. 2014b: extrapolated from tables

According to Uzea (2013: 11), the Recycling Council of Ontario estimates that 30% of the non-hazardous waste stream in landfills is organic, and could have been composted or redirected. Although Toronto's green bin program has rerouted some organic waste away from landfills, there are many other steps that municipalities can take. Vidoni (2011: 1) notes that "other jurisdictions in Canada, the US and the UK have more flexible regulations for the production of compost, and... this has allowed community-scaled programs to play a much more engaged role in the management of municipal waste." Composting in the backyard, probably the easiest and cheapest approach (MacRae 2016: 175), is not generally practiced or supported. A Master Composter program offered by the city has been discontinued (Vidoni 2011: 37).

The total tonnes of waste annually for the Greater Golden Horseshoe food system is estimated to be 207,326.5 tonnes (Econometrics Research Limited et al. 2014b: extrapolated from tables). The value of discarded food in Ontario is estimated at \$12 billion by the Ontario Waste Management Association 2016, and \$27 billion for all of Canada (Uzea 2013: 5). For all of Canada, the value is estimated at \$31 billion as of 2014 (Gooch et al. 2014: 5). As Uzea notes, (2013: 27), few Canadian businesses realize the savings that could be generated from reducing (rather than disposing of or recycling) waste. One Tim Horton's outlet, part of a large Canadian fast food chain specializing in coffee and doughnuts, reports almost ½ million in annual savings from various energy and waste management tactics (Ibid.: 20). Even on a relatively small scale, diverting waste into composting as Foodshare does has been shown to save thousands annually in the city's processing costs (Vidoni 2011: 29). MacRae et al. (2016: 200) reports on another study based on eight case studies that found a seven to one benefit to cost ratio in coordinated efforts across the supply chain.

The research identified both educational and business practices that establish important solutions and innovation around waste and materials use. Recent opportunities reframe materials discarded by industrial processes as new raw materials for future processes. Such efforts can have positive impacts on land and planet, reducing waste as well as the cost of transporting it for disposal, and saving money for the enterprise. However, the redirection of resources from waste to use can incur



additional impacts that must be carefully assessed to determine actual net benefits. So far, efforts tend to be privately driven and not directed by government or centralized agencies. The Provision Coalition has united many food system corporations, including large scale commercial enterprises like Coca Cola, Loblaw's and Maple Leaf in organized efforts to increase sustainability, including better use or processing of waste materials. They provide an online assessment tool for members to assess their waste management practices and to plan for immediate, low cost change, as well as more transformational and systemic changes.

The Ontario Food Terminal has been separating and recycling waste since the 1980's as a money-saving strategy. They recycle the wooden pallets, compost vegetables; they have had an increase in non-vegetable waste due to the increase in plastic packaging, tags and wrapping on vegetables. Even the plastic corner boards that come with some pallets are chipped up and recycled to other products.

Gooch et al. (2010: 8)<sup>15</sup> explore waste across the whole supply chain, and report that a project in the U.K. found that "it is common for businesses to be able to reduce costs by 20% and increase sales by 10% through making improvements in the way their chains are managed." The financial case can inspire companies to initiate waste reduction. A more complex analysis would incorporate the cost to society of environmental degradation to paint a more complete picture of the positive effects of a waste reduction program. Waste has also been found to be a social issue (Parizeau et al. 2015: 216) and can also be addressed through social measures (jobs, but also the redirection of waste materials from toxic landfills to safer uses, such as old tires used as building materials (for instance, in "[earthships](#)").

The [Provision Coalition](#) includes waste as a key area of their sustainability platform. Food production businesses such as Maple Leaf (reducing water use for chicken processing) and farms innovating to manage manure or processing waste have begun to address waste reduction both for environmental and economic reasons. [King Cole Ducks](#), a vertically integrated firm, has implemented "water and waste management, land reforestation, composting, carbon footprint and zero product waste" (King Cole Ducks website: [kingcoleducks.com](http://kingcoleducks.com)).

Indicators should include waste reduction changes that are designed to continue beyond the initial positive media coverage, and that integrate with the whole supply chain smoothly so that workers, consumers and owners all support the program. For instance, the increase in recycling options can reduce attention to more systemic solutions like packaging reduction. As Jevon's Paradox has shown, measures that reduce the negative impact of consumer action can lead to an increase in the action that brings society back to where it started, or creates new problems. For instance, although electric cars seem like an excellent solution to transportation-linked air pollution, an increase in car trips by those may avoid cars when fueled with gasoline might create new urban traffic problems and create undue stress for the electrical system.

A recent redesign of the single cup coffee packets for the Loblaw Companies in Canada has made the packaging reportedly 100% compostable ([President's Choice press release](#)). However, there has been resistance from green bin program managers ([Noakes 2015](#)); each municipality must approve the item for compost disposal. A deeper effect of the innovation is to encourage the purchase of the one-cup machines with all the plastic, waste and energy use in the manufacture and disposal that is associated with them. Many existing one-cup options use a reusable or compostable filter without the need for additional machinery, although the user is required to measure their own coffee grounds.

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<sup>15</sup> See also their updated report at <http://vcm-international.com/wp-content/uploads/2014/12/Food-Waste-in-Canada-27-Billion-Revisited-Dec-10-2014.pdf> .

The measurements of long-term sustainability in waste reduction (materials use and redirection) should include considerations of the whole supply chain and related infrastructure. A compostable or biodegradable pen that is brought from China may cause as many environmental problems as it mitigates. Likewise, a product like fair trade coffee with its social and environmental benefits in production, is subject to significant environmental impact in the transportation and roasting processes.

The supply chain thinking that Gooch et al. (2010) recommend is still novel; indicators that assess the impact across the chain are needed:

- Level of positive and negative impact of programs across the supply chain
- Combined economic and environmental impacts of activities
- Indirect impacts of innovations (upstream and downstream of waste reduction measure)

## 2. Land and transportation

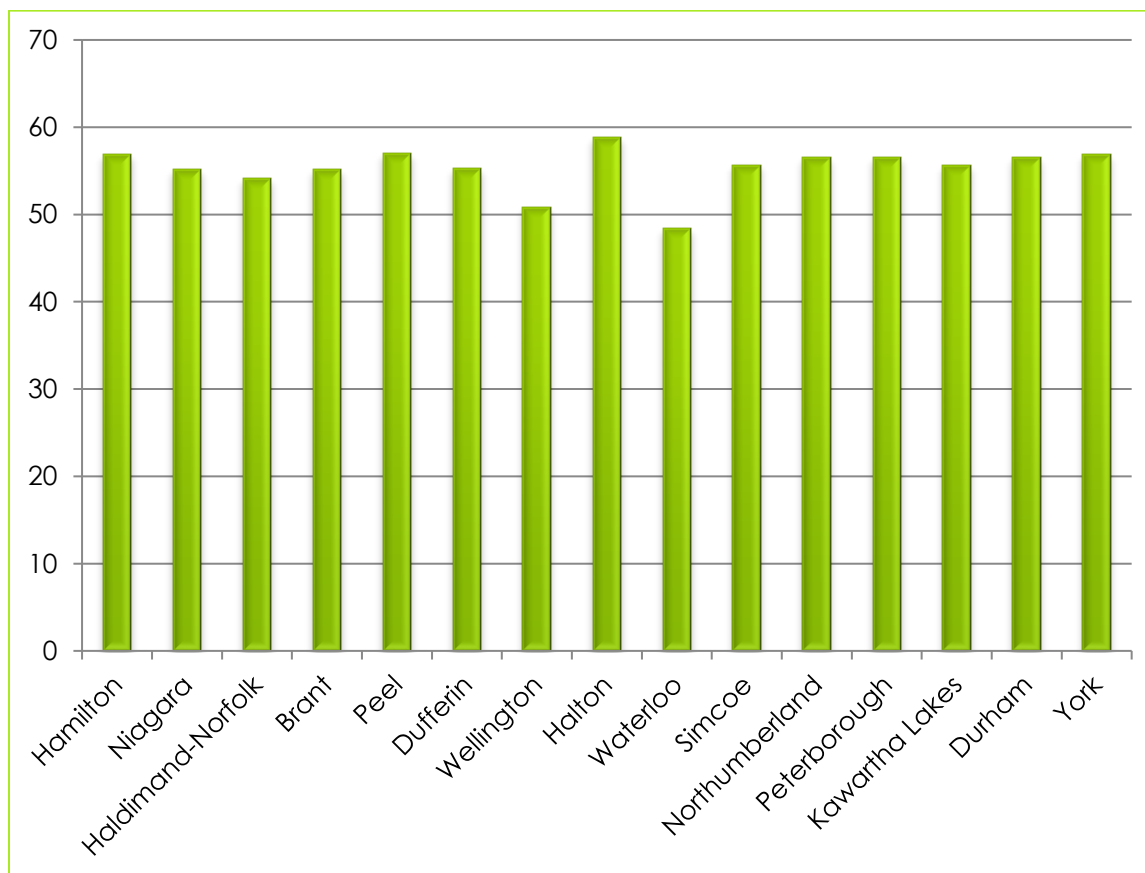
Land use planning for more sustainable food systems is only part of the equation. As the average age of farmers brings established farmers closer to retirement, the next generation faces daunting barriers to access to land. The average age of Golden Horseshoe farm operators is 56.5, higher than the Ontario average of 54.4 (Walton 2014: 2.34, 2011 Census of Agriculture). In the larger GGH, the average farm operator age is 54.6, with the highest average in Halton Region as the table below shows.

Access to land<sup>16</sup> emerged as an issue in the primary research although it was not a main focus of the interviews. The struggle is ongoing between continuing to submit land to the free market, to trade at the highest price regardless of the use, and the desire to retain the land for broader benefits to society. The benefits of retaining food production lands (or water) in the GGH are efficient food production for nearby markets, water management, natural heritage. The conflict is intensified in areas where multiple interests converge, as in a city region (see Miller 2016 for a detailed analysis of the issue). For stakeholders in 2016, the ground-breaking changes to land use planning through the new coordinated review brought the question of land use to the forefront.

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<sup>16</sup> For a 2016 analysis of the issues of land and food, see Miller (2016), *Belongings: The Fight for Land and Food*.

**Table 29 : Farm Operator Age in the Greater Golden Horseshoe, 2011**



Source: Table 004-0239, 2011 Census of Agriculture; note that Toronto is no longer counted in the Census of Agriculture.

New farmers in the GGH struggle to find land that they can afford and where they can depend on secure tenure (through ownership or long-term leases). For some specialty crops, like world crops, the need to be near the urban markets with the right demographics for the crops, as well as to be far enough south to get the right climate for the crops, adds to the barriers. Additional barriers include concerns about acceptance as a newcomer (particularly from a different ethnic group) in a town with well-established community going back generations. Sethuratnam, long-time farm manager at [FarmStart](#) (Cheng 2016: 47), “observes the agricultural sector to be invisible to settlement and career services agencies, which subsequently creates barriers for newcomers to enter the industry. Vice versa, newcomers and their relevant knowledge, skills and experiences are mostly ‘invisible’ to the agricultural industry or severely under-recognized and under-represented.”

The Greater Golden Horseshoe is an area of concentrated demands on land. A few of these uses are reviewed in the following sections.

### **Aggregate extraction**

Resource extraction has become a contested issue in the Greater Golden Horseshoe. Thousands turned out to protest the Melancthon limestone quarry on prime farmland and watershed north of Toronto. It would have been the largest open pit limestone quarry in Canadian history (<http://www.ndact.com/>); protests inspired the foreign owners to sell the land back to farmland investors. However, if the municipality had wanted to halt the operation themselves, they did not

have legislation to prevent it. Aggregate extraction is permitted even in protected countryside such as the Greenbelt.

On the other hand, with the need for housing for the millions of people moving to the area, aggregates are essential for the construction industry, particularly for densification. The Advisory Panel (2015: 111) for the Greenbelt Plan review reports that “The GGH consumes approximately 90 to 100 million tonnes of aggregate per year, more than half of Ontario total consumption... About 35 per cent of this amount is produced within the areas of the four plans.” The transportation corridors that move all the people and goods around also require aggregates. Aggregates are expensive to transport, so extracting them close to where they will be used is much more cost-effective (and reduces emissions from long-distance transport).

Generally, land converted out of food production may be difficult to return to agriculture; urban centres, factories and mining can leave toxic grounds behind (brownfields) that would make agricultural activities difficult. Asphalt is so toxic that disposal is highly regulated; Toronto homeowners that replace their driveways with more eco-friendly materials (or gardens) find themselves challenged to get rid of the resulting chunks of tar. Over the long-term, land uses are not always compatible; short-term decisions for windfall profits may curtail our later options Miller 2016: 26).

### Protected land covenants

North American and European jurisdictions have used zoning regulations to protect or permit certain uses in a range of circumstances. Fishel (in Cole 2012: 260) writes “Zoning extends to local voters (or to those who are decisive in local politics) the right to control other people’s property within a jurisdiction.” The Greater Golden Horseshoe is home to numerous zoning restrictions, including the protected areas of the Greenbelt, Niagara Escarpment, and Oak Ridges Moraine, but also industrial, residential and commercial zoning. Zoning can be provincial or municipal. The Greenbelt and other protected areas overlap. However, the boundaries are not matched with each other, or with the Golden Horseshoe or the larger Greater Golden Horseshoe area. The three protected countryside and rural zones provide overlapping and sometimes contradictory stipulations designed first and foremost to protect environmentally sensitive areas. They also protect existing uses such as agriculture, while allowing certain priority uses such as aggregation extraction or designated development percentages for future population growth.

Deaton and Vyn (2010: 141) write that, “There is no clear consensus in the literature as to the nature of the effects of zoning or conservation easements on the value of agricultural properties.” A Golden Horseshoe Food and Farming Alliance report (2014: 2.37) shows that “While the establishment of the Greenbelt may have slowed the decline in some regions and improved support for farm practices, it did not slow the overall decline of the number of farms or area of farmland in the GH and there continues to be uncertainty within the near urban area about the future of agriculture.”

From the point of view of farmers, who felt the Greenbelt protected area was imposed without their input, the boundaries, which follow environmental protection lines, are arbitrary, cutting farms apart and dividing prime farmland on either side. Some have suggested that the best approach, given the importance of southwestern Ontario’s fertile farmland to the viability of the food system, would be for the whole province to be “greenbelted”, with new designations for housing then ruled as needed (Miller 2016: 141). The JRG Consulting group (2014: 9) notes that: “the Greenbelt accounted for approximately 88% of the area farmed in the Golden Horseshoe, and 90% of the total number of farms in the Golden Horseshoe. In the Greater Golden Horseshoe, the Greenbelt made up 24% of farmland and 31% of farms.” That is, the Greenbelt corresponds closely to agricultural lands in the Golden Horseshoe, but when the focus is expanded to the Greater Golden Horseshoe just beyond the

Greenbelt, the protected area covers much less than half of the farmland and farms. The difference indicates the extent of near-urban unprotected farmland.

The study area continues to lose farms and farmers at about the same rate as the province as a whole. According to Statistics Canada, there were 19,266 farms, and 27,985 farm operators in the Greater Golden Horseshoe (Statistics Canada, 2011, <http://www5.statcan.gc.ca> 2011, Table 004-0237, Census of Agriculture, total number of farms and farm operators).

A more recent report separates the categories into more fine detail, finding 14,477 farmers and farm managers (GHFFA 2016). In 2014, Walton reported over 6000 farms in the Golden Horseshoe alone, with 8985 operators (down from the previous census almost 10%). The recent GHFFA report also indicates that farmer and farm numbers are decreasing (GHFFA 2016: 4).

Although the decline is a cause for concern, the development pressure in these areas suggests that the loss rates might be much higher with the protected areas.

The face of farming has also changed, with livestock and large operations moving to the fringes of the Greenbelt or out of the zone. Rental tenure has increased as would be expected in a rural area near a rapidly expanding urban territory. One study found that decline in fruit farming was lower than the rest of the province, but since the climate is ideal in the area for fruit, that might be predictable regardless of zoning. The economic impact of near-urban agricultural activity may be higher than in other areas. A focus on higher value crops like fruits and vegetables can mean higher revenues as well as more labour intensive work with more jobs. One report (JRG Consulting 2014: 20) for the Friends of the Greenbelt Foundation found that “This suggests that the average Golden Horseshoe farm operation supports more families through employment than farms outside the region. Farming in the region is more labour-intensive; this reflects its much larger proportion of Ontario’s horticulture output.”

Some leapfrog development has occurred over the Greenbelt zone, with prime farmland converted to housing just over the Greenbelt border in the GGH. The GH Food and Farming Alliance (2014: 2.37) reports that “A trend of converting farms to rural estates in the rural areas of the GH drives up land prices in certain areas and increases conflicts.” The housing pressure that has moved outside the Greenbelt has made agricultural even more tenuous in some cases, as developers are beginning to break rental contracts to seize the moment of development. Even the one year leases that farmers are offered now may not guarantee access to their farm. The increase in farmland rentals has both economic and social impacts. Walton (2014: 2.7) notes that “A farmer with a year-to-year rental agreement is not going to plant crops that require capital investment and a number of years to reach full production.” Higby writes, “Recent studies confirm what we all know intuitively—oral and year-to-year leases offer little incentive to use resource-conserving farming practices, while long-term leases that offer relatively secure tenure stimulate good management” (Ruhf 2004: 67).

Although many farmers feared the loss of property value when they were designated in the Greenbelt, it is unclear if that has come to pass. For farmers, who have taken on increasing debt as the amount they receive for their products has remained frozen in real dollars at 1970s levels, they can only clear the debt and retire by selling at the highest rate. This highest bidder close to urban areas is inevitably a housing developer rather than another farmer. A recent study (Deaton 2010) shows that the Greenbelt land values have diminished near the urban centres but not at the fringes, suggesting that developers and farmers expect the fringes to be converted but not the centre. The researchers write, “We find that Ontario’s Greenbelt decreased the value of agricultural property in



close proximity to urban areas: i.e., agricultural property with the greatest likelihood of development in the short term” (Deaton 2010: 142)<sup>17</sup>.

It remains unclear what effect the zoning strategy has on the local agricultural economy. Local municipal officers report promotion of local food and farming and engagement with the sector through Agricultural Advisory Committees and other means. They report however that this attention has more to do with economic development than the requirements of the Greenbelt Plan, though the results are in support of the Greenbelt goals and mandate (Hertel 2015). They support a range of promotional events and activities for the sector, including farmers’ markets, farm directories, local food maps, farm tours for staff and councilors, support for value-added on-farm activities, and specific staff positions.

### Recreational and public lands

Marketing by the [Friends of the Greenbelt Foundation](#) has helped to raise the profile of the Greenbelt’s working landscapes as a source of recreation as well as food. New trails, bike tours and access to natural areas have been promoted throughout the Greenbelt. Fairly large parks snake through the urban area and along the peripheries. Rouge Park at the northeast of the city is now a federal park but is still home to significant multi-generational farming activity. The expropriation and ensuing year-to-year leases led to a reduction in perennials and other long-term investments except on grandfathered parcels with better tenure security. The new multi-year rolling leases provide better tenure security and presumably will lead to more long-term investment by local farmers. Farming and recreation are fairly compatible; easements and other permissions make room for hiking, skiing, or snowmobile trails through private property. Mutual respect is all that is required to maintain the integrated uses.

The Toronto Region Conservation Authority (TRCA) has made significant policy changes to support and stimulate agricultural activities. TRCA land is home to a number of farms that are focused on urban agriculture and community benefit, including the Black Creek Community Farm, and FarmStart’s McVean farm that provided mentoring and incubation for new farmers. The five year rolling leases provide better tenure security, and the compatibility and collaborative opportunities are evident in various food and farming programs offered to the public through these projects. The TRCA policy for Near-Urban Agriculture has the following goal: “To promote the benefits of near-urban agriculture to the planning and development of sustainable communities.” (<https://trca.ca/planning-permits/living-city-policies/>).

Toronto Region Conservation Authority land (TRCA) land is home to a number of farms that are focused on urban agriculture and community benefit, including the Black Creek Community Farm, and FarmStart’s McVean farm that provides mentoring and incubation for new farmers

As the GHFFA reports (2015), the TRCA staff “put a conscientious effort into developing appropriate lease frameworks, helping to develop the sites, establishing the infrastructure for sustainable

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<sup>17</sup> The prices that they cite for Greenbelt land seem unusually low both before and after the zoning occurred (compared to anecdotal reports as well as real estate assessments), perhaps a result of the focus on MPAC registered land transactions.

farming (from greenhouse to laneways, from parking to irrigation), and treating each farm as its own unique partnership.”

All the challenges of access to land are equal or increased for the practice of urban agriculture. Urban agriculture is not recognized as a potential commercial source for food self-sufficiency in most North American cities, and does not benefit from the protections and advocacy that support agriculture. Food growing activities in the cities are not even included in the federal Census of Agriculture. Unless it is expressly supported as in the City of Hamilton and in Toronto by the Toronto Food Policy Council at the City of Toronto, access to urban land with long-term tenure security is rare. In the U.S., community gardens in impoverished cities have restored degraded vacant land to fertility and community enjoyment. Organizations to protect community gardens that have restored abandoned properties have developed to provide legal assistance when the absentee landowner decides to sell the improved property.

Even those from resident farm families may start with rental land with annual or insecure leases. Insecure land tenure means that cash crops are the best use of the farmland; fruits and vegetable crops require more input and perhaps equipment depending on the crop, an investment which is not rational if the farmer does not know if the land will be available next year (Miller 2016: 46). Even in the Greenbelt, a farmer could point out parcels of land that they currently farmed that were owned by speculative developers (interview). These owners undoubtedly are waiting for the right moment to build housing while collecting rent from local farmers and benefiting from the low farm tax rates. Reports have begun to surface of rental agreements that were broken when the prime moment for development was perceived.

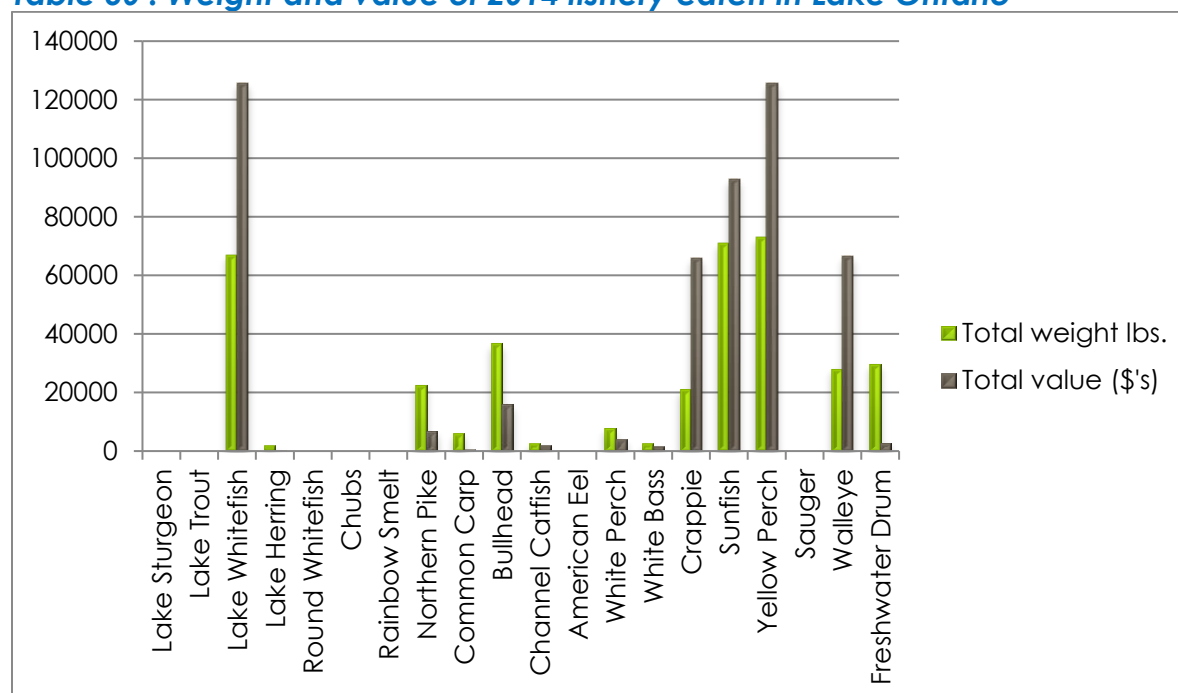
### Transportation corridors

The issue is linked to another frequent topic of discussion: transportation and roads in the GGH. Although food producers need to reach urban markets for efficient chain management, the crowded and increasingly dangerous transportation corridors around the GGH urban areas have become increasingly daunting. Truck-based solutions (as opposed to rail) that simply expand the road system encroach on the farmland even before they are built.

Plans for the Highway 407 expansion have meant that land was expropriated but left fallow as the expansion was anticipated but not implemented for a number of years. Public transit options are inadequate and have even been reduced in recent years, putting more people in cars (or risking their lives in urban cycling). The infrastructure for better rail transit for goods as well as people should be rebuilt with food system planning in mind. The new planning documents from the province and regions commit to agricultural impact assessments for non-agricultural development in the area, a significant step towards integrated planning for multi-use areas. The new coordinated review through the “agricultural system” model also greatly expands the definition of what is needed for a prosperous agricultural economy, beyond the farm operations themselves.

Although it is beyond the scope of this report or research to address the question fully, it is interesting that the focus in planning and in this report is on a crescent-shaped area called the Greater Golden Horseshoe. The two arms of the crescent embrace part of a large, never frozen body of water (Lake Ontario) which has the potential to be a fertile source of food protein and other goods. Despite challenges of toxicity, there is still a fish industry drawing on Lake Ontario’s waters. In general, it is not included in secondary research or discussions of local assets, and is mentioned here in the hopes of inspiring more research and appreciation of this valuable asset. The fisheries harvest for 2014 from all of Lake Ontario is summarized in the table below by weight and value.

**Table 30 : Weight and value of 2014 fishery catch in Lake Ontario**



Source: Ontario Commercial Fisheries' Association, <http://www.ocfa.ca/fisheries-industry/fisheries-statistics>

Indicators suggested by the data for land and roads includes:

- Level of tenure security on near urban or urban land
- Security of contract for food businesses renting or borrowing land
- Level of agricultural impact assessment for new development projects
- Access to tenure security on farmland for new farmers
- Level of supply chain infrastructure investment by agricultural and other communities (including primary and secondary processing, food hubs, perennial crops, etc.)
- Transportation indicators such as time to market compared to net profit and cost of transport mode

### 3. Prices and Costs

The cost and price of food was a frequent theme in interviews. While many people cannot afford to buy food (up to 17.6% in the GGH regions), farmers find they cannot afford to sell it either. Numbers that do not add up was a common theme in producer interviews. In general, farmgate prices remain at 1970's levels in real dollars, while input prices to the farmers, and the price of food to consumers, have all risen steadily (National Farmers Union 2011) .

Despite the reliance on mass market for larger commercial growers, or sales to packers who aggregate for mass market, the relationship does not reap a lot of benefits for the agricultural producers. In one interview, a potato packer who relies on sales to mass markets reported that Wal-Mart has potatoes on sale at a rate well below his cost of production. The remarks continued with the speculation that the farmer who sold the potatoes to this transnational corporation had to be desperate, willing to sell at a loss rather than lose everything. Food often features loss leaders (with the price set below the cost to bring it to the store) in order to entice consumers into the store. Consumers tend to have a few items that they watch the prices on, such as bananas and milk.

Significant discounts on these key items will bring them in to buy their groceries. This practice gives consumers an unrealistic perception of the cost of food.

The same year that the cost of fertilizer went up 40%, a well-known grocery chain sent suppliers a letter announcing that all prices would be dropped by 1.45%, and that any higher input costs (and therefore requests for higher prices) would have to be proven to them  
-- interview

The relationship of producer/ packer to mass market buyer involves only verbal contracts, that can be set aside at any time. The cost of production is delinked from the market price, and the market price is set by the powerful mass market chains. One interviewee reported that, in the same year that the cost of fertilizer went up 40%, a well-known grocery chain had sent suppliers a letter announcing that all prices would be dropped by 1.45%, and that any higher input costs (and therefore requests for higher prices) would have to be proven to them. A producer also reported that packers may increase the price per unit if they are able to get the buyer to agree, but then not pass the increased profit back to the farmer.

The only recourse producers have on unscrupulous packers would be the breakdown of trust in the agricultural community, or access to the buyers themselves. The latter is generally limited to the vendors themselves, not their suppliers. The longer supply chains also increase the opportunities for profit making along the way as well as coverage for marketing and distribution expenses, so that consumers will consider 50 lb. bags of onions at over \$30 in the store while the farmer is getting \$5-8 for the same bag (as one interviewee explained). Interviewees also reported that new buyers may change vendors simply to establish their own system, regardless of whether the existing supplier has crops underway based on expectations of the relationship's continuation.

Mass market has also set private standards above the national standards, meeting their marketing goals to offer better product (particularly cosmetically) than other outlets. The practice further increases waste as product that meets the Canada standards is rejected and may be discarded, or damaged in transport and re-sorted. The approach puts decisions to turn away product subject to the rules of the private grocery chain rather than according to a uniform national standard set by a third party (government, or authorized third party). Refused vendors have few recourses; they can try to sell at the terminal, donate the product, or dump it for compost or animal feed. Organic product that shows up at unusually low prices in local independent stores may have been delivered by a vendor rejected by mass market and selling cheap (most likely through the Ontario Food Terminal) to get rid of it. This can create market distortions for farmers who cannot match the depressed price<sup>18</sup>.

A few short years ago, there were more protections exercised by duties and regulations effecting produce from the U.S. that competed with in season produce in Canada. These protections have mostly been eliminated, greatly increasing the opportunities for American growers to dump surplus product across the border while maintaining their domestic pricing. When this occurs at the height of a harvest for a perishable product like spinach, strawberries or tomatoes (as it often does given the cycle of seasons in the more southern country), the Canadian farmers are forced to sell at the lower rate since they cannot store it.

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<sup>18</sup> Interviews were solicited with a mass market representative who agreed to send written responses to the questions. This input has been included wherever relevant.

Many horticultural products (including apples, carrots, potatoes) now flow as commodities through a global market, with prices at the whim of all trading partners facilitated by NAFTA, the TPP, etc. New trade deals seal this situation by making it difficult to promote local over import, although there may be some solutions that can be included in contracts that are not identified as trade barriers (MacRae 2014).

Even within Canada, producers face competition from other provinces; mass market buyers may readily choose to buy PEI potatoes rather than Ontario ones, whatever prior agreements or off-season discussions were conducted. In a few cases (dairy, chicken), supply management remains to protect farmers; the ability to have some business security, to plan ahead, invest in infrastructure, and entice the next generation back to the farm is clear in the case of these sectors; supply management ensures a more robust agricultural economy in which the difference during interviews and on the farm is stark. Supply management may also be under threat from new trade deals, as it might qualify for suits brought before non-governmental bodies like the World Trade Organization as an unfair restriction of competition.

Farmers are also free to seek better prices and markets through export, but take on a high level of risk in doing so. For instance, one interviewee described the risk in the following terms: if a buyer refuses to pay for a truckload shipped abroad due to bankruptcy or other reasons, U.S. shippers exporting to Canada have a protective trust that ensures they will still get paid. Until recently they extended this to Canadian shippers as well, expecting reciprocation. However, the program was never duplicated in Canada (to protect US shippers) and the US withdrew their protection of Canadian shippers as well. Another interviewee pointed out that if you ship a load all the way to some U.S. market, and the buyer announces they are paying less than originally agreed, there are not a lot of options. Certainly it is not worth bringing it back over the border, so the only alternative is to sell it somewhere quickly (and probably cheaply) in the U.S., or accept the depressed price.

The situation speaks to a highly consolidated demand side that leaves the supply side with few options. The limited number of powerful buyers means disaster if a purchase promise is withdrawn. The power extends beyond decisions about procurement. As Aitken notes (2014: 160), the large retail chains “are politically and socially influential, with corporate lobbying being a major influence on public policy in Canada and the United States. Their economic influence over the value chain also provides them with a degree of social and political influence over the actors in the value chain, which indirectly influences the political system.”

In terms of indicators, the situation suggests the following key measurements:

- Distributed market system allowing a variety of choices for the producer
- Level of consolidation of power (number of buyers facing number of sellers)
- Level of protection for sellers in limited option markets (trade deals, supply management, legal written contracts)
- Level of stability of markets for: long-term planning, infrastructure investment, stable succession



## 4. Democratic engagement

Democratic engagement was identified as a critical issue during the planning stage of the CRFS Toronto project. The topic faced challenges, since the numbers have not been aggregated for the GHH as a whole, although individual agencies and municipal departments may track participants in consultations and planning sessions. Toronto has included voter participation information in their open data set, but levels of engagement beyond voting is not available in the secondary research sources (or accessible within the time-frame of the current research).

Engagement tends to be a measured and direct goal for food security and urban agriculture organizations. Engagement for non-profit and charitable organizations in food, urban agriculture, aquaponics and other food-related activities can improve nutritional levels, reduce social isolation and launch new social enterprises. The projects can create employment and economic activity in low income areas. In other parts of the food systems (production), the goal of engagement is to include producers in a process that will bring their concerns to the table as decisions are made that affect them. Food security organizations can also support policy development and engagement in decision-making, carried forward by staff on behalf of community members.

For food security and non-profit or charitable organizations, the measurement of engagement is partly driven by their internal goals to reach as many members of a community as possible, and more recently by the increasing complexity of measurement requirements coming from funders. A large organization like Ecosource in Mississauga (Peel Region) keeps careful track of their impact in terms of the number of people they have reached. Their 2015 Annual Report shows that over 4700 participants engaged in learning about healthy food and healthy environments, there were 6 community food growing sites in Peel, that over 5200 volunteer hours were contributed to ecological stewardship on public land, 7700 pounds of food was grown by community members in parks, 1900 pounds of fresh food was sent to local food banks, and students in two schools grew over 850 vegetable seedlings.

Many health and food security organizations have a range of creative approaches to engaging and consulting with community members. In a group interview, the Simcoe health unit listed around a dozen different ways that they determine community needs, from population surveys to workshops to outreach in schools. The unstable funding for non-profits and charities (that tends to move from one project to another, funding innovation rather than long-term impact and operations) has meant that longitudinal measurements of engagement are often not available. How many gardeners return to a project year after year? How many were inspired to make lasting changes in dietary habits? How many saw a significant improvement to their long-term health due to an increase in vegetable intake? How many champions of community gardens took their learning and experience into new projects to improve the quality of life in their community?

The unstable funding for non-profits and charities (that tends to move from one project to another, funding innovation rather than long-term impact and operations) has meant that longitudinal measurements of engagement are often not available.

The ability to engage community members (as well as the barriers) may vary from one part of the GGH to another or even within a region. In Niagara, some interviewees reported well-attended consultation sessions while others in the same area reported difficulty moving initiatives forward simply due to low populations and capacity. Regions that have highly urbanized southern regions and rural northern areas face the challenge of addressing issues with such diverse (and geographically separated) stakeholders. In urban areas, organizations often work to address barriers

to participation, which can include language and cultural differences, lack of trust across different demographics, and access challenges (from the cost of public transit to accessibility for people in wheelchairs). Food justice organizations like the [Black Creek Food Justice Action Network](#) in Toronto have begun to consolidate activities around food justice, engaging community members with migrant farmworkers groups, community-driven urban agriculture in low income and marginalized communities, and workers in precarious employment in food.

In the agricultural case, stakeholders reported some shift to governmental committees from advocacy channels like the third-party organizations like the Ontario Federation of Agriculture (OFA), the National Farmers Union (NFU) and the Christian Farmers Federation of Ontario. The recent establishment of municipal and regional agriculture committees has created a new pathway to decision-making that may carry more authority than the external groups. The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) also holds occasional consultations, and conducts surveys.

Consultations or member-based advocacy of various types are also conducted by various sectoral organizations like the Ontario Fruit and Vegetable Growers' Association, the Canadian Horticultural Council or commodity groups like the Ontario Potato Board. Farmers can theoretically invest time in all organizations but the amount of time they can spend in meetings is generally limited. The reduction in numbers of farmers as consolidation and economic crises have occurred has meant that many farmers engage with several boards, committees and networks, while the pool of available participants is dwindling.

The Food Charter and Food Policy Council models, which have been taken up by a number of regions and municipalities in the GGH, show a significant multi-year consultation process during development which may be in itself one of the most important outcomes of an approved food charter or established food policy council. The process tends to be cross-sectoral, engaging food security actors, producers, food entrepreneurs, environmental groups, as well as government representatives.

Overall, the research indicates great creativity around engagement and a range of motivations and goals for engagement. A holistic view of the GGH food systems also shows an inequitable ability among stakeholder groups to reach government or others with sufficient power to make change. For non-governmental organizations such as non-profits and charities that are by definition and intention independent of government, their access to decision-making can vary from the important impacts of the Ontario Federation of Agriculture and the GHFFA to the struggles for funding and political voice among smaller community-based organizations. The agricultural sector has been more directed in developing avenues for input to the authorities. Non-profit and charitable engagement focuses more generally on helping people understand the food system, and to make better personal choices in dietary selection and preparation. This is no doubt partly due to restrictions by law on advocacy by charitable organizations; only a small percentage of their financial outlay can go to policy or system change advocacy.

Yet as the education section will indicate, having the knowledge is not always enough to surmount other barriers to better nutrition (such as poverty). The complex question remains of the long-term impact on community members who engage through urban gardening and community kitchens in food production and preparation; are they more likely to become active in the food system generally and provide input to higher level decisions that affect the food system? [Food Secure Canada](#), [Foodshare in Toronto](#), and other organizations like the regional food policy councils have been instrumental in coordinated efforts to engage Canadians in the national initiatives for food security, national food and school food policies, calls for a guaranteed income, and other initiatives that can affect the root causes of food security (poverty and inequitable food access).

This emerging theme is reflected in some indicators that cannot be easily populated, and others that are straightforward:

- Number of farmers engaged in agricultural decision-making through various channels
- Activity level of agricultural committees (impact on policy, finances, etc.)
- Number of (non-farming) community members engaged in community-level activities and programs around food and agriculture
- Level of impact of key sectoral councils, committees, boards (are their recommendations reflected in policy and regulatory change?)
- Longitudinal engagement of community members in food system issues
- Impact level of community consultations on higher level decisions

## 5. Education

Education was also named as a critical issue by the Task Force. Like “democratic engagement”, it is a somewhat novel assessment lens and has not been aggregated for the GGH as a whole. Non-profits and charitable organizations engage and measure their individual education efforts extensively, as do formal education providers. Educational activities can be grouped by target groups (consumers, workers, producers) and by topic (health, growing food). They may be restricted to a sector as in on-farm trainings in new equipment, or generally available, as in a public workshop on how to cook for a diabetic diet.

A review by the [Toronto Urban Growers](#) found 93 school gardens in Toronto alone.

It is likely that the number of educational opportunities are increasing; a review by the [Toronto Urban Growers](#) found 93 school gardens in Toronto alone. The Food by Ward study identified 116 community kitchens. These host a range of programs from healthy eating to cooking from harvest to newcomer groups gathering over a meal of dishes from home (see also Miller 2013). Other projects may have been motivated by other priorities but include some educational aspects. Most urban agriculture projects focus on the basic activities of growing but may also hold gatherings to cook a communal meal from the harvest, or workshops for the gardeners.

### Sectoral training

The research found that education can be internal or external to a sector. Large farmers may provide considerable (internal) training for workers and others. A sector specific training centre may provide training without the concern of losing trained workers to other employers; for instance, the [Hospitality Workers Training Centre](#) provides training to any worker in the sector through a partnership between the hospitality workers union and major hotels in Toronto (Zizys 2015: 21). Zizys found three programs in Toronto linked to employment that provided training in various food sectors (2015: 16). Zizys’ research showed that the Community Food Works program found that 39% of participants had found employment after the course (Ibid.: 19).

Sectoral networks are also key providers of education on food systems. Across Ontario’s apple growing regions, the Ontario Apple Growers provides worker safety training and workshops on the new high density trellis planting methods. The Greenbelt Farmers’ Market Network provides training opportunities for market staff; Sustain Ontario provides toolkits and resources online to support their members who come from many parts of the food system. Many sectoral networks also identify

education for non-members as part of their mandate; the Holland Marsh Growers for instance works to educate consumers and government staff on emerging agricultural issues.

Durham was found to be a region that seems particularly focused on agriculture-related education. In addition to the Durham College Food and Farming Program in the region, Durham Farm Connections provides education about agriculture for non-farmers through a large event for Grade 3 students. The event is offered in an arena with stations focused on different topics. The group in partnership with the OAFE also offers curriculum and information about careers in agriculture to high schools. They work with the Ontario Institute of Technology's Agriculture Leadership Program to provide a five-day training with an annual focus on one topic. They have received money from the Friends of the Greenbelt Foundation to create a mobile education trailer that offers educational information on key commodity groups.

### Public education events

Farmers may also hold or participate in public events designed to increase the agricultural and food knowledge of community members or students. Large-scale commercial farms are more constrained in their opportunities to offer educational outreach to the public; food safety and biosecurity rules restrict public entry into many food production sites. Nonetheless, some farms will hold educational events that are open to the public.

The farm tour events at Gwillimdale Farms in Bradford has brought thousands of non-farmers onto the farm each year. A range of options is carried out in the Holland Marsh, where associations like the Holland Marsh Growers and the Muck Research Station provide the opportunity for more organized internal and external education than other areas, supporting growers and engaging non-growers in understanding agriculture.

The Breakfast on the Farm event at Gwillimdale Farms in Bradford brings thousands of non-farmers onto the farm each year.

Many food security organizations report the value and impact of farm tours; despite the expense (transportation, catering, insurance), they can be illuminating to non-farmers about the work of food production in a way that nothing else can achieve.

### Formal education

Although some of food system education is offered outside the formal education system, increasingly engagement goes beyond occasional school trips. Some High Schools offer a special stream for food and agriculture, with curriculum available to address the special focus for students who choose it. Agscape, partly funded by the Ontario Ministry of Agriculture, Food and Rural Affairs, offers agri-food industry curriculum for schools. There are important formal training opportunities at the George Brown Chef School, Durham College's Food and Farming Program, Loyola's program focused on food technology, the Sandford Fleming Sustainable Agriculture program, and the Food and Nutrition Management program at Humber College. Durham College has a full program stream to train chef-farmers from field to kitchen. The [Durham College Food and Farming](#) program focuses primarily on urban agriculture in eastern Ontario, where climate and soil provide unique conditions that may be under-studied by research facilities like the University of Guelph, or the Muck Research Station.

The Country Heritage Park in Milton has taken a demonstration heritage farm one step further to engage school groups (15,000 students each year) in actual food growing, bee-keeping, etc. They focus on the whole food chain. They are redeveloping curriculum to provide "place-based education". Elevated Eats, an urban agriculture project on the roof of the Yorkdale Mall in the north end of

Toronto, focuses on food education and offers “curriculum based materials for primary school teachers” (GHFFA newsletter Friday July 29, 2016).

### **Food and health training**

Public health units and community health centres provide considerable training focused on food, from workshops on diet-related illness to community gardens nearby (Miller 2013). Although some gardening may be included, the focus is on nutrition and access to healthy food rather than commercial food production. For instance, the Guelph Community Health Centre has a drop in program called Wandering Chefs that shows people how to prepare recipes from the contents of their Garden Fresh Box (a subsidized box program). The Ontario Federation of Agriculture offers the Six by Sixteen program, with the goal of training children to prepare six healthy and locally sourced meals by the time they are sixteen. Although organizations tend to focus on health and food security, or agriculture, but rarely both, Ecosource in Mississauga provides training on the food system as well, and explores food and food production issues from field to plate. Their gardening training engages community members through partnerships with other organizations; they also work with hospitality teachers, food service companies and school boards to get more local food into schools and to engage students with local farms and food. They offer teacher education sessions for York University and two school boards to help insert sustainability, food system and waste issues into the curriculum. Foodshare in Toronto has engaged almost 1 million people in the school-focused [Great Big Crunch](#), which offers curriculum in addition to the “moment of anti-silence” when everyone registered bites into a piece of crunchy produce.

### **Business training**

Much food or agriculture training in the GGH focuses on workplace or business training. Farmers generally provide training as needed for workers; they also recognize that one of the advantages of the Seasonal Worker Program is that they can name workers who return to their farm every year and do not need additional training. OMAFRA, the Agricultural Management Institute (AMI) and commercial providers offer a range of trainings focused particularly on business development, agricultural practices, and food safety.

The new food business incubator in Toronto, Food Starter, has a formalized regime of trainings for entrepreneurs who access the facility. They have also organized an interactive website that gives clients ready access to experts to answer specific questions in a forum format. Depending on prior experience, the entrepreneur can enter the facility and access trainings at different points along the development path. [VG Meats](#), outside the GGH but selling to regional markets, created a meat-cutters training program after they struggled to find skilled workers for their plant (Van Groningen, Eastern Local Food Conference presentation, 2015). Several programs have been established to train new farmers. Farms at Work, Everdale and the CRAFT program all have provided training and/ or access to land for training. In some cases, this training includes business development as well as agricultural training. The farmers trained in these programs generally launch businesses that depend on direct sales through CSAs and farmers’ markets. Funding remains precarious for these organizations, despite their proven record in training new farmers.

### **Research and education**

Research and education can be directed at maintaining the status quo or effecting broad system change (see also Kornelson 2010: 104). For instance, although some agricultural education (e.g., the programs of the Muck Research Station) focuses on benefitting from the existing system (how to make the most from chemical inputs for instance), they are also exploring varieties that resist climate change problems (drought, rising temperatures) as well as ways to reduce chemical use. The Station



was instrumental in testing and encouraging the now widespread use of Integrated Pest Management, which allows farmers to reduce the on-farm use of pesticides. Interviewees noted that the unusual nature of the Marsh means a need for place-specific education, research and expertise. They use specialized machinery to deal with the Muck soil, and have a machine shop that customizes and has the expertise to repair the special equipment. Most of the farms plant a diverse set of crops that require a correspondingly diverse knowledge of agricultural methods.

Research can be a key part of the educational work. The Vineland Research Station, with various partners, has explored the development of world crops that can grow well in Ontario (hardy varieties of okra, Japanese eggplant and other crops). The project has been industry-driven and export-focused, although urban agriculture groups that work with newcomer growers have also engaged in testing the seeds on their urban plots. Despite the wide extent of examples, there are also significant gaps and opportunities. A new farmer reports that research into organic production of world crops is almost non-existent (Cheng 2016). Likewise, education for better nutrition may focus on the preparation of healthy greens like kale while not addressing the root causes of poor nutrition, ignoring the lack of access to fresh, healthy foods in low income neighbourhoods and the rising percentage of incomes that goes to housing rather than food.

Measurements related to education must assess both the level of impact and the strategic direction of the material. Does it engage people only in understanding and supporting the status quo, or does it include knowledge and expertise to address challenges in the food system? The sustainability of the education program is also a key assessment point. Is it a one-year opportunity that is grant dependent, or is there self-sufficiency or long-term funding that allows it to make a larger, multi-year impact and investment in resources?

Complex indicators for education include:

- Number of people accessing education opportunity
- Number of people acting on the information over a period of time (years) (e.g., new farmers who are still farming, consumers who eat more healthy food)
- Availability of training and research in standard and non-standard farming, markets
- Level of stable funding
- Level of cross-sectoral, food system information

## **6. Bureaucratic processes: rules, regulations and red tape**

Primary research revealed a widespread concern with undue bureaucratic demands. This concern cut across all sectors and stakeholders (and may be a result of the structure of Canadian society itself). In food security organizations, stakeholders discussed regulations that constrain the provision of fresh fruits and vegetables through food banks. Producers and some planners addressed rules that prevent farms from doing on-farm processing. Small producers and processors addressed the problem of regulations designed for larger businesses. Producers seeking to redirect manure to compost on the farm, or dealing with multiple jurisdictions across different plots of land, reported frustration with the intricate entanglement of zoning, environment and resource protections.

## Land use regulations

In the region of Durham, to implement fully their new food charter, there are eight different lower tier municipalities that the Food Policy Council would need to engage, as well as the agricultural community and other sectors that cross governmental boundaries.

The bureaucratic picture of the GGH is a jungle of overlapping and multi-level regulations. Municipalities may be single-tier like Hamilton, with full jurisdiction over their area under the provincial rules, or lower-tier like Caledon in Peel, with responsibilities to upper regional jurisdictions as well as provincial and federal ones. In the region of Durham, to implement fully their new food charter, there are eight different lower tier municipalities that the Food Policy Council would need to engage, as well as the agricultural community and other sectors that cross governmental boundaries.

Likewise, the regulations responding to different needs and constraints overlap unevenly; municipal conservation areas like the Toronto Region Conservation Authority can overlap the Greenbelt area; the Niagara Escarpment Plan can overlap with the Greenbelt protected area, which might overlap with the Oak Ridges Moraine protected area. Specialty Crop Areas can be declared in an area that a municipality had earmarked for residential development. Natural heritage areas can be identified in areas surrounded by prime agricultural lands. The area of urban-rural co-habitation is an area of intensive stakeholder interest; many different needs and interests in the same landscape provide considerable tension.

The Ontario Ministry of Agriculture, Food and Rural Affairs launched a “Red Tape Challenge” recently to take advice on how to reduce or rationalize bureaucratic demands. The Region of Durham has developed a workshop to help local food entrepreneurs navigate the red tape. One interviewee spoke in exasperation of the lack of coordination among planners in interpretation of the rules; they noted that one person will find ten reasons you can not do something, while another will look at the same rules and say you can. One farm leader reported in a regional agriculture committee meeting about the time spent on trying to get planners to fix blueprints for a roundabout in farm country that had failed to include soft curbs (which allow large farm equipment to negotiate the curve smoothly and without tipping over).

Several stakeholders spoke of the lack of available information on regulations when they were seeking to meet guidelines; they were asked to develop their plans first (at their own expense), and then submit them to see if they were acceptable. One farm, rejected several times by the Ministry of the Environment for their on-farm processing plans, chose to create a solution that avoided the approval process entirely, despite the fact that the unique solution cost significant amounts of money and time. In particular, it has been found that highly regulated businesses like livestock have moved outside the GGH to areas with fewer overlapping stakeholder interests.

The Holland Marsh seems to be ground zero for overlapping regulations; Jody Mott (Executive Director of the Holland Marsh Growers Association) reports that there can be as many as twenty-two different jurisdictions who must give input to permissions for a project. The Holland Marsh is highly fertile muck soil, the result of draining by settlers in the early twentieth century. It is directly north of Toronto, part of a vast watershed feeding Canada's largest municipality. It is on the edge of the wave of urban sprawl, close enough to the city for urbanites yearning for more space and pastoral scenes to commute daily to work in the city. Holland Marsh is a perfect storm of prime agricultural land, key natural resources, prime space for residential development. The Marsh is situated midway on key (and crowded) transportation corridors, protected conservation areas, essential resource areas, and infrastructure for agriculture.

Jody Mott (Executive Director of the Holland Marsh Growers Association) reports that there can be as many as twenty-two different jurisdictions who must give input to permissions for a project in the Holland Marsh.

### Food safety regulations

The GGH food system is also regulated by food safety rules. The highest level in mainstream food systems is Canada GAP, which will soon be required by mass market retailers and meet global standards to facilitate export (<http://www.canadagap.ca/>). GAP is a global initiative that establishes food safety standards recognized around the world, facilitating international trade. Canada GAP is not a government program; it is managed armslength through a non-profit corporation. Certification is paid for by the grower or packer, and is quite expensive. Given the limited market options (aside from mass or export), food producers are increasingly forced to assume the costs simply to stay in business. Consolidation of the grocery industry has meant that food safety regulations have increased, as large corporations have more at risk in cases of food safety problems, and more likelihood of problems given the scale and volume of food that is aggregated, transported, stored, and mechanically processed. Consolidation has meant that a small amount of contaminated material can be dispersed into a large volume of product, and distributed broadly, resulting in the potential for widespread impact of food-borne illnesses and the need for mass recalls.

VG Meats has instituted traceability measures that allow customers to scan the code on any package of meat, and identify the original source, as well as the tenderness rating as tested by their sophisticated system.

For instance, the meat industry has become highly regulated, to maintain safety in the centralized system. Livestock enters the supply chain from many different places and is pooled. One hamburger can contain meat from many different animals and places, so that a food safety problem stemming from one animal, or one moment of mishandling, creates a widespread recall to cover all the possibilities.

These regulations are applied universally, so that processing plants that use animals from a few farms or a farm co-op (such as [Penokean Hills](#)) are still required to meet the standards for the large-scale consolidating plants (according to revised federal or provincial regulations), although the process and issues they face may be quite different. VG Meats has instituted traceability measures that allow customers to scan the code on any package of meat, and identify the original source, as well as the tenderness rating as tested by their sophisticated system.

The new [Food Starter](#) incubator facility in Toronto has struggled with the level of regulations in application to start-up companies of limited resources; they provide incubation, training and

mentoring for start-up food businesses, and help entrepreneurs navigate the regulations. However, the facility has been unable to arrange affordable and appropriate scale meat processing options despite the fact that they are situated in an old meat processing facility. They also chose not to seek CanadaGAP certification for the facility, but recognize this limits their entrepreneurs initially to farmers' markets, independent stores, etc. For an entrepreneur to sell to grocery stores or export, they will need to find another processing site.

### Severance and rural housing

Many jurisdictions now prevent severance of farmland to less than one hundred acres, establishing minimum sizes for land parcels. Severance rules are designed to keep non-farmers from buying agricultural property. The rationale was that non-farmers are unlikely to spend that much on a rural estate. However, a parallel result has been that new non-traditional farmers (selling through CSAs, farmers' markets, etc.) who have the need and capital for less than that cannot find the land they need to run their farm business. Likewise, farmers who buy a new parcel that is contiguous with existing parcels may remove any houses in order to avoid residential taxes, to open precious land for farming, meet minimum size rules, and to avoid becoming a landlord. This has reduced housing options for farmers entering the area, including the next generation of farm families returning to the land. Family farms face challenges in providing separate housing across generations or siblings, due to the rules against additional housing of any kind on farmland. This can mean thousands of dollars in permitting fees to get an exemption for a two-family farm (even two brothers, for instance, or father and daughter). In this case, a regulation has had unintended negative consequences, a story that was repeated throughout the primary research across the food system.

### Environmental regulations

Environmental regulations and animal welfare rules were cited most often as onerous and irrational. One chicken farmer had planned to create a manure storage area between his woodlot and the production barn; in this case, he was not told whether or not it would work during discussions with planners, but it was rejected once he submitted the plans. Yet in terms of the environment, to process manure and use it on his own farm seems more rational than transporting it elsewhere and then buying inputs that would have been provided by the manure. In a similar situation but a different part of the GGH, another chicken farmer brings in shredded cardboard, mixes it with the manure which is brought regularly out of the barn on a conveyor belt. All of the resulting composted manure goes onto the farm, an elegant use of a by-product of production. Varying regulations can make a solution possible in one region or municipality and not in others despite general similarities otherwise.

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### Scale

Another recurring theme is the issue of scale; small or alternative farms (co-ops or collectives, vertically integrated projects like orchard/ cider operations) can face a flurry of permitting and regulatory requirements that do not seem designed for their size or context. Approval for on-farm processing, often a way for a mixed farm to extend their market into the winter and add value to the

raw product, has been very difficult to achieve. This problem is mitigated somewhat in the new coordinated review plans by new regulations and permissions for on-farm processing as part of the overall “agricultural system”. For farms selling to farmers’ markets or through CSA’s, the ability to use surplus for value-added, high margin products can make the difference between financial success and failure.

Even for mid-scale commercial farms, the regulations can create bizarre challenges. One farm that has thousands of acres in diverse crop production as well as a processing/ packing/ storage facility, faced barriers in processing for other nearby farms. While an efficient processing plant is run as continuously as possible, the prescription against processing more than a set percentage of product from other farmers could mean more idling of the equipment than is financially rational. Yet it might also be irrational (according to economies of scale) for each farm operation to do its own processing.

### Urban regulations

In urban areas, the problems for potential urban farmers are intensified as the same categories of stakeholders in rural areas are even more closely linked and overlapping. A recent successful motion by one municipal councilor in Toronto, along with a coalition of farmers’ market advocates, has created a working group to streamline permitting for new public markets, and to establish Toronto as a “Market City” following the lead of Barcelona and other cities (see [Project for Public Spaces](#)). As noted earlier, the City of Hamilton has made significant changes to their regulations to facilitate urban agriculture and other agriculture-related activities in the area.

A group of cross-sectoral stakeholders has also been negotiating agreements for urban agriculture in Toronto’s hydro corridors, a project made more complex by the shifting of Toronto utilities from public to private hands. One interviewee pointed out that communities can also create obstacles to urban agriculture projects, on the grounds of racially and class-motivated fears of low income people gardening in the area.

### Another Perspective on Bureaucracy in the GGH

A deeper investigation into the nature of the complaints reveals several specific attributes of the bureaucracy that lead to frustration for stakeholders. The problems are characterized by a lack of scale appropriate regulations, and a lack of consultation with the experts (farmers, food manufacturers) who experience the impact of new regulations. The perception is that lack of consultation with those directly affected by regulation can lead to the establishment of irrational rules.

Regulations are often perceived as coming from outside a sector, and not taking the sector’s needs or attributes into account. In one glaring example, the new meat processing regulations that required abattoirs to meet federal standards (appropriate for large scale and export production) put many successful small abattoirs out of business. The new regulations and their impact stranded the small and mid-scale livestock producers who had depended on these abattoirs. They were faced with a long drive (stressful to the animals, and resulting in more loss due to injury) to reach the remaining abattoirs. These problems go beyond the objection that there is too much bureaucracy; the deeper issue is the nature of the rules and the process to develop them.

For instance, for environmental regulations, farmers with fairness question the fact that the financial onus is on them to develop solutions, which may be approved or rejected only after the farmer has gone to the expense of obtaining a plan. There is also a sense that undue concern for environmental and food safety impacts are focused on the production end of the supply chains, while processing,



retail and consumption receive less attention. The contribution of agriculture to climate change seems to receive more attention, for instance, than the larger contribution from processing and retail with the glaring lights and ever-rumbling cooling compressors for open displays of produce, dairy and meat.

The situation pits farmers against environmental concerns, whereas farmers see themselves as stewards who are careful of their assets (e.g. the water, land, and soil on which their livelihood depends). The issues, couched in terms of over-regulation, can be more complexly described as objections to the wrong or arbitrary regulations.

Interviewees highlighted examples where a requirement seems to have an effect that is contrary to the intention. For instance, in the chicken sector, the “free run” model means that chickens are gathered in an open barn rather than in cages. For consumers, this has become a valued alternative to battery cages. For people who actually operate chicken farms, they report that “free run” creates more suffering for the chickens (injuries, and other problems). The workers also face difficult work environments in free run operations through greater exposure to ammonia from accumulated manure in which the eggs are hidden. Conversely, manure can be removed regularly on conveyor belts in cage operations.

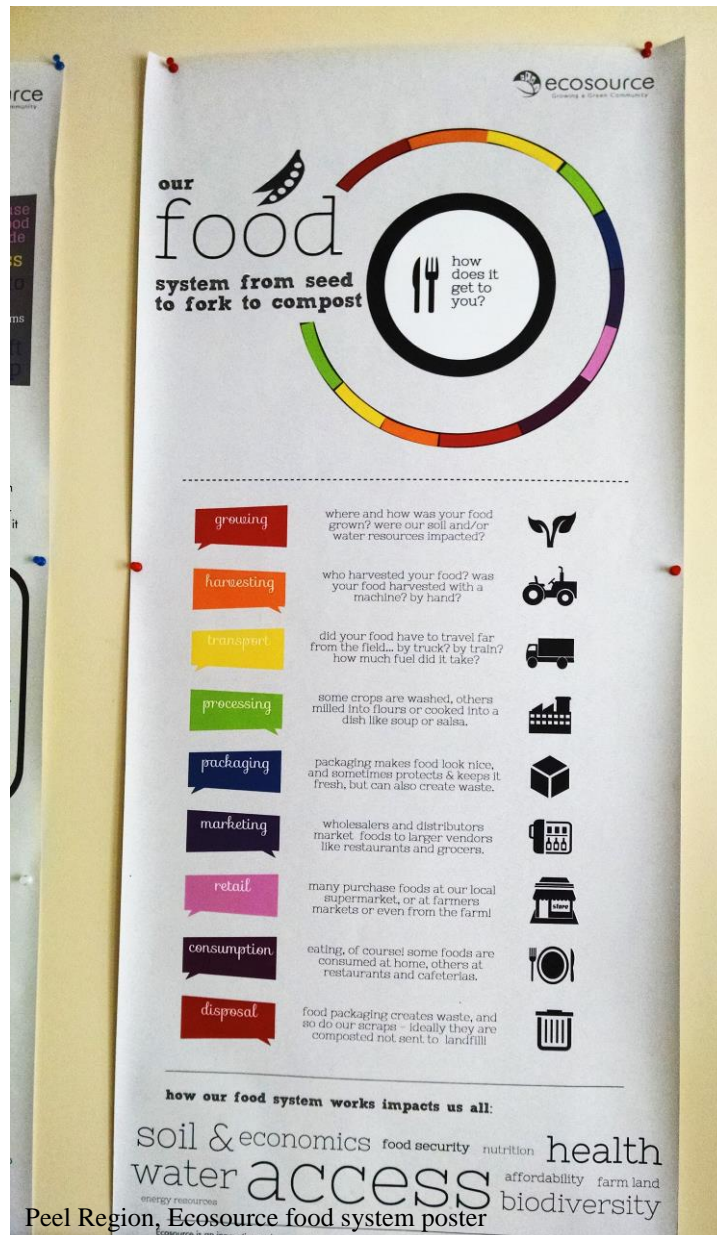
Chicken farmers have advocated for and accepted “enriched cages” as a better option than free run, reducing suffering from injuries as well as worker issues from breathing ammonia from manures in open barns.

Chicken farmers have advocated for and accepted “enriched cages” as a better option. The improvements have been requested by mass market in response to consumer demands but must be paid for by individual farmers. They can be more acceptable in terms of animal and human welfare than “free run” and represent an important development in the chicken sector. The new design allows chickens to engage in three key behaviors that are seen as essential to their welfare: in addition to more space, the design provides a place to roost, peck and darkened areas for egg-laying. The new model still maintains the cleanliness of the operation by letting the manure drop away rather than accumulating on the floor of the barn with the birds. Farmers have negotiated for time to manage their cash flow as they build the new barns (Schillings, interview).

In a salutary development in recent years, the province has conducted a complex “coordinated review” of interlocking plans in order to harmonize regulations and plans at every tier that bridge isolated interests such as the environmental and agricultural sectors, or food manufacturing and residential groups. The coordinated review has placed emphasis on protection of water and land resources, encouraging more compact urban centres and protection of prime agricultural lands. Through this extraordinary process the province has engaged in extensive consultation and consideration of cross-sector needs and solutions. The coordinated review should stand as a beacon and model for future planning in North America and beyond.

Indicators of sustainable food systems in this area include:

- Level of cross-sector discussion in regulation development
- Availability of scale-appropriate regulations
- Opportunity for streamlined change to regulations in line with changes in food systems



## 7. Labour and decent work

Labour was identified as a critical issue for the project by the Task Force, and was a frequent issue for stakeholders as well. The research focused on opportunities and trends towards decent work in all food system areas.

A recent report from the Golden Horseshoe Food and Farming Alliance (GHFFA 2016: 14) shows jobs by agri-food sector for the GGH area. For jobs related to agriculture (direct or secondary) they identify 354,182 jobs, while the entire food and farming sector accounts for 630,325 jobs, not including jobs associated with waste. The report finds that 10% of jobs are in primary production; 13% in food and beverage processing; 3% in retail; 65% in hotels, restaurants and institutions; 1% in agricultural services. The report points out that the majority of jobs are in food service, which tend to be precarious jobs with low pay. Food service (for instance, fast food chains) do not realize the full potential of food or agriculture multipliers. Revenues for large transnational corporations tend to leave the local economy; expenditures (supplies, management, planning) are made elsewhere.

MacRae writes (N.D.b: 3) that “all parts of the food system are facing labour-related difficulties.” Overall, Toronto Public Health reports (2010: 4) that the food sector is the second biggest employer in the province.” In Toronto, “roughly one out of ten jobs (10.5%) in the City of Toronto are related in some way to food” (Zizys 2015: 1). For 2011, Zizys found 144,170 jobs in Toronto that were related to the food sector (Ibid.: 4). The report shows (Ibid.: 7) that between 2006 and 2011, jobs were gained largely in food services and lost in the much of the processing sector (see also the GHFFA 2016 report).

The Greater Golden Horseshoe is a prime location for siting food processing and other enterprises related to food and agriculture because the proximity to significant urban areas ensures ready access to a labour market for skilled and non-skilled workers, as well as necessary infrastructure for business.

Durham has addressed jobs and training through partnership with the Durham Workforce Authority and the **Durham Farm Connections** project, as well as a multi-day training in partnership with the University of Ontario Institute of Technology Agricultural Leadership Program. Residents can also benefit from Durham College’s Food and Farming Program, and Durham Farm Connections partnerships with Ontario Ministry of Agriculture Food and Rural Affairs (OMAFRA) for food and agriculture business development training. They have access to the Ontario Agri-Food Venture Centre, for the development of food and agriculture related products and businesses. Support for entrepreneurs also comes through the Business Advisory Centre.

The GHFFA report notes that increased production with declining job numbers can indicate an increase in automation (2016: 16). It can also mean increased agricultural consolidation. MacRae reports (N.D.b: 9) that labour can account for around 38% of the cost of a food item. Labour declines due to automation can occur across the food system, where farm corporations purchase larger, more versatile equipment, or hospitals remove their kitchens and staff are reduced to “rethermalizing” food made elsewhere, or grocery stores replace the cashiers with automated bar code readers for self-service checkout. One unexpected result of automation, consolidation and off-shore labour as reported by interviewees is that as the demographics of voters involved in agriculture has decreased, their ability to get their voices heard in government similarly has decreased.

Organic farms have been shown to provide more jobs and greater job satisfaction for migrant workers (MacRae N.D.b: 13 citing Jansen 2000). Smaller farms (which make up the majority of farms in Ontario) also tend to be more labour intensive, as do farms that grow fruits and vegetables. As

interviewees note, the Ontario premier Kathleen Wynne announced an ambitious program to grow the agricultural economy and related jobs; better support for organic farming, family farms, and fruit and vegetable production would help to achieve that goal. One chicken farm owner reported that his average size operation raise 350,000 chickens per year for Maple Lodge, KFC and Swiss Chalet and is a one-man show; automation has turned chicken farming into a lonely business.

One 2009 study found that 30% of Holland Marsh farmers still work off-farm (Planscape 2009: 70). 60% work more than 40 hours as well (Ibid.: 68).

Even in the Holland Marsh, where agriculture has some of the best soil in Canada, with supportive infrastructure like the Muck Research Station, and nearby urban markets, one 2009 study found that 30% of farmers still work off-farm (Planscape 2009: 70). 60% work more than 40 hours as well (Ibid.: 68), suggesting that if the revenues were sufficient, some jobs could be split into two jobs, employing more people.

Many farmers see labour as one of their primary costs that they seek to reduce, either through automation, working long hours themselves, or relying on the subsidized migrant workers program. Horticulture (fruits and vegetables) is generally more labour intensive than other forms of agriculture; the fertility of Holland Marsh generates sufficient margins to make intensive horticulture worthwhile.

While farmers work off-farm to support the farm, Canada also supports a program to bring in labour for farm work (the Seasonal Agricultural Workers Program - SAWP). The portion of revenues and tax dollars that go to establish foreign workers on farms flows in a complex way, much of it ending up in other countries. Migrant workers tend to send significant portions of their income to their home family and country. The countries themselves spend time and money to forge contracts to facilitate the flow of labour across borders.

Hennebry (2012: 1) reports that “Every year, 30,000 agricultural migrant workers arrive in Canada as part of the Temporary Foreign Worker Program (TFWP), the Seasonal Agricultural Worker Program and the Low Skill Pilot Project.” 51% of these are in Ontario, with over 16% of that group in Niagara, and a smaller percentage in other GGH areas, including Simcoe and Brant. The largest percentages in Ontario are in Essex County (west of the GGH), working in the greenhouses in the Leamington area. Greenhouses run most of the year, though there can be a break to clean and sterilize to prevent disease outbreaks. Under the SAWP program, migrant workers are required to return to their home country for part of the year, which can presumably coincide with any planned shutdown.

Migrant workers in meat processing are also brought in under the agricultural stream. The SAWP in Ontario is run through FARMS (Foreign Agricultural Resource Management Services, a non-profit authorized by the government). By 2015, according to the Government report on the Temporary Foreign Worker Program, 53,303 agriculture workers entered Canada through the program. The number of workers in other sectors had decreased, leaving farmworkers at 59% of the migrant workforce (2016: 7).

As MacRae notes (N.D.b: 6), wages do not reflect societal value, but scarcity of workers. In addition, the SAWP supplies seasonal workers to agriculture and other occupations on a restricted basis (they are required to return to their home country regularly, cannot access many Canadian social services, and are not able to use the program’s residence period to apply for more permanent status). The cost of the program may be underestimated; some estimates go as high as \$12,000/ worker compared to \$125 for domestic workers (N.D.b, supplementary: 5). The cost is mostly administrative and is paid in part by the tax-payers.

One interviewee pointed out that even migrant workers cost the producers \$12-13/ hour, making it hard to compete with regions that pay less; with associated costs like travel and accommodation, the number is probably closer to \$20/ hour (MacRae, N.D. b supplemental: 5, citing McKnight 2014). The SAWP worker wages are currently \$11.43/ hour; in 2016, minimum wage increased in Ontario to 11.40/ hour. The wages for SAWP participants are negotiated annually between Canada and the participating countries. On top of that, the interviewee added, since the farm owner must house them, pay utilities, etc., the cost of migrant workers is actually higher to the farmer, although the money doesn't all go to the worker.

As a standard principle of business, labour costs are considered a significant part of the expenses. Owners seek to reduce the cost through automation, changes in methods (as on apple farms where new high density planting has reduced labour needs) or the partially supported labour of the migrant farmworkers program. Overall, the reduction of skilled jobs in agriculture matches a global shift towards low paid unskilled jobs; as noted earlier, the fastest growing food sector jobs are in food service. The new Low Skilled Pilot Program provides visas for low skilled work for up to twenty-four months, including some agricultural workers; workers can access the program for a maximum of four years. As with all migrant worker programs, the time spent in Canada does not count towards applications for status, except in rare cases where a pathway to citizenship has been negotiated as part of the union contract (the United Food and Commercial Workers Union has achieved in one case).

Many farmers cited the positives of the SAWP. Most interviewees reported a commitment to create decent workplaces, and a loyalty to workers that can mean the same ones are asked for by name, and return every year to the same farm. The access to Canadian dollars can be used to support families back home (a practice that reduces the local economic impact of these programs). Some farms reportedly will even pay more than they are required to, although if apprised of the practice, the government may withdraw a corresponding amount of funding, similar to the administration of social assistance. Status would not conflict with any of these dispensation; it would simply allow workers in abusive situations to seek protection and other employment in Canada as all Canadian workers have the right to do.

In general, as activists and researchers have pointed out (Hennebry 2012: 16), the precarious employment and dangerous work in Canada is characterized by racialized labour. As in the building of the railroads, the food system depends on people of colour who enter as migrant workers or take the low-paying food service and preparation jobs farther along the supply chain. A movement has grown rapidly around these issues. As the Black Farmers' Collective farmers pointed out in an interview, the barriers exist across the food chain; for people of colour hoping to enter agriculture, and for the preponderance of people of colour in food insecure communities.

Pfennings' has hired many local newcomers as well as migrant workers; as the business is somewhat vertically integrated, they can afford to create full-time permanent jobs while accessing the skilled pool of labour that seeks work in Canada from agricultural communities around the world. This farm also makes a number of additions to the program such as ensuring the food security of their workers. Workers can access land to grow food for themselves, and harvest what they need for themselves from the fields as well.



The problem is not that most farmers do not generally treat their employees well, but that the program is subject to abuse by unscrupulous employers.

The problem is not that most farmers do not generally treat their employees well, but that the program is subject to abuse by unscrupulous employers. Migrant workers have little recourse; speakers during the Harvesting Freedom caravan for migrant workers rights reported the results of that vulnerability in unsafe working conditions (using chemicals without protection), substandard housing, deportation in the case of injury despite the right to health care, lack of access to health care or community, and food insecurity (Hennebry 2012: 10; Migrant Dreams 2016).

Some farmworkers arrive with high debt loads already, from recruiters who charge thousands of dollars to place them in Canada (Migrant Dreams 2016). This does not happen on every or even most farms, but the program in itself permits vulnerability to abuse. The new pilot temporary workers program for low skilled work (which can be applied to agricultural labour) has increased the lack of protection for foreign workers.

Most interviewees who addressed labour as a key challenge argued that migrant workers do work that Canadians are not willing to do. The reasons cited for failed domestic recruitment were that the hours were long, the work was hard and needs to be done quickly. One interviewee reported that responses to the farm's job posting were scarce; the ones that they did get specified a need for limited work hours. This requirement does not fit well with the agricultural cycle, which during the season starts early and ends late. The work is also seasonal for many agricultural sectors, although on large farms the workers may stay well into the winter. Year-round sector stakeholders (e.g. the chicken industry) report only full-time work which they can fill with Canadian labour.

The SAWP program may be an inadequate solution to the lack of interest in these jobs from domestic job-seekers. The lack of interest seems to correspond to a problem of wage levels and job quality rather than a lack of unemployed workers. As one farmer pointed out, any resistance to status for farmworkers comes from a desire to prevent the workers from leaving for another job. But as the interviewee further remarked, providing decent work for people who are trained in farming and paid fairly ensures their desire to stay. They cited the new regulations that require farmers to post the job nationally before hiring migrant workers, and the lack of success such recruitment faced. One farmer mentioned that she had spoken to farmers who didn't have good access to a computer (or the expertise) to do this; it was seen as an unnecessary piece of bureaucracy.

Interviewees also reported that migrant workers are simply more skilled; they come from farms and bring expertise and understanding of the sector. Often trade deals and other international pressures at home force them to give up their agricultural land at home to come to Canada to make money to buy food. Yet there are many young people interested in farming and willing to do the work who have trained with Everdale, FarmStart, or on the numerous farms that accept apprentices.

The labour pool and the available jobs unfortunately are mismatched. The young people are seeking much more autonomy than they are likely to get working on a large farm as seasonal labour. Changing the nature of the work may be harder than shifting expenditures from a federal program that subsidizes foreign workers to one that subsidizes wages for new or Canadians or permanent residents in agriculture. Some areas like Durham Region have begun to invest in promoting work opportunities in agriculture. Anecdotally it also seems as if the next generation may be returning to the farm after completing their education and working in other sectors. Overall, there are farms that need workers and Canadians who want to do this work, as well as farmworkers willing to do it on a multi-year basis.

Given the actual cost per worker that is paid by the farmer (or in the case of unscrupulous employers, costs that are transferred back to the worker), it seems there might be a possibility of meeting the needs of both groups in a more rational program. The demand from the migrant farmworkers is for status rather than specific wages. Although farmers argue against the increase in minimum wage, they clearly invest more than the minimum wage in these workers as a recognition of their skills. The farmers that abide by the current regulations and treat their workers with respect and dignity do not need to take a position against awarding status to migrant farmworkers (and no interviewee argued against status or raised the issue at all).

The employers' only concern might be that the workers might take other jobs when they have the work mobility that comes with status, but since they have long-standing relations with these workers and have created decent workplaces, that seems unlikely for the majority of the workers. Workers who enter Canada in other jobs are permitted to accumulate residence time as a pathway to status; why would this be denied to the farmworkers? Since public money is already spent on supporting the system (reimbursement for airfare, the development of contracts with participating countries), and health care is already extended to these workers, then it seems that there can be little financial argument against giving them status.

Various other distortions in the labour market exist throughout the food system. In general, job quality is low in food sector employment. Precarious employment is high; many of the low wage sub-sectors offer positions that are disproportionately part-time; "many employ high proportions of women, visible minorities and/or newcomers, oftentimes in what have come to be termed precarious employment" (Zizys 2015: 11).

A review of the material indicates an interesting pattern, where labour needs are not necessarily matched to available skills training or worker preferences (which tend to be based on job quality). Job status (and pay levels) are not aligned with skill levels; farming and food preparation for large groups both require considerable skill, experience and creativity but both are low waged, as is much of the food sector generally (Zizys 2015: 10). Another distortion may derive from the concern with poaching (MacRae N.D.b: 5); employers fear that providing training for employees will inspire other employers to solicit their services (increasing competition among employers and driving the cost of labour up).

Among the different positions relating to food system labour, the desire for good quality work for skilled workers who have job security emerges as an overlapping set of values for the stakeholders. For all stakeholders, the financial model must make sense, with sufficient support for the workers not only to meet workers' needs but to reflect their skill level, and to ensure the ability of the employers to pay a reasonable wage within the business capacity.

Key indicators that can be drawn from this analysis include the following. These are complex indicators that can be used to test innovations in the food system together with indicators identified in the other themes below:

- Good quality work for skilled labourers
- Fair pay for skill level of work that fits within the business capacity
- Stability of tenure (that is, a situation where the workers know they will continue to have a job, and the employers know they will continue to have trained workers)

## 8. Food access issues

This section reviews the stakeholder input to the key topic of food insecurity in the Greater Golden Horseshoe. Food insecurity affects at least 1 in 10 families in the GGH (and almost 1 in 5 in some areas), there are champions, innovations and possibilities in the GGH enough to create a food system where everyone has access to healthy food.

The City of Toronto's consultations (2010: 18) on the local food system yielded clear themes: "the affordability of healthy food, lack of access to quality food stores, the specific needs of newcomers adjusting to a new food system, a range of food safety and quality issues, concern about the lack of basic food skills and the unhealthy diets of children and youth, and the poor quality of food available through food banks." The report notes the tendency to create siloes in the food system, rather than incentives that stimulate local food production to support more equitable food access. The report (2010: 11) notes that "most farm incentives and supports encourage farmers to produce more commodities at a lower price, rather than rewarding them for growing healthier food or providing environmental benefits." As Desjardins et. al. (2010: 130) note, "current agricultural production in North America is not primarily organized around the nutritional requirements of the population."

"Results show that a shift of approximately 10% of currently cropped hectares to the production of key nutritious foods would be both agriculturally feasible and nutritionally significant to the growing population."  
-- Desjardins et al. (2010: 129) for Waterloo Region, Canada

Although food production and food security goals tend to be de-linked, they are not necessarily incompatible. A city region lens seeks to create linkages between all parts of the food system and across the urban-rural divide. In particular, this lens has the unique goal to combine food access goals with food production goals. A recent report (Miller 2013: 5) found that the non-profit and charitable sector, serving meals to people facing food access challenges at no or minimal charge, was spending millions each year on food. Much of that expenditure necessarily comes from public funding, and much of it is spent at local discount supermarkets at retail prices, or at transnational food service distribution companies. If these expenditures were shifted to wholesale and directed to local producers and distributors, more of the money would stay in the local economy, and more of the food could be fresh and healthy with minimal processing<sup>19</sup>.

The TPH 2014 Nutritious Food Basket Survey found that food prices had increased 5.4% in one year, further reducing access for people living in poverty (2015: 4). The Consumer Price Index from Statistics Canada shows that food prices have increased over 40% since 2002 (Statistics Canada, Table 326-0021 Consumer Price Index, annual (2002=100). As wage increases have not kept pace with food prices, it is likely that people are trying to spend less on all categories of household expenditures, including food. Food purchases may be less "elastic" than other expenditures (like new clothes, or a new car) while the food budget may be reduced in preference to not paying the rent. The Consumer Price Index shows an increase of over 10% in the cost of food in Ontario from 2011 to 2015 (based on a set of basic food items tracked over time). Household expenditure on food as a percentage of expenditures in Canada dropped slightly (less than 1%) between 2010 and 2014, despite rising food prices (Statistics Canada, Table 203-0023 Survey of household spending (SHS), household spending, by household type, annual (dollars).

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<sup>19</sup> See also Erin Nelson report on VON Windsor: <http://nourishingontario.ca/wp-content/uploads/2014/06/VON-Case-Study-FINAL.pdf> .

A 2014 report (Tarasuk 2014: 28 Appendix F) found that in Ontario 11.9% of households face varying levels of food insecurity, while the number rises to 12.6% in the Greater Toronto Area (GTA). The study (Tarasuk 2014: 28 Appendix F) shows that hunger varies between 10 and 17.6% in the Greater Golden Horseshoe. Food Banks Canada (2015: 3) reports that 358,963 individuals accessed food banks in Ontario in March 2015. Nonetheless, in 2010, only 10% of household spending was on food (TPH 2010: 11). Low income households will pay the rent before they buy food. Many people accessing food banks or the community food agencies may be working people with homes. The wages are enough to cover housing but cannot be stretched to food as well.

As MacRae and others have argued, public intervention in the food system, from protecting agriculture to ensuring healthy food is available to all, is recognized by many as an important tool to improving food systems. Careful planning (Hill and MacRae 1995) allows us to identify short, medium and long-term processes that eventually can unite sectoral change to create a food system that benefits all, from land to plate. Solutions take various forms; these are reviewed for impact and sustainability in the following sections.

The Greater Golden Horseshoe has numerous examples of innovation and commitment to reduce food insecurity. The solutions tend to be regionally focused, both for supply and for distribution. The initiatives run the gamut from emergency food provision to various programs to help people grow and prepare their own food. A debate has arisen between the community-focused strategies that offer training in healthy eating, gardening and cooking, and those organizations (often the same ones) that offer food to people who are hungry, drawing on donations from supermarkets, processors, financial donors, and other funders and supporters. The organizations are not nearly as clearly defined as the debate would imply; most community organizations that provide communal services and education also provide meals or food free of charge to people who are hungry. The difference is more in emphasis than in activity.

### **Innovation at food banks**

Food banks in the interviews reported various innovations to reimagine emergency food provision, to expand related programming and to focus on distribution and improving supply through purchasing. [Good Shepherd](#) reports that they are the largest food bank in Hamilton, but have moved from a traditional food bank model, operating a warehouse and a supermarket style distribution integrated with social service programming. Their shelter has increased the opportunities for people to buy their own food and prepare it for themselves or their immediate family. Kalinowski (interview) made the interesting point that true cost accounting of donated food would show that it is unsustainable financially, as well as not being a long-term solution to hunger.

Some food banks like Daily Bread and the Mississauga Food Bank have focused on creating strong logistics programs, and tracking client needs through rich longitudinal databases. The Mississauga Food Bank uses the Link2Feed program for online ordering and to track purchases.

At the most basic level, all food insecurity organizations would like to be no longer needed for emergency food provisions; what began as a stopgap measure has become unwontedly permanent (Scharf et al. 2010: 16). Most organizations support a solution to poverty, generally a guaranteed or basic income, to allow people to buy, grow or access the food they want with enough information to make healthy choices. The

Most organizations support a solution to poverty, generally a guaranteed or basic income, to allow people to buy, grow or access the food they want with enough information to make healthy choices.

debate has become acrimonious in several regions of the GGH, but there is much common ground and many shared goals. The research shows that many of the indicators of success and sustainability are similar.

### Food access food hub aggregation

Several areas within the GGH have planned, tested or developed food access solutions that aggregate and distribute to the community sector. Such innovations are occurring across North America, and often build on existing food bank models that shift the organizational emphasis away from food banks to procurement and distribution of healthy affordable food to people who face food access challenges.

SCOR food hub (outside the research area but purchasing from GGH area farmers) and FoodReach in Toronto have focused on creating an online ordering process for community agencies, schools, daycares and institutional buyers. SCOR uses an off-the-shelf program (Local Food Marketplace) while FoodReach uses a custom program developed for them with the support of various grants and key stakeholders. SCOR has developed a model that relies on regional production, while FoodReach focuses on affordability and consolidation through one or two distributors who purchase from the Ontario Food Terminal or direct from large-scale producers like Canada Bread. The use of technology to manage food distribution businesses is widespread but uneven. Many small and mid-scale distributors rely on in-person, phone, e-mail and fax orders; the variability of price, availability and quality of fresh produce has kept the in-person relationship alive where it has been mostly replaced in other sectors. As Sawtell (co-founder and co-owner of 100km Foods) pointed out, even if the ordering system is good, you still have to figure out the logistics of moving the food from point A to point B.

### Food access hubs and regional sourcing

Some regions cite the failure of logistics and distribution solutions for their organization to access surplus supply for food scarce areas. At least one organization noted that the [tax credit for farmer donations](#) has not helped (since their problem is logistics). Farmers have also reported that the tax credit makes little difference, as margins are so tight that their tax exposure is minimal anyway. As Naccarato reported (interview), the [Greenbelt Fund](#)<sup>20</sup> is exploring technology solutions that will connect farmers with each other to arrange route and load sharing to reach aggregation points or markets.

The research with community agencies in Toronto (Miller 2013) showed that agencies have specific needs from a distributor, including specific inventories and pricing, that may not mesh easily with conventional distributors' systems. Those organizations who out-source the distribution may find difficulty controlling the price, delivery schedule, produce quality, and tracking. Food access projects that work with mainstream distributors can face challenges to align values and programs between non-profits, government, charities and private companies.

Conventional distributors are also likely to be dependent on imports and not attuned or networked for the potential of regional production, requiring a cultural shift in their supply chain management to meet regional production goals of agencies. Some organizations have found that buying direct from farms with diverse crops worked better than trying to meet minimums and delivery schedules of a distributor. In Toronto's [Community Food Flow Project](#), the research found that small and medium scale agencies were not well-served by large (transnational) food service companies. Their size and

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<sup>20</sup> As part of the establishment of the Greenbelt protected area mandated by the Greenbelt plan, funding was allocated to promote the marketing of regional food into regional markets of all types in the Greenbelt area and Ontario.



volume was better fitted to more regional independent distributors, or to direct access from farmers, bakeries, urban agriculture projects or nearby retailers.

One of the longest running food access food hubs, **Foodshare in Toronto**, combines many of these attributes, offering food-related programming as well as fresh, often regionally produced food along with staples and culturally appropriate foods as a wholesale supplier to community agencies and schools, and through their Good Food Boxes, Good Food Markets, meal programs and the Mobile Markets that go to underserved communities. Though they purchase all the food they provide, their charitable model and long-term relations with the Ontario Food Terminal and regional producers enables them to keep margins tight and fresh food relatively affordable. Of the options noted above, the only one Foodshare has so far not utilized is an online ordering option. Foodshare is a unique hybrid economic model in which many of the food hub operations (such as the distribution to schools and agencies) is largely financially self-sufficient, while other initiatives rely more on charitable funding. Their operations include a training kitchen that works with marginalized groups, a catering enterprise, urban agriculture sites, and community animation for neighbourhoods across Toronto.

Some of the most innovative initiatives converge on the model of a food access food hub. These may seek to improve the nutritional quality of the food provided as well as to access regionally produced food, and to encourage people to prepare healthier meals for themselves. Often these innovations combine with a food bank function in a hybrid organization that relies on donations as well as purchases. For instance, Halton Food for Life (a food recovery agency) and Feeding Halton (working with farmers to purchase healthy food for food insecure households) collaborate to link food security solutions with regional production. They innovate to address challenges around logistics, as they access the fresh healthy food from farmers in the rural north of Halton to aggregate and bring it to southern urban areas like Burlington.

### Community food organizations

Some organizations like the new community food hub in Cannington act as convenors of organizations that address food insecurity in different ways, providing meals, programming and community gardens. Often these organizations also focus on regionally produced food, although not always. In aggregate, such a hub meets the goals of a community food organization, although the individual programs and agencies remain independent of one another. Many food banks also house programs or organizations that provide the programming goals while the food bank focuses on distribution. Similarly, Halton Food For Thought organizes food programs for 114 different school sites, and works with a range of collaborators including thousands of volunteers. They work with the Nutrition For Learning warehouse in Waterloo and others to link schools to healthy food distribution; one agency goal is to increase the level of local food in the mix. Partners in Niagara have also convened to explore the possibility of a community food hub there.

Community Food Centres © and other community organizations start from the goal of fresh, local food for all. They combine programs on growing and preparation with healthy community meals and food bank efforts that mobilize financial and food donations to provide healthy food for distribution. Distribution can take a number of forms, including meals or raw food distributed at no charge, or through a market mechanism specific to the community food sector, as in the case of The Local CFC in Stratford. One new centre in Toronto buys local where possible but the interviewee notes that sometimes the price is too high; they purchase and receive local as well as imported food from independent local distributors, Daily Bread Food Bank, Second Harvest, and local farms.

[The Seed in Guelph](#) has created a hybrid economic model, working with the six largest emergency food providers in Guelph and others to shift their purchases towards healthier and more affordable food. The Seed aggregates their orders and bulk purchases through a warehouse in the terminal; much of the food is regionally produced when that is available. The Seed offers a Garden Fresh box through the Guelph Community Health Centre, which relies on volunteers to host and distribute the food sourced from local farmers where possible, and from a nearby Mennonite distributor, [Jay West](#). The latter is a project around the same time as [the nearby Mennonite Elmira Produce Auction Co-op](#) (for more information see Miller 2010, *From Land to Plate: the dilemmas and victories of alternative food distribution in Ontario*). It provides distribution services of fruits and vegetables people who did not have time to go and bid at the auction. The wholesale model helps to maintain price points at the terminal rates for farmers who were forced to sell below cost through the auction process (one of the main drawbacks of the produce auction model).

The Seed is also exploring the economic and nutritional impact of their boxes with the University of Guelph. Through the Pod (warehouse) operations they are able also to track changes in what the agencies are providing to test the impact of their new supply programs and to revise as needed. They are initiating a feasibility study for a Local Food Brokerage, to source local food for institutions, as well as a regional food hub to act as a local food terminal.

Some organizations approach food insecurity largely from the point of view of helping people grow their own food in community gardens (e.g., [Greenest City](#) in Toronto, Ecosource in Mississauga) or a strategically located urban farm (e.g., McQuesten Urban Farm in Hamilton). They tend to do little distribution, but offer shared meal preparation and consumption from the harvest to participants. The City of Hamilton has provided leadership in this type of endeavour by embedding urban agriculture in their planning documents, facilitating the development of such projects. Food produced on public land is often proscribed from sale; these regulations conflict with the desire of many marginalized groups to launch an enterprise through a community garden rather than just growing for their own household. Hamilton's planning regulations link their urban market gardens to farmers' markets, an essential step to ensure that the food grown in public and non-profit spaces can be sold as well as eaten by the urban growers. Toronto also has an extensive list of community garden projects, including school gardens, represented by the [Toronto Urban Growers](#).

### Food security and labour

The question of labour in community food organizations was raised by a number of organizations. The dependence on grants and donations creates budgets that rise and fall with the fortunes of donors and foundations; few sources for operational funding exist outside the generosity of donors. Project-oriented funding means that many excellent workers can only be retained for the term of the project, often a year or even one summer season<sup>21</sup>.

One solution is to limit staff to what the organization is guaranteed to be able to support, and then to invest in them rather than varying staff complements based on annual resources. [Mississauga Food Bank](#), for instance, has streamlined their operations to reduce staff to only ten people; however, they have also formalized the positions, and improved job quality by providing benefits and fair wages to ensure a low turnover rate.

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<sup>21</sup> See also Nourishing Communities reports: <http://nourishingontario.ca/publications-and-presentations/>.

Many non-profit and charitable organizations also benefit from student placements, which are temporary but when well-managed can drive a specific project forward that could not be completed otherwise. Organizations can find that dependence on volunteers can create challenges, as turnover rates can be high, and commitment ebbs and flows. Many people have been encouraged to volunteer as a stepping stone to employment or to add strength to a resume; these tend to be short-term commitments, as the job-seeking goal, if successful, means less time to volunteer and often a change of location as well. Volunteers and donations tend to show up around the winter holidays, while summer months struggle with low food inventories and lack of volunteer support. The onslaught of donations in this narrow window of charitable feeling can stretch food banks beyond their resources to process and store the much needed donations. For labour issues in the sector, the Mississauga Food Bank offers one solution which limits jobs associated with the organization, but ensures that the jobs that remain are high quality and permanent.

### Food access issues section summary

Among the interviewees, food bank organizations are rethinking their model in many cases to focus more on logistics streamlining, fresh food and regional production, taking on many of the characteristics of the education-focused community organizations. A handful of food bank organizations in the U.S., such as the [Foodlink in Rochester, New York](#), have also realigned their mission and expenditures to provide good food regionally sourced when possible. These organizations have recognized that as the grocery industry has consolidated, aggregating enormous volumes of one product at their own distribution centres to market in their stores, small and mid-scale producers have been left with few options. As the farmgate prices have been squeezed by powerful grocery corporations, food banks have recognized the value in redirecting their funds to healthier food that benefits the local economy.

In reorganizing and improving food insecurity solutions, and moving away from the emergency food provision model, the organizations offer the gamut of assets, from good logistics, ordering and distribution systems to good relations with regional production and aggregation centres like the food terminal or distributors. Although these attributes rarely seem to unite in one organization, across the sector a transition towards healthy, affordable food for all sourced as regionally as possible is definitely shaping the strategies and decisions, from Community Food Centres © through food banks.

For marginalized groups, the struggle between the various models is resolved in yet another way through organizations like the Afri-Can Food Basket, Black Creek Community Farm and the efforts of the Black Farmers Collective. These organizations insist that growing and distributing to marginalized groups must be owned and operated by members of the community themselves. These organizations reflect an important movement for food security in U.S. urban areas that is driven by communities of colour. One of the longest running examples is the [Detroit Black Community Food Security Network](#), but many similar groups have developed in response to the economic evisceration of American cities.

The range of food access food hubs together suggest a set of indicators that measure the impact, equity and stability of these initiatives. These include:

- Engagement levels (growing, preparing, sharing food)
- Logistics system efficiency (distribution and trucking, software supporting ordering, route planning, inventory management)
- Stability of labour (reliance on volunteers, quality and security of jobs)
- Level of ownership, governance and management by consumers/ food insecure groups (make-up of staff, board, clients as well as governance structure and consultation practices)
- Level of use of purchasing dollars for regionally produced healthy food
- Ability to track clients' needs and impact of provision of specific foods
- Solutions of sufficient but appropriate scale to make system change

## Points of vulnerability and risk

Although not originally identified by the Task Force as a critical issue, the issue of risk and vulnerability to political and other change or shock emerged from the research. Points of vulnerability and risk that were highlighted by the research include:

- **Large power inequities in transactions** (e.g., between the corporate food buyers and the farmers)
- **Limited choice** (e.g., the lack of fresh food in high-volume donations, or commercial farm sales that are largely limited to the options of mass market or export),
- **Unstable funding**, particularly for non-profits and charitable organizations for whom grant funding is focused on program start-up and not operations or existing successful programs
- **Dependence on volunteers** for program delivery (as in many school food and food security programs)
- **Climate change shocks in agriculture** (frequent crop failures as in the apple sector)
- **Climate change shocks in food** (as in the increased price of food during the California drought, and the related increase in risk for urban areas that have only a few days supply of food on hand)
- **Succession and access challenges** for farmers
- **Reductions in the patchwork of social assistance** (for instance, recent cuts to key supplemental income for food left many low income people with increased food insecurity as well as challenges in managing diet-related illnesses)

The level of each of these challenges can be included in a complex indicator list. Redressing these issues conjures the possibility of systemic solutions:

- Systematic social assistance that recognizes the international right to food
- A national school food program instead of individual, volunteer dependent programs
- Government support for the next generation of farmers regardless of their approach
- Long-term planning by appropriate government levels for strong food and agricultural systems
- An approved national food policy with budget and timeline for implementation
- Support for diverse markets
- Measures to reduce monopoly control in any economic sector
- Access to multi-year funding and funding that supports the ongoing operation of successful programs
- Research into climate resistant agriculture (drought tolerant varieties, cropping diversity, frost-hardy fruits<sup>22</sup>).

Lengnick et al (2015: 3) report that a review of the literature shows that “A consensus is emerging in sustainable food systems scholarship that two fundamental changes—a transformation of production methods from industrial to sustainable and a transformation of food system geography from regional specialization to regional diversity—should enhance the resilience of the food system to climate change.” The authors cite Walker and Salt (2012) to identify three key aspects to resilience: “*response capacity* (ability to respond quickly and effectively to buffer disturbances); *recovery capacity* (ability to quickly restore the system after damage); *transformation capacity* (ability to transition the system to a new identity when the capacity to respond or recover is exceeded or transition is desired) (Walker and Salt 2012).” Of these, the first one seems to be prevalent in our food systems, in that the system is designed to react after a crisis (providing emergency food aid to the hungry, crop insurance to farmers suffering crop failures). The return to status quo (the second

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<sup>22</sup> See Gaudin et al. and The Global Alliance on Climate Smart Agriculture (GACSA): <http://www.fao.org/gacsa/about/en/>.



aspect of resilience) is less universal and more dependent on the financial resources of the affected group. The other two keys to resilience seem less in evidence generally in the current system; it is more likely that, as in the health care system, we wait until the damage is done and then respond to repair the effects.

When interviewees considered the system as a whole, there was a widespread recognition that new systems are needed. Current system-wide solutions can seem at odds with the food systems' best interest at times. For instance, expanding existing systems might be expected to increase production and feed more people, but as the report has shown, this comes with flaws that are inherent in the system, including hunger, environmental challenges, and ongoing loss of farmland (if land markets are unregulated for food production). As the authors of [EAT in Sustainia](#) (2015: 8) note, "scaling up current food systems would cause enormous environmental, health and economic risks".

Current food safety and agricultural supports are cited by people across the supply chain as counter-productive to mid-scale farming, to food security efforts, to mid-scale processing projects and to new farmer enterprises. Groups may differ on their initial ideas of what a solution should be (for instance, in whether prices should be raised to protect farmers or lowered to protect the hungry). Food systems in areas like the GGH face the conflicting challenges of high and increasing urban populations and rural food-growing areas facing pressure from housing, infrastructure, environment and natural resource demands. Such city regions are in a context of rapid change and increasing pressures that open the possibility for transition to greater resilience, economic stability and healthy food for all.

However, the third aspect of Walker and Salt's model (ability to make systemic change) seems challenged by the vast and intricately interwoven bureaucracy that characterizes Canada (and other industrialized countries). Flexibility and ability to respond rapidly are often cited as characteristics of small or diffuse systems, as opposed to the rigidity and resistance to change that can be found in large systems with high levels of centralized action.

Lengnick's three aspects of resilience can be taken as complex indicators of food system resilience. :

- Ability to respond quickly and effectively to buffer disturbances
- Ability to quickly restore the system after damage
- Ability to transition the system to a new identity when the capacity to respond or recover is exceeded or transition is desired

## Section conclusion: Indicators derived from emerging themes

The indicators established by the emerging themes are aggregated in the grid below.

**Table 31: Critical indicators, phase 2 primary research**

| Indicator  |
|--|
| Labour   |
| <b>Good quality work for skilled labourers</b>   |
| <b>Fair pay for skill level of work</b>  |
| <b>Stability of tenure in work</b>   |
|  |
| Food access  |
| <b>Engagement levels (growing, preparing, sharing food)</b>  |
| <b>Logistics system efficiency (distribution and trucking, software supporting ordering, route planning, inventory management)</b>   |
| <b>Stability of labour (reliance on volunteers, quality and security of jobs)</b>  |
| <b>Level of ownership, governance and management by consumers/ food insecure groups (make-up of staff, board, clients as well as governance structure and consultation practices)</b>                    |
| <b>Level of use of purchasing dollars for regionally produced healthy food</b>   |
| <b>Ability to track clients needs and impact of provision of specific foods (e.g., how many clients are diabetic and what percentage of food provided is part of an appropriate diet for diabetics?)</b> |
|  |
| Cost, price and competition from outside region  |
| <b>Solutions of sufficient but appropriate scale to make system change</b>   |
| <b>Distributed market system allowing a variety of choices for the producer</b>  |
| <b>Level of consolidation of power (number of buyers to number of sellers)</b>   |
| <b>Level of protection for sellers in limited option markets (trade deals, supply management, legal written contracts)</b>   |
| <b>Level of stability of markets for long-term planning, infrastructure investment, stable succession</b>  |
|  |
| Governance challenges  |
| <b>Level of cross-sector discussion in regulation development</b>  |
| <b>Availability of scale-appropriate regulations</b>   |
| <b>Opportunity for streamlined change to regulations in line with changes in food system</b>   |
|  |
| Democratic engagement  |
| <b>Number of farmers engaged in agricultural decision-making through various channels</b>  |
| <b>Activity level of agricultural committees (impact on policy, finances, etc.)</b>  |
| <b>Number of (non-farming) community members engaged in community-level activities and programs around food and agriculture</b>  |
| <b>Level of impact of key sectoral councils, committees, etc. (are their recommendations reflected in policy and regulatory change?)</b>   |
| <b>Longitudinal engagement of community members in food system issues</b>  |
| <b>Impact level of community consultations on higher level decisions</b>   |
|  |
| Education  |

|  |
|--|
| Number of people accessing education opportunity   |
| Number of people acting on the information over a period of time (years) (e.g., new farmers who are still farming, consumers who eat more healthy food)  |
| Level of stable funding  |
| Level of cross-sectoral, food system information   |
| Availability of training in non-commodity farming, markets, consumption habits   |
| Access for practitioners (workers, farmers, students) to rights-based information related to their efforts   |
|  |
| Waste  |
| Level of positive and negative impact across the supply chain  |
| Combined economic and environmental impacts of activities  |
| Indirect impacts of innovations (upstream and downstream of waste reduction measure)   |
|  |
| Land and roads   |
| Level of tenure security on near urban land  |
| Security of contract for food businesses renting or borrowing land   |
| Level of agricultural impact assessment for new development projects   |
| Access to tenure security on farmland for new farmers  |
| Level of supply chain infrastructure investment by agricultural and other communities (including primary and secondary processing, food hubs, perennial crops, etc.)   |
| Transportation indicators such as time to market compared to net profit and cost of transport mode   |
|  |
|  |
| Points of vulnerability and resilience or risk   |
| Large power inequities in transactions, as between the corporate food buyers and the farmers,  |
| Limited choice (as in the lack of fresh food in high-volume donations, or the limitations of commercial farm markets largely to mass market or export),  |
| Unstable funding, particularly for non-profits and charitable organizations for whom grant funding is focused on program start-up and is rarely sustaining   |
| Dependence on volunteers for program delivery (as in many school food and food security programs)  |
| Climate change shocks in agriculture (frequent crop failures as in the apple sector)   |
| Climate change shocks for food (as in the increased price of food during the California drought, and the related increase in risk for urban areas with only a few days supply of food)   |
| Succession challenges for new farmers, particularly ones focused on traditional or alternative methods of farming and marketing  |
| Reductions in social assistance (recent cuts to key supplemental income for food left many low income people with increase food insecurity as well as challenges in managing diet-related illnesses as choice was further decreased by the cuts) |
|  |
| Availability of systemic solutions   |
| Systematic social assistance that recognizes the international right to food   |
| A national school food program instead of individual, volunteer dependent programs   |
| Government support for the next generation of farmers regardless of their approach (as Quebec has instituted)  |
| Long-term planning by appropriate government levels for strong food and agricultural systems   |
| An approved national food policy with budget and timeline for implementation   |
| Support for diverse markets  |

|   |
|---|
| <b>Measures to reduce monopoly control in any economic sector</b>   |
| <b>Access to multi-year funding and funding that supports the ongoing operation of successful programs</b>                                    |
| <b>Research into climate resistant agriculture (drought tolerant varieties, cropping diversity (Gaudin et al.), frost-hardy fruits, etc.)</b> |

## Assessing innovation

This section addresses the characteristics that distinguish innovation and change that is replicable across regions and jurisdictions, and compares them with some of the indicators identified above. The section provides an example of the application of a short series of indicators drawn from the larger set, and used to assess one set of activities in a case study format.

Innovation may not be replicable, as in the case of the special authority a single-tier municipality such as Hamilton has to unite rural and urban interests, or in the case of the Mennonite produce auctions that aggregate for local buyers. Some innovations are undervalued for the potential impact: agroecological farming methods, including a range of methods that are present in organic and other small-scale practices, have been shown to be more efficient and more productive (IPES 2016; Pretty 1995). With equal access to capital, land and support programs, these methods could provide the diversity of crops needed to feed local populations more effectively than large-scale production, which depends on large volume buyers in mass and export markets to succeed.

John Ikerd, speaking at the 2016 Food Secure Canada Assembly argued that innovation means systemic change. He defined innovation as “fundamental positive change”. The food system has interconnected parts that cannot be improved fully with piecemeal efforts. “The various parts of food systems are clearly interconnected, requiring a holistic analysis of how these systems operate, and an awareness of the power relations running through them” (IPES 216: 10).

The CRFS project goal to identify change towards resilience and sustainability has guided the choice of key indicators for the GGH city region food system. These include measurements of impact over time rather than the basic measurements of impact such as the number of people effected, reductions in environmental damage (waste and water use reduction), jobs created to measurements over time and across system areas. This distinction is the crux of the conflict over food bank solutions; all stakeholders know that food banks do not represent system change, yet until system change is achieved, they are necessary. They could be replaced by a range of system changes, including guaranteed income or government programs that recognize the right to food and ensure healthy food for all. Until then, the system relies unsatisfactorily on voluntary shifts of resources from those who have to those who have not, and is measured in volumes of food and numbers of people accessing food banks.

Complex indicators that can assess impact over time and across system areas are summarized here:

1. Extent of integration with associations, networks, businesses
2. Level of risk (debt, climate and economic vulnerability)
3. Impact on multiple system areas or potential for linkages to new system areas
4. Ownership and engagement level of stakeholders
5. Access to and ongoing practices of consultation and democratic engagement
6. Ability to transfer power, viable succession planning
7. Longevity
8. Level and potential for constructive responsiveness to crisis

One measure of the longitudinal impact of change is the extent to which it is embedded in the networks identified earlier as key sources of collaboration and robust change (indicator #1 above).

The following section examines the coordinated review of GGH plans as a key example of change in the GGH, assessing the activities in terms of the eight general indicators above.

The recent coordinated review of the provincial planning statement and other regional plans provides an excellent example and test of this list of complex indicators. Consultation and input to the revisions came from agricultural networks such as the Federation of Agriculture chapters, networks that link food security and agriculture (municipal committees), and networks linking agriculture and municipalities (such as the GHFFA). 3000 people attended town hall meetings for the coordinated review. The government received 19,000 submissions for the first draft. An advisory panel with a wealth of representation from government and various sectors convened and provided 87 recommendations for the review process (indicator #1, integration with networks; #5 consultation, #3 links to multiple system areas, #4 engagement level of stakeholders).

The networks existed before and after engagement with the planning process (#5, #6); their strategic plans stretch beyond this particular collaborative moment. Some of them are independent of government or grants (#3; e.g., the Ontario Federation of Agriculture) while others may be independent but integrated in order to achieve some tenure security (#7; e.g., the municipal agricultural committees, or the Toronto Food Policy Council at Toronto Public Health). The coordinated review will have an impact over many years (#8), and has engaged long-standing networks (#8) as well as community members (#6).

The proposed revised plans reflected this input in a way that testifies to the strength of the networks that gave input. New guidelines address interconnected food system sectors (#4): the plans inaugurate measures to protect agriculture and associated businesses (processing, on-farm infrastructure) that are essential to protect the Ontario agricultural economy. New possibilities for living cities (that can integrate green space, urban agriculture, walkable assets, better transit options) are included, setting a new standard for improving urban areas (which can reduce flight to rural areas by the middle and wealthy classes) and strengthening rural economies to reduce economic migration from rural areas.

The consultations featured regional events and a multi-stage process (#6): the proposed plan responded to initial submissions but also invited a new round of discussions in many venues and a new round of submissions (#6). Interviews conducted during the process showed that agricultural stakeholders felt strongly that their concerns had been listened to and the opportunity for positive change was formalized in the new plans (#5). Other sectors of the food system were not as directly involved or aware of the changes, partly because the focus on planning (land use, zoning, infrastructure regulations) is not as much part of their everyday work as it is for agriculture, and partly no doubt due to the less coordinated character of other sectors.

In addition to strengthening rural economies and reducing their vulnerability to risk (#2), the coordinated review sets the stage for broad system change. The proposed changes establish infrastructure that is regionally scaled and appropriate to independent and regionally focused markets from on-farm stores to local food co-ops (#4). As a public process that engaged a wide range of stakeholders, it demonstrates the potential for such planning efforts to create system change in which community members can feel a sense of ownership (#5).

The coordinated review was a ground-breaking moment in the history of planning in Ontario. Most innovation and change does not have a positive outcome in so many system change indicators. This example demonstrates how proposed changes can be assessed for their stakeholder engagement and reach, and their impact across the food system. The next section returns to the needs and future changes that stakeholders identified, using this measurement schema to assess the system impact of proposed changes.



The following sections review the specific sectors and clusters of activity based on the full indicator framework developed above. The Diagnostic report from Phase 1 defined the GGH food systems in terms of baseline numbers: numbers of farms, number of food retail outlets, level of hunger and other markers. The Phase 2 analysis goes further to assess resilience and sustainability through the lens of the emerging themes and indicators established from the primary research with stakeholders. This approach emphasizes complex, multi-faceted indicators that can be used to determine if the systems are moving towards greater resilience (responsiveness, ability to recover, ability to transform) or towards rigidity and vulnerability to sudden unavoidable shifts (such as economic crisis, hundred-year weather events or spiking oil prices).

The following sections mobilize the framework of indicators to assess existing clusters of activity by sector, place and activity. Subsequently, the opportunities or examples of change and innovation are tested within this framework for the level of positive impact on the overall system. Assessment of actions for change in terms of these indicators shows the level of positive (or negative) impact that planned or potential changes would have on the most important issues that face stakeholders.

## Assessment by indicators of top food supply chains

The following section compares the findings on specific commodity sectors against the identified indicators. The report then turns the indicator assessment to the place-based examples. The final application of the indicators will be used to assess change and innovation found in the GGH food system, in order to identify the actions and practices most likely to be part of resilient and sustainable city region food systems.

The following table examines the overall GGH food flow systems in terms of the identified complex indicators. The table assesses the system using a scale of high, medium or low. In general, viewed holistically, the GGH region does not score high. Examples of sustainability and resilience tend to be place-specific, and in the majority of measurements are not in evidence across the entire GGH. Individual regions or businesses offer excellent models of activities that do rank high on various measurements (see section on place-based analysis for comparison).

**Table 32: Critical indicators, phase 2 primary research, commodity sectors**

| Indicator  | General | Trend | Sector variability |
|--|---------|-------|--------------------|
| Labour   |         |       |                    |
| <b>Good quality work for skilled labourers</b>   | low     | -     | chicken; apples    |
| <b>Fair pay for skill level of work</b>  | low     | -     |                    |
| <b>Stability of tenure in work</b>   | low     | -     | chicken; apples    |
|  |         |       |                    |
| Food access  |         |       |                    |
| <b>Engagement levels (growing, preparing, sharing food)</b>  | high    | +     |                    |
| <b>Logistics system efficiency (distribution and trucking, software supporting ordering, route planning, inventory management)</b>   | high    | +     |                    |
| <b>Stability of labour (reliance on volunteers, quality and security of jobs)</b>  | low     | -     |                    |
| <b>Level of ownership, governance and management by consumers/ food insecure groups (make-up of staff, board, clients as well as governance structure and consultation practices)</b>                    | low     | 0     |                    |
| <b>Level of use of purchasing dollars for regionally produced healthy food</b>   | low     | +     |                    |
| <b>Ability to track clients needs and impact of provision of specific foods (e.g., how many clients are diabetic and what percentage of food provided is part of an appropriate diet for diabetics?)</b> | high    | +     |                    |
|  |         |       |                    |
| Cost, price and competition from outside region  |         |       |                    |
| <b>Solutions of sufficient but appropriate scale to make system change</b>   | low     | +     | chicken; apples    |
| <b>Distributed market system allowing a variety of choices for the producer</b>  | low     | -     |                    |
| <b>Level of distribution of power (number of buyers to number of sellers) (vs. consolidation)</b>  | low     | -     | chicken            |

|  |        |   |          |
|--|--------|---|----------|
| <b>Level of protection for sellers in limited option markets (trade deals, supply management, legal written contracts)</b>                                     | medium | - | chicken  |
| <b>Level of stability of markets for long-term planning, infrastructure investment, stable succession</b>  | medium | - | chicken  |
|  |        |   |          |
| Governance challenges  |        |   |          |
| <b>Level of cross-sector discussion in regulation development</b>  | medium | + |          |
| <b>Availability of scale-appropriate regulations</b>   | low    | 0 | chicken  |
|  |        |   |          |
| Democratic engagement  |        |   |          |
| <b>Number of farmers engaged in agricultural decision-making through various channels</b>  | high   | + | chicken  |
| <b>Activity level of agricultural committees (impact on policy, finances, etc.)</b>  | high   | + |          |
| <b>Number of (non-farming) community members engaged in community-level activities and programs around food and agriculture</b>                                | medium | + |          |
| <b>Level of impact of key sectoral councils, committees, etc. (are their recommendations reflected in policy and regulatory change?)</b>                       | low    | + | chicken  |
| <b>Longitudinal engagement of community members in food system issues</b>  | medium | - |          |
| <b>Impact level of community consultations on higher level decisions</b>   | medium | + |          |
|  |        |   |          |
| Education  |        |   |          |
| <b>Number of people accessing agriculture or food education opportunity</b>  | medium | 0 |          |
| <b>Number of people acting on the information over a period of time (years) (e.g., new farmers who are still farming, consumers who eat more healthy food)</b> | low    | 0 |          |
| <b>Level of stable funding</b>   | low    | - |          |
| <b>Level of cross-sectoral, food system information</b>  | low    | 0 |          |
| <b>Availability of training in non-commodity farming, markets, consumption habits</b>  | medium | - |          |
| <b>Access for practitioners (workers, farmers, students) to rights-based information related to their efforts</b>  | low    | + |          |
|  |        |   |          |
| Waste  |        |   |          |
| <b>Level of positive and negative impact across the supply chain</b>   | low    | + | chicken- |
| <b>Combined economic and environmental impacts of waste reduction or redirection activities</b>  | low    | + | chicken- |
| <b>Indirect impacts of innovations (upstream and downstream of waste reduction measure)</b>  | low    | + | chicken+ |
|  |        |   |          |
| Land and roads   |        |   |          |
| <b>Level of tenure security on near urban land</b>   | medium | - | chicken  |

|   |            |   |                                      |
|---|------------|---|--------------------------------------|
| <b>Security of contract for food businesses renting or borrowing land</b>   | medium     | - | chicken                              |
| <b>Level of agricultural impact assessment for new development projects</b>   | medium     | + | new in provincial planning statement |
| <b>Access to tenure security on farmland for new farmers</b>  | low        | - | chicken-                             |
| <b>Level of supply chain infrastructure investment by agricultural and other communities (including primary and secondary processing, food hubs, perennial crops, etc.)</b>   | medium     | + | chicken; apples                      |
| <b>Transportation indicators such as time to market compared to net profit and cost of transport mode</b>   | low        | - |                                      |
|   |            |   |                                      |
| Points of vulnerability and resilience or risk  |            |   |                                      |
| <b>Large power inequities in transactions, as between the corporate food buyers and the farmers,</b>  | high       |   |                                      |
| <b>Limited choice (as in the lack of fresh food in high-volume donations, or the limitations of commercial farm markets largely to mass market or export),</b>  | high       |   |                                      |
| <b>Unstable funding, particularly for non-profits and charitable organizations for whom grant funding is focused on program start-up and is rarely sustaining</b>   | high       |   |                                      |
| <b>Dependence on volunteers for program delivery (as in many school food and food security programs)</b>  | high       |   |                                      |
| <b>Climate change shocks in agriculture (frequent crop failures as in the apple sector)</b>   | increasing |   | chicken; apples-                     |
| <b>Climate change shocks for food (as in the increased price of food during the California drought, and the related increase in risk for urban areas with only a few days supply of food)</b>   | increasing |   |                                      |
| <b>Succession challenges for new farmers, particularly ones focused on traditional or alternative methods of farming and marketing</b>  | medium     |   |                                      |
| <b>Reductions in social assistance (recent cuts to key supplemental income for food left many low income people with increase food insecurity as well as challenges in managing diet-related illnesses as choice was further decreased by the cuts)</b> | high       |   |                                      |
| Availability of systemic solutions  |            |   |                                      |
| <b>Systematic social assistance that recognizes the international right to food</b>   | low        |   |                                      |
| <b>A national school food program instead of individual, volunteer dependent programs</b>   | low        |   |                                      |
| <b>Government support for the next generation of farmers regardless of their approach (as Quebec has instituted)</b>  | low        |   |                                      |
| <b>Long-term planning by appropriate government levels for strong food and agricultural systems</b>   | medium     |   | chicken                              |
| <b>An approved national food policy with budget and timeline for implementation</b>   | low        |   |                                      |

|   |                    |  |  |
|---|--------------------|--|--|
| <b>Support for diverse markets</b>  | low                |  |  |
| <b>Measures to reduce monopoly control in any economic sector</b>   | low                |  |  |
| <b>Access to multi-year funding and funding that supports the ongoing operation of successful programs</b>                                    | low                |  |  |
| <b>Research into climate resistant agriculture (drought tolerant varieties, cropping diversity (Gaudin et al.), frost-hardy fruits, etc.)</b> | low;<br>increasing |  |  |

This table should be understood as a preliminary assessment of the current and potential food systems for both the general system and the key foods of the research. Ideally these ratings are submitted to stakeholder consultation to confirm and enrich these preliminary assessments. The assessment indicates a number of positive trends and opportunities, as well as some significant gaps and problems.

The numbers for sustainable work are reduced due to the instability of work in the fastest growing area of food service, where jobs are low paid and insecure. Agricultural jobs show some stability and fair pay, especially in year-round positions in vertically integrated operations, or livestock. However, although many farm workers are nominated to return by the employer, and may come to work every farm season for decades, they do not have access to many of the rights and securities that Canadian workers have. In addition, some of these jobs have been replaced by temporary worker positions for low skilled workers; these positions are much more precarious than jobs access through the Seasonal Agricultural Workers Program.

The focus by interviewees on labour costs as a concern reflects a standard business principle that personnel costs must be carefully monitored and reduced wherever possible. The principle persists although it has been challenged even by large-scale actors like Costco. The focus on labour costs also reflects the inelasticity of other factors such as price, which is generally outside the control of producers and even retail businesses to some extent. Likewise, the lack of surplus to distribute to fair pay, or other social goods, is a symptom of the consolidation of wealth in the hands of a few, limiting the flexibility of other actors in the supply chain. This “oligarchy economy”, shown especially in the cost/ price discussions, creates many of the distortions that result in low levels for many of the indicators.

Likewise, the social indicators like education and democratic engagement are similarly depressed, as they are undervalued in the current food systems. Some salutary opportunities and activities exist, as in the new coordinated review that has deliberately engaged the agricultural community to aggregate and put forward their needs. These demands have been to a great extent reflected in the new plans. The ability to link consultation and engagement to actual change is less pronounced in the rest of the food system. Organizations like food policy councils and food security organizations do not always see their advocacy reflected in policy; they are also not evenly distributed or representative across all regions, reducing their ability to offer a unified voice. Lack of stability in funding, workforce and programming also reduces the ability of food security representatives to achieve long-term change. Food policy councils on the other hand, if they are well-integrated with municipal government, can have long-lasting impacts, as in the many important innovations that the Toronto Food Policy Council has achieved.

Although “red tape” and an over-abundance of regulations was cited by actors across the food system as a problem, the opportunities to make change through cross-sector discussion (leading to regulations that are coordinated and perhaps more streamlined) seem to be more of a possibility than in the past. These opportunities arise particularly in links between agriculture and environment,



and agriculture and food security through the work of municipal and regional committees, councils, and other groups. Shifts towards efforts to coordinate, harmonize regulations and streamline transitions must be partly due to the inspiring work of the Greater Toronto Agricultural Action Committee (GTAAC) and the subsequent efforts of the Golden Horseshoe Food and Farming Alliance. Recent strategic directions from funders has emphasized collaboration and coordination as well. These organizational activities link to the work to regionalize food systems that crosses sectoral divides. The work to regionalize the food system includes community organizations, food retail, restaurants, farmers' markets and consumer commitment to local foods, as well as government recognition of the importance of local food economies in legislation (such as the Local Food Act of Ontario) and policy.

Although sustainability in waste reduction and resource redirection were rated low, there are many promising new opportunities with the work of the Provision Coalition and the University of Guelph's collaborative work on waste. These two groups together offer opportunities for well-informed research to support change. The Provision Coalition's new waste assessment and reduction planning tool offers rich resources to effect that change. However, unlike the U.K., Ontario does not have a broad and well-supported program for change like the ground-breaking WRAP program.

In the area of land and roads, infrastructure that is required for strong regional food systems, the GGH faces stakeholder conflicts for control of these inputs which have not yet been redressed. The region requires more measures like firm urban boundaries or protected areas that are not subject to conversion through aggregation or speculation by developers. The Greenbelt and other protected areas are important but have struggled to protect foodlands fully, and have contributed to leapfrog development on prime farmland beyond the protected area boundaries. The assessment overall shows a system that is highly vulnerable to risk, and vulnerable to price and climate shocks, despite support programs such as the Agri-stability and Crop Insurance programs. Many key elements of the food system are precarious, and solutions that have been implemented in other countries (like national food policies) are only in the initial stage of advocacy in Canada.

Among the key foods (carrots, apples, chicken, potatoes), only chicken and apples stand out as offering a slightly different set of scenarios. These two sectors offer more long-term stability, better worker opportunities, concrete input into sectoral change and market and/or production regulation from the producers, and the ability to be more flexible about alternative entrants to the profession.

These sectors face additional challenges as well. Chicken also faces more challenges around waste management, partly from the higher production of waste and GHG emissions, but also from environmental regulations that may constrain waste processing on the farm (although these can affect horticulture as well in watershed areas like the Holland Marsh). Although agriculture is generally vulnerable to climate shocks, the apple sector seems to be experiencing more impact and less ability to respond, as perennials take years to move or replant, and increased volatility in temperature can increase the risk of late frost that can damage an entire annual harvest. Once the research develops more fully, horticulture will probably be better able to respond to climate change than other sectors. Horticulture has already moved to many alternative methods like cover crops and no-till agriculture that protect agricultural assets from volatile weather, so the practice and commitment is there to make these changes.

The consumer end of the supply chain is more vulnerable to climate change because, even if agriculture addresses climate-related challenges, urban areas still lack the infrastructure to provide more than a few days of food to local eaters (from any source). Consumers are therefore vulnerable to other effects of climate crisis, like ice storms that temporarily limit transportation infrastructure and energy infrastructure for food storage.

The Ontario Food Terminal reports that they have not invested in generators or other back-ups due to the expense, but that the terminal storage is efficient enough to last about a week without power. Beyond that, the system will begin to break down, effecting crops that are stored at the terminal after harvest for longer than a week. The research did not show what back up systems the supermarket chains and transnational corporations have instituted. The economic and physical reasons that support “just-in-time” inventory (reducing the risk of loss, reducing spatial requirements) are considerable, suggesting that storage for more than a few days of market demand at their Distribution Centres may also be limited.

The fact that the market is global can mean that the best markets are elsewhere when an allied countries’ food systems collapse. Mike Davis (2000) notes that the terrible famines in India and other colonies in the late nineteenth century were a result, not of scarcity, but of the export of India’s grain harvest to England to feed the new industrial workers (who had been moved off the land by enclosures and other methods). In a more recent example, during California’s drought, the U.S. looked to other countries to fill their demand. This market created a new opportunity for the sale of carrots from the Holland Marsh, garnering the strong U.S. currency for Canadian producers. The inevitable response to such opportunities, facilitated by free trade deals, reduces Ontario’s inventory of food for regional markets, or increases the price beyond the ability of many people to pay. The scenario means that Canadians, with a less valuable currency, are competing against consumers with American dollars for the food they need.

From the point of view of the overall food system, there are many critical issues that should be addressed to increase resilience and sustainability, particularly during this period of transition and climate challenge. There are also many points of opportunity and promise; the GGH food and agriculture assets and institutions to make change are robust and increasing.

## Assessment by indicators for place-based activities

The grid below shows the key areas of impact for each region of activity reviewed earlier. This is a preliminary assessment that would benefit from a multi-stakeholder process; the research was limited in time and scope and no doubt did not capture all the examples of positive activities (or challenges) in every region. Likewise, the main impacts are noted but not broken down into comparative numbers, as that is a more appropriate level of analysis for people working directly in these areas.

**Table 33: Critical indicators, phase 2 primary research, by region**

| Indicator   | Halton | Peel | Niagara | Hamilton | York | Toronto |
|---|--------|------|---------|----------|------|---------|
| Labour  |        |      |         |          |      |         |
| Good quality work for skilled labourers   |        |      |         |          | X    |         |
| Fair pay for skill level of work  |        |      |         |          |      |         |
| Stability of tenure in work   | X      | X    |         |          | X    |         |
| <i>Average</i>  |        |      |         |          |      |         |
| Food access   |        |      |         |          |      |         |
| Engagement levels (growing, preparing, sharing food)  | X      | X    |         |          |      | X       |
| Logistics system efficiency (distribution and trucking, software supporting ordering, route planning, inventory management)   | X      | X    |         | X        |      | X       |
| Stability of labour (reliance on volunteers, quality and security of jobs)  |        |      |         |          |      | X       |
| Level of ownership, governance and management by consumers/ food insecure groups (make-up of staff, board, clients as well as governance structure and consultation practices)                    | X      |      |         |          |      | X       |
| Level of use of purchasing dollars for regionally produced healthy food   | X      |      |         | X        |      | X       |
| Ability to track clients needs and impact of provision of specific foods (e.g., how many clients are diabetic and what percentage of food provided is part of an appropriate diet for diabetics?) |        | X    |         | X        |      |         |
| <i>Average</i>  |        |      |         |          |      |         |
| Cost, price and competition from outside region   |        |      |         |          |      |         |
| Solutions of sufficient but appropriate scale to make system change   | X      |      |         |          | X    | X       |
| Distributed market system allowing a variety of choices for the producer  | X      |      |         | X        | X    | X       |
| Level of consolidation of power (number of buyers to number of sellers)   | X      |      |         | X        | X    | X       |

|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| Level of protection for sellers in limited option markets (trade deals, supply management, legal written contracts)                                     |   |   |   |   | X |   |
| Level of stability of markets for long-term planning, infrastructure investment, stable succession  | X |   |   | X | X | X |
|   |   |   |   |   |   |   |
| Governance challenges   |   |   |   |   |   |   |
| Level of cross-sector discussion in regulation development  | X | X |   | X | X | X |
| Availability of scale-appropriate regulations   |   | X |   | X |   | X |
| Opportunity for streamlined change to regulations in line with changes in food system   |   | X | X | X |   |   |
|   |   |   |   |   |   |   |
| Democratic engagement   |   |   |   |   |   |   |
| Number of farmers engaged in agricultural decision-making through various channels  | X | X | X | X | X | X |
| Activity level of agricultural committees (impact on policy, finances, etc.)  | X | X | X | X | X |   |
| Number of (non-farming) community members engaged in community-level activities and programs around food and agriculture                                |   | x |   |   |   | X |
| Level of impact of key sectoral councils, committees, etc. (are their recommendations reflected in policy and regulatory change?)                       | X | X |   |   | X | X |
| Longitudinal engagement of community members in food system issues  |   | X |   |   |   | X |
| Impact level of community consultations on higher level decisions   | X |   |   |   |   | X |
|   |   |   |   |   |   |   |
| Education   |   |   |   |   |   |   |
| Number of people accessing education opportunity  |   | X |   |   |   | X |
| Number of people acting on the information over a period of time (years) (e.g., new farmers who are still farming, consumers who eat more healthy food) |   | X |   |   |   | X |
| Level of stable funding   | X |   |   |   |   |   |
| Level of cross-sectoral, food system information  | X | X |   |   | X | X |
| Availability of training in non-commodity farming, markets, consumption habits  | X |   |   |   |   |   |

|  |   |   |   |   |   |   |
|--|---|---|---|---|---|---|
| Access for practitioners (workers, farmers, students) to rights-based information related to their efforts   |   |   |   |   |   |   |
|  |   |   |   |   |   |   |
| Waste  |   |   |   |   |   |   |
| Level of positive and negative impact across the supply chain  | X | X |   |   |   | X |
| Combined economic and environmental impacts of activities  |   |   |   |   |   |   |
| Indirect impacts of innovations (upstream and downstream of waste reduction measure)   |   |   |   |   |   | X |
|  |   |   |   |   |   |   |
| Land and roads   |   |   |   |   |   |   |
| Level of tenure security on near urban land  |   |   |   |   | X | X |
| Security of contract for food businesses renting or borrowing land   |   |   |   |   | X | X |
| Level of agricultural impact assessment for new development projects   |   |   | X |   | X |   |
| Access to tenure security on farmland for new farmers  |   |   |   |   |   |   |
| Level of supply chain infrastructure investment by agricultural and other communities (including primary and secondary processing, food hubs, perennial crops, etc.) |   |   | X | X | X | X |
| Transportation indicators such as time to market compared to net profit and cost of transport mode   | X |   |   |   | X | X |
|  |   |   |   |   |   |   |
|  |   |   |   |   |   |   |
| Points of vulnerability and resilience or risk   |   |   |   |   |   |   |
| Large power inequities in transactions, as between the corporate food buyers and the farmers,  |   |   |   |   | - |   |
| Limited choice (as in the lack of fresh food in high-volume donations, or the limitations of commercial farm markets largely to mass market or export),              |   |   |   |   | - |   |
| Unstable funding, particularly for non-profits and charitable organizations for whom grant funding is focused on program start-up and is rarely sustaining           | - | - |   |   | - | - |
| Dependence on volunteers for program delivery (as in many school food and food security programs)  | - | - |   | - | - | - |



|  |   |   |  |   |   |   |
|--|---|---|--|---|---|---|
| Climate change shocks in agriculture (frequent crop failures as in the apple sector)   | - |   |  |   |   |   |
| Climate change shocks for food (as in the increased price of food during the California drought, and the related increase in risk for urban areas with only a few days supply of food)   | - |   |  |   |   | - |
| Succession challenges for new farmers, particularly ones focused on traditional or alternative methods of farming and marketing  | - |   |  |   |   |   |
| Reductions in social assistance (recent cuts to key supplemental income for food left many low income people with increase food insecurity as well as challenges in managing diet-related illnesses as choice was further decreased by the cuts) |   |   |  |   |   | - |
|  |   |   |  |   |   |   |
| Availability of systemic solutions   |   |   |  |   |   |   |
| Systematic social assistance that recognizes the international right to food   |   |   |  |   |   |   |
| A national school food program instead of individual, volunteer dependent programs   | + |   |  |   |   |   |
| Government support for the next generation of farmers regardless of their approach (as Quebec has instituted)  |   |   |  |   |   |   |
| Long-term planning by appropriate government levels for strong food and agricultural systems   | + | + |  |   | + |   |
| An approved national food policy with budget and timeline for implementation   | + |   |  |   |   |   |
| Support for diverse markets  | + | + |  | + |   |   |
| Measures to reduce monopoly control in any economic sector   |   |   |  | + | + |   |
| Access to multi-year funding and funding that supports the ongoing operation of successful programs  | + | + |  | + | + | + |
| Research into climate resistant agriculture (drought tolerant varieties, cropping diversity (Gaudin et al.), frost-hardy fruits, etc.)   |   |   |  |   | + |   |
|  |   |   |  |   |   |   |

## Indicator analysis by region

### Halton Region

Halton Region is able to rank at a higher level in many of the complex indicators than the GGH achieves overall. Halton region is able, through the collaboration of public, private and non-profit stakeholders, to create programs that have lasted. They have been able to make changes to respond to new opportunities (such as partnerships with local farms for procurement that mobilize financial resources from food recovery to support the local agricultural economy). Organizations have been able to build on this base to access additional funding such as multi-year funding from the Ontario Trillium Foundation, or the Greenbelt Fund. Their leadership has provided the structure for them to be one of three regions that is exploring institutional procurement through a multi-region GHFFA grant from the Greenbelt Fund.

### Peel Region

In terms of the identified indicators, Peel Region scores high on many measures of democratic engagement, including engagement of community members, non-profits and the stability of networks and organizations that can participate in and provide input to decision-making. The strategies employed by Ecosource in animating gardens in partnership with other organizations and with support from the municipality means that the projects benefit from diverse supports. The diversity of actors and supports ensures greater longevity than urban agriculture projects developed by one organization. Although the urban agriculture and food security measures are dependent on volunteers, there are paid staff-people and organizations involved of sufficient size to help ensure continuity of programming. Much of the work is focused on and partnered with schools, ensuring a broad network of collaboration.

The Mississauga Food Bank has also provided leadership in the movement for food banks to build on their strengths in logistics and client needs; the Link2Feed tracking provides multi-year client information that can contribute to linking food security measures with health outcomes. Through links with other jurisdictions who now also use the software, this information could be aggregated to prove the links between food and health that can improve responses to hunger.

Likewise, cross-sectoral work with agriculture and related sectors at the municipality is supported by a staff position as well as access to funding that increases its direct impact. These factors no doubt partially explain why the region is ahead of the curve on developing land use planning studies and strategies with their LEAR and Edge Planning Reports, which in many anticipate the new strategies in the draft plans.

### Niagara Region

In terms of key indicators, Niagara scores high on the engagement of representatives from agriculture in consultation and input to regional decision-making. Coordination through the regional office has led to a regional food strategy and a regional agriculture strategy that echoes the GGH action plan. This means that protection of the agri-food sector has the tools in place to proceed in response to the new provincial rules that benefit that sector. For food security and infrastructure outside the wine industry, Niagara Region groups report struggles with unstable funding, scattered proponents of initiatives, and over-dependence on single champions to move projects forward outside of agriculture. As the urbanizing areas develop further, similar attention to urban agriculture and food security will become more urgent, and the dedicated players that already are hard at work on these issues may be able to elevate their work to more formalized structures with more stability in funding and personnel. The Niagara Region context raises the important question of how to address rural

poverty and food insecurity, which is significant in the GGH, but perhaps lower profile or less visible than the same issues in urban contexts.

### City of Hamilton

Hamilton is a rich source of innovation and solutions that may be replicable, or, like Goodness Me, can have an impact on a broader area. Nonetheless, the capacity to innovate and thrive may be partly dependent on their unique position as a single tier municipality, with both more centralized power to make decisions, and more flexibility to respond to needs and opportunities across the whole area. In terms of critical indicators, the ability to respond flexibly and to create innovations that link urban food growing and markets with rural areas and agriculture is unique in the GGH. They have a strong health-oriented independent chain (and other independent stores, restaurants and other retail). These additional assets can help to link food and health, or food and local production, in their procurement practices. Food security organizations seem to be long-lived in Hamilton, but like other groups in the sector they rely on unstable donor and grant funding to operate. Hamilton can also report on a strong level of inter-departmental work in policy and planning development. Consultation for policy development was not emphasized in interviews but may exist nonetheless.

### York Region

In terms of critical indicators, York Region as a whole may not rate at a high level yet on the indicator list, but the Holland Marsh area itself (crossing York and Simcoe) as described earlier scores high on many of the key measurements that pertain to agriculture. Highly diversified and intensive horticulture ensures more stability of job tenure, higher skill level requirements, and the production infrastructure to supply regional markets if other infrastructure (distribution, marketing) is available. The current need to rely on mass market or export increases vulnerability, but the nature of agriculture in York Region offers many assets (a relatively high number of small and mid-scale farms, experience with diverse food crops, strong networks for policy and practical agricultural research). For decision-making and system change, York Region has an active and engaged cross-sectoral committee focused on food and agriculture, as well as coalitions focused on food security, and even a waste collaboration at the regional level. The diversity of assets makes it well designed for transition to other food system models if necessary, providing a high measure of resilience in the face of risk, and an ability to adapt as needed.

The high productivity and fertility of the agriculture in York Region makes it more likely that producers will remain in business and pass the business on to other producers rather than to buyers who convert it to housing or resource extraction. Tenure security is reinforced by the protection of the Greenbelt area and other conservation requirements. The infrastructure exists for farm supply and primary processing and packing, as well as some joint marketing through the Holland Marsh Growers Association. The region is also a leader in the development of infrastructure, solutions and accommodations to meet environmental stewardship and natural heritage goals. Holland Marsh represents a precious asset within York and other regions that can demonstrate sustainable solutions and responses to the needs of non-agricultural sectors that also meets the requirements of the agricultural economy.

### City of Toronto

Across the board, Toronto can demonstrate projects, networks and policies that rank high in the list of critical indicators. The Toronto Food Policy Council, housed at Toronto Public Health and consistently brings together a cross-sectoral group of advisors. Their participation in the GTAAC and now GHFFA regional planning for the GGH combine regional organizations and the work of networks like the Toronto Urban Growers to create a well-developed set of mechanisms for consultation and policy development. Toronto may not have the same flexibility to make rapid decisions across the

municipality as in the case of Hamilton, but remains a leader in innovation and stable networks to engage in change.

Like Hamilton and Peel, the local food bank distributors (Daily Bread, along with North York Harvest and Second Harvest) have streamlined their procurement, ordering and distribution function to create a system that draws somewhat on regional food production, and could easily increase that supply with the addition of more options for back-hauling and exchanges with other regional distributors. As with other food bank distributors, they represent a significant asset despite the focus on the charitable model to address food insecurity. The willingness and expertise is there for food bank distributors and community food distributors to shift to more regional procurement. Toronto also has excellent examples of institutional procurement with the buying practices at the University of Toronto and elsewhere.

Toronto has some access to funding for non-profit and charitable activities that other jurisdictions do not have (the mostly regional Metcalf Foundation, and the Toronto Community Foundation, as well as various City of Toronto funding initiatives like the Live Green program). On the other hand, the competition for the funding is fierce. Toronto is no different from other regions in depending on volunteers and time-limited funding, with relatively little access to funding to maintain successful and proven programs.

Community consultations have supported various initiatives in food and agriculture for Toronto. An important farm incubation project situated on Toronto Region Conservation Authority (TRCA) land provided multi-year access to farmland as well as training for new farmers at FarmStart. TRCA has spearheaded leases on their conservation land for projects like Black Creek Community Farm and Albion Hills Community Farm, as well as improving tenure security for all farms in the public land under their authority (Miller 2016: 161). Along with York Region, Toronto is one of the only areas that can show a good score on the “tenure security on farmland” indicator. Although the number of acres that have been effected is still limited, the model of public/ community partnerships is significant.

## Collaboration

Strong partnerships and collaborations have been one key to successful change in the GGH food systems. The research examined the mechanism of collaboration through the reports of stakeholders. What makes collaborations work? What makes them fail? These questions are particularly important as public and foundation funding has shifted towards an emphasis on collaborative activity.

"I'm a firm believer that you need to work with partners - your power is much greater when in a collaboration than isolated. There are only so many dollars out there for people to support us. You're better off collaborating. We are all doing great work and it is important that we work together where we can as we're in it for the same reasons."

-- Gayle Kabbash, Halton Food Council

The interviews and secondary research identified interconnecting webs of collaborations, networks and partnerships. These are formed for a variety of purposes, period of time and with varying authority to effect change. Interviewees (who were identified by others as important actors) tended to be positioned as a central node of overlapping networks. Often participants were members of more than one network or collaboration.

This characteristic ensures continuity and links between different initiatives, and many opportunities for partnerships and new collaborations to form as the need arises. The characteristic construction of such interconnected networks courts the danger of homogeneity as well, excluding others who have not already emerged as leaders (e.g., youth), or who represent marginalized groups who are less likely to have access to the networks.

The research showed that collaborations tended to fall into several categories, including:

- Collaborative activity and consultation for development of food and agriculture plans or strategies
  - Agri-food strategies
  - Food charters
  - Promotion/ advocacy for agriculture
- Project-focused collaborations
  - Partnerships and contracts (based on legal agreements)
- Networks
  - Business based networks
  - Value-based networks
  - Public/ private networks
- Food policy councils or similar groups
- University/ college collaborations

The following chart provides an overview of collaborations as identified in the research.



**Table 34: Collaborative work by GGH region**

| Collaboration<br>Region/<br>Municipality | Food<br>charter   | Agriculture<br>committee                                       | Agri-food<br>strategy      | Food<br>policy<br>group or<br>council     | Local<br>food<br>maps | Municipal<br>food<br>security<br>group |
|--|-------------------|--|----------------------------|---|-----------------------|--|
| <b>Guelph</b>                            | X                 | Chamber of<br>Commerce<br>Food and<br>Agriculture<br>Committee | in development             |   | X                     | X (round<br>table)                     |
| <b>York</b>                              | X                 | X  | in process                 |   | X                     | X                                      |
| <b>Niagara</b>                           | in process        | X  | X                          | in process                                | X                     |  |
| <b>Halton</b>                            | X                 | X  | X                          | X   | X                     |  |
| <b>Simcoe</b>                            | X                 | X  |                            |   | X                     |  |
| <b>Hamilton</b>                          | X                 | X  | X                          | X   | X                     | X                                      |
| <b>Durham</b>                            | X                 | X  | X                          | X   | X                     |  |
| <b>Peel</b>                              | in process        | X  |                            |   | X                     | X                                      |
| <b>Toronto</b>                           | X                 | GTAAC  | Food strategy              | X   | X                     | Toronto Food<br>Strategy               |
| <b>Waterloo</b>                          | X                 |  | food system<br>plan        |   | X                     | Food System<br>Roundtable              |
| <b>Wellington</b>                        | X                 |  | in development             |   | X                     |  |
| <b>Haldimand Norfolk</b>                 |                   | X  |                            |   | X                     |  |
| <b>Brant</b>                             |                   | X  |                            |   | X                     | Food System<br>Coalition               |
| <b>Kawartha Lakes</b>                    | X                 | X  | Agriculture<br>action plan |   | X                     | Kawartha<br>Lakes Food<br>Coalition    |
| <b>Dufferin</b>                          | in<br>development |  | interest                   |   | X                     |  |
| <b>Northumberland</b>                    | X                 |  |                            | Food Policy<br>Committee                  | X                     |  |
| <b>Peterborough</b>                      |                   | X  |                            | Peterborough<br>Community<br>Food Network | X                     | Sustainable<br>Peterborough            |

## Agriculture and food planning collaborations

The instances of collaboration and networks in the GGH rely on a variety of approaches and engage different sectors of the populations. The diversity of collaborative activity can eventually shape change across the regional food systems.

## Agri-food strategies and plans

Agri-food strategies have arisen with the development of publicly mandated agricultural committees, which were established across the region and continue to meet and provide input to municipal decision-making in most areas of the GGH. Only four regions have completed agri-food strategies so far.

The agri-food strategies seem generally to reflect or parallel the stakeholder-based plan created by GTAAC and carried forward by the GHFFA for the whole region. This organization is hosted by the Toronto Region Conservation Authority, and funded by stable public core funding as well as grants for specific initiatives. As in the case of the Toronto Food Policy Council, housed at Toronto Public Health, core funding gives them the flexibility for longer term planning and multi-year initiatives.

Given the engagement of the individual jurisdictions in the GHFFA, the need for regional agri-food strategies may be less pressing given the wider collaborative work.

Food planning remains more geographically narrow, with food charters approved or in process in almost all regions or municipalities. Only Brant and Kawartha Lakes do not seem to have pursued the development of a food charter yet, according to online and in-person discussions. Food security networks also tend to develop in individual regions, and to vary from publicly mandated and supported working groups to organizations outside the government offices (tending to be volunteer dependent and therefore less stable).

Food charters tend to focus on the broad food system, including food security issues. Toronto has a more food-focused strategy (and food charter) that reflects the lack of rural areas. Extensive consultations have led to the development of food strategies in that city. A Toronto Public Health report (2010: 18) states that “some key themes emerged from the consultation process, especially the affordability of healthy food, lack of access to quality food stores, the specific needs of newcomers adjusting to a new food system, a range of food safety and quality issues, concern about the lack of basic food skills and the unhealthy diets of children and youth, and the poor quality of food available through food banks.” Although the initial consultations in a region can be enlightening and inspiring, stakeholders noted the importance of stable funding and ongoing staffing to make a food council effective.

Both food charters and agri-food strategies are established with significant staff and volunteer efforts, and tend to be a multi-year process to establish guidelines for future public activities around food and/ or agriculture. Like the official plans themselves, they can be significant milestones for the development of initiatives, particularly if the process engaged both community members, non-profit and business representatives, and government. These are examples of multi-stakeholder processes that can be ephemeral if they are not supported by ongoing structural institutions like the Agricultural Liaison Committee and staff, as in Halton Region, or food policy councils as in Toronto and other areas. Some arrangements mandate separation between city council and food policy council (e.g., Durham Region), which gives more flexibility to the food policy council to advocate actions that are not yet approved by government, but also may reduce the long-term security of the group.

### **Project-based collaborations**

Effective partnerships can be project-oriented. The new food business incubator in Northumberland County developed from a multi-region consultation process that included Kawartha Lakes and the Frontenac area in the largest Business Retention Expansion (BR/E) ever undertaken, encompassing an area with one quarter of Ontario’s population. The consultation involved nine sub-projects, with a survey using the OMAFRA template that took about two hours to complete. Northumberland County was able to move forward with the multi-million dollar food processing incubator facility based on the information, needs and opportunities identified for the surveyed areas.

Partnerships in the agricultural economy are often based on verbal contracts. These “handshake agreements” are often long-standing between actors with similar positions in the agri-food economy, and similar levels of status and power. These agreements between equals may be unwritten, but they lubricate the wheels of the economy, linking producers to packers, equipment providers, the supply co-op manager and others. They may involve informal exchanges of land for specific uses, sharing of equipment and machine expertise, and supports during health or other business crisis. They are long-standing, often multi-generational.

## Networks

### Business network collaborations

Business networks include the Provision Coalition, which has been able to bring together large-scale businesses, including global brands like Coca Cola, and national brands like Loblaw's, to focus on sustainability assessment and improvement. They have made the links and provided tools for these large economic actors to identify strategies for waste redirection, reduction and other changes that have positive environmental impacts as well as positive effects on the corporate bottom line.

Business networks can be ongoing, as in the case of the Greenbelt Farmers Market Network, supported by the Friends of the Greenbelt Foundation to provide support and promotion for farmers' markets throughout the Greenbelt. There is also a provincial farmers' market network; the Greenbelt one focuses on particular issues of the city region area. Sustain Ontario is a provincial organization that works closely with the regional GHFFA; they have an active Municipal Regional Food Policy Network that can strengthen the strategies of the municipalities engaged in initiatives through the GHFFA. The Ontario Farm Fresh Association (regional examples are also in development or operation) is organized to promote and support direct to consumer marketing activities (farmgate sales, etc.).

An interesting business cluster has formed around the new [Food Starter](#) food business incubator in Toronto, which provides mentoring, training and facilities for start up food businesses. Food Starter was formed partly to address the difficulty for new food businesses in establishing the networks they need from scratch. They have established a collaborative environment for the new businesses, easing barriers like access to capital and infrastructure, and providing business training from the financial structure to the navigation of regulations. Food Starter provides access to networks of suppliers, marketers, and other experts that McCauley (Executive Director) has built from over twenty years in food businesses. Their collaborative character is particularly evident in a new partnership with Foodshare and North York Harvest that has developed a dry soup mix that can be used to create quick healthy meals at community agencies, distributed through existing channels by North York Harvest (a small food bank distributor based in the north-end communities of Toronto).

100km Foods, a key distributor for regional producers selling to Toronto area restaurants, has a close and multi-year partnership with Fresh City Foods, which focuses on training and marketing for urban growers. This is a significant example of linking food flows (urban and rural) that are generally separated. 100km Foods aggregates from local growers to sell to retail (mostly restaurants) while Fresh City aggregates from urban agriculture plots to sell direct to households. By linking appropriate scale markets, they can ease the transition for growers from direct to wholesale sales. The two businesses share a warehouse (both operate on rapid inventory turnover, selling and shipping as produce becomes available with little need for storage). They have also collaborated on funding development for the warehouse; Fresh City can access surplus space (for a fee) on 100km trucks as well if the route and volume permit (see case study text box).

The Pfennings' packing and distribution infrastructure is another business network for collaborating organic growers. The level of consultation and planning the group undertakes with partner growers makes this a significant and successful example of a business partnership or cluster. Martin's Family Fruit Farm has a similar cluster with their network of apple growers. In both cases, there has been significant give and take that surpasses simple procurement from suppliers for resale. 100km Foods also exceeds business partnerships to offer events where the chef (customers) can meet the farmers (suppliers). Instead of worrying that their customers will go direct to their suppliers, 100km Foods

sees this as a way to strengthen the businesses at both ends of their supply chain, and to keep 100km Foods themselves strong.

The positive characteristics of informal networks help to knit the countryside together, and can punish those who break their word. Despite the importance of this network building, based on social capital<sup>23</sup> exchanges of trust and understanding, and depending on informal meetings in passing, at the coffee-shop, and on committees, this kind of network can also pose a barrier to new entrants who are not from the farming community. The verbal agreements between mass market buyers and agriculture are a distortion of these traditional agreements, because the relationship is not equitable. They do not carry the same resilience as an agreement between neighbours, where broken promises can be punishable by ostracism from the community.

There is a fine balance between trust-based relations and exchanges built on financial agreements; in one case, a community-food oriented project found that they needed to formalize relations with their for-profit supplier; the lack of shared values had created problems that meant a written agreement was needed to maintain a functioning partnership. Organizations often discover a turning point in growth when trust-based relationships need to be formalized. The change is a transition time when it is often not easy to identify or to get simultaneous agreement from everyone (boards, business owners, staff). The research showed that the difference between legal and trust-based agreements was not so much indicated by scale of the project but was more likely to pertain to relative scale (disproportionately powerful actors working together) or differences in values (food security vs. profit).

### Value-based networks

The region is also home to some networks and clusters that are almost purely value-based. Foodshare, Toronto Food Policy Council, Toronto Food Strategy have a legacy of nurturing, mentoring and implementing innovation in business and non-profits that stretches over decades. These activities have to a great extent shaped the vibrant community and alternative food sector in Toronto. The value-based network designation applies to food security networks, as well as organizations like Greenest City and Environment Hamilton that link environment, urban agriculture and food security. These organizations can be leaders in significant networks and tend to be place-based; Greenest City is part of an active community food cluster that includes a large drop in centre (PARC), the West End Food Co-op, a church, the new Parkdale Neighbourhood Land Trust as well as the umbrella Parkdale Food Network. The mobility that characterizes urban environments can threaten the strength of these networks, as residents may move on after a few years, leaving a gap of knowledge and lack of continuity for the networks they leave behind. Through membership and conferences, such organizations may link to broader organizations like Sustain Ontario, but these tend to be informal or project-focused rather than long-term or formal arrangements.

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<sup>23</sup> See for instance, Robert Putnam's *Bowling Alone*, as well as Mark Lutz's *Economics for the Common Good*.

**Foodshare**, a non-profit charitable organization focused on the community food sector, has been a leader for decades in partnerships that have made lasting improvements to Toronto's food systems. They inaugurated the Good Food Box model, provide a Mobile Market truck to reach neighbourhoods without access to healthy, culturally appropriate food, and operate a wholesale distribution arm for community agencies and School Nutrition Programs across the city. They also operate a commercial kitchen that provides training for youth facing employment barriers, a catering business, and incubation for healthy school cafes.

Each project comes about as part of a collaboration; these may form only to complete a project, may continue on to other projects, or may shift their relation to Foodshare as they become more independent. Food businesses and projects have been housed during start up at Foodshare's downtown warehouse, including 100km Foods and the Not Far From the Tree gleaning project. They have sponsored the Black Farmers Collective and other organizations as they develop self-sufficiency. Although Foodshare is a charitable organization driven by their mission, mission and values, they have been instrumental in creating hybrid economic solutions or social enterprises that address food security challenges without depending fully on donations and outside funding.

Food networks may also ebb and flow depending on the need. During the Regent Park revitalization efforts, the Regent Park Food Partnership formed to ensure that community food assets were saved or enhanced by the development process; once the development was complete, the group could reform around a new project, or go into hiatus until needed again. Currently a network has formed to advocate for improved access to public lands for urban agriculture in Toronto; the group includes Toronto Urban Growers, relevant City of Toronto departments, Hydro One and North York Harvest (a food bank distributor). Another group that included the Greenbelt Farmers' Market Network has advocated successfully for a working group review of the permitting process for new farmers' markets with the goal (inspired by Barcelona and other cities) of developing Toronto as a "market city" with every resident within walking distance of a farmers' market.

### Sectoral networks

As demonstrated in the Holland Marsh section, the region is also knit together by networks that link actors by sector. These include organizations like the Federation of Agriculture (with provincial and regional chapters), the National Farmers Union, product specific organizations like the Ontario Apple Growers that link regional growers to province-wide activities. Some networks are limited to one city or region, like the Toronto Urban Growers, or the York Region Food Security Network. The [Organic Council of Ontario](#) and the [Ecological Farmers of Ontario](#) link organic and sustainable producers across the province. The integration of regional and provincial networks, as well as the strength of the GHFFA, has allowed the agricultural community to respond in a coordinated way to the call for input on the new Provincial Planning Statement (and other plans in the coordinated review like the Greenbelt Plan), and to be able to get many of their demands integrated into the revised plans. The coordinated review itself is an astonishing moment of cross-ministerial and cross-sectoral collaboration that will be addressed later in this report<sup>24</sup>.

Funders may also convene stakeholders for consultation and collaboration. The Greenbelt Fund and Friends of the Greenbelt Foundation have engaged in the development of stakeholder groups as part of the support and awareness that they have helped to build around the Greenbelt. This includes many co-operative promotional activities such as the Greenbelt Farmers Market Network,

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<sup>24</sup> See also the Nourishing Communities case study at <http://nourishingontario.ca/wp-content/uploads/2015/11/Foodshare-FINAL.pdf>.

online promotion of local food sources (i.e., [Ontariofresh.ca](http://Ontariofresh.ca)), and some branding activities for Greenbelt producers.

## Summary

This birds-eye view of networks and partnerships in the Greater Golden Horseshoe indicates the strengths and weaknesses of the region's web of activity. For instance, one can trace a nested and fairly well-integrated set of agricultural and agri-food stakeholders from regional and municipal committees, networks and organizations through participation and representation to provincial and national groups. Farm businesses are required to register with a provincial organization, either the Federations of Agriculture, the National Farmers Union or the Christian Farmers Federation of Ontario. The member fees in large part support the activities of the member association. Informal networks also knit the countryside together in multi-generational trust-based links.

Business networks exist for the retail and restaurant sector, as well as the grocery industry. Provincial and national business networks tend to be disproportionately representative of the larger corporations. In general, small and mid-scale actors, although plentiful, are less organized in member networks. Sustain Ontario and National Farmers Union both represent these actors but also have limited capacity and resources to achieve their goals. In the realm of food security, there is even less network representation outside the public health departments (which have a variable level of engagement with food security issues, and tend to focus on their own region). Food security organizations do not have representation mandated by their participation in any group as in the case of agriculture. Yet they are numerous enough that member fees, scaled to size, could create broader capacity and representation for this set of organizations.

## Keys to collaboration

People in every part of the food system were able to identify collaborations that had made their own work possible. The depth and longevity of collaborations seemed to increase with sub-sectoral focus. Groups without access to national support and representation were more likely to be reliant on networks of co-operation and trust-based partnerships. In areas that were less stable in funding and capacity (i.e., many food security organizations), the networks were essential but also less stable. Although funding has been specifically directed to network building, these organizations find they cannot substitute network building for frontline services (which are less likely to be funded), leaving little time for actual network building except for large, well-established organizations.

Interviewees were asked to identify keys to collaboration. There was considerable agreement on the obvious factors such as trust, or shared values. Respondents also evidently consider a kind of economic calculation essential as well, i.e., "win-win" arrangements. Short-term collaborations may succeed when goals are clear and shared. Longer term collaborations (which are essential for systemic change) tend to engage the gears of trust and shared values. However, relations built on trust and relations built on profit for all are not the same. Trust based relations by definition do not assume an obvious return. They reflect the culture of a gift economy. In a gift transaction, trust tends to be the glue for complex relations that feature exchanges of non-equivalent benefits over the long-term, but each transaction occurs without calculation or agreement on what would equal a "win" for the giver: what is owed, how much debt is incurred, when the return will be received.

In order to achieve trust-based relationships as a broad principle of exchange, success depends on a long period of exchanges, stable funding and tenure/ personnel security (trust networks can be transferred but generally changes of personnel require time to cement new trust). A number of the indicators assessed above are part of measuring the context for trust-based relationships. The research demonstrates that these networks are more likely to be established, long-lasting and stable



at regional rather than city regional levels, despite the fact that most actors have many connections and transactions outside the region. Changes to the community (the entrance of people who make their living elsewhere, the departure of families who have been there for generations) create challenges to action that must be understood beyond a nostalgia for tradition or the way things were.

Interviewees identified challenges to collaboration such as:

- Distance to travel to meetings
- Distrust among disparate actors
- Lack of shared values
- Lack of matched capacity (scale, resources, timelines, status/ power)
- Silos of activity
- Competition for funding
- Lack of follow-through on plans
- Structural differences (public, private, co-op, charitable, non-profit structures)
- Lack of infrastructure for collective action (like mid-scale processing or abattoirs)

Core measurements of collaboration can be assessments of engagement such as:

- Number of meetings
- Number of people attending meetings or joining committees
- Short-or long-term activity
- Level and amount of impact
- Number of people involved before and after
- Continuity of personnel

The core measurements have limitations for prescriptions about change. For instance, one rural area reports a high level of turnout for events focused on agriculture, but difficulty in maintaining and getting people to attend meetings for the Poverty Reduction Network. The actual count of people attending meetings related to food security is subject to a number of interpretations, none of them rendered definitive by the measurement of attendees at meeting. The lack of turnout might be an indication of fragility in the network, or a lack of interest in the issue. There are no doubt cultural reasons for this as well as indications of effectiveness in networks. Society continues to place blame on individuals for poverty, and on individuals for failing to respond. Shame on both sides can prevent people from acting.

Longitudinal tests may be more relevant than the simple measurements of attendance.

Have there been tangible outcomes from the work of the network?

Has the network been able to continue efforts over a long-term?

Do directors, members, staff tend to stay for multi-year terms (that is, do those who have chosen to work on a project tend to continue with the network or organization)?

Among the different sectors of the food system, non-profits are leaders in developing complex measurements. They are required by funders to track the effectiveness of their projects. They are also directly focused on change management, and set measurable goals through the Board and membership or client structure. Businesses on the other hand do not always set goals beyond staying in business and registering a profit if possible. In general, planning for businesses is not long-term (when asked, food business owners report planning only about one or two years in advance). Business decisions can be reactive rather than strategic, a significant source of vulnerability for economies.

**Headwaters Communities in Action** has created a framework that includes community wellbeing reports (following the Canadian Index of Well-Being), five pillars of a healthy community, and an assessment of community assets in relation to the five pillars. The group represents a number of the regions within the GGH, including Dufferin, Guelph and Wellington. They have identified four asset categories in relation to the pillars, including human, social, natural and financial/ built assets. The framework was built on consultations to identify the priorities of community members from 2008-2011. In 2012 the group began to roll out programs based on the local priorities. The area has also created its own Headwaters Food and Farming Alliance (HFFA). The HFFA has created a hub that organizes and coordinates the engagement of government representatives as well as other groups such as the Hills of Headwaters Tourism, and the Education Literacy Action working group. They are currently developing a food charter and action strategy, with input from the groups and two food summits in the past.

Indicator processes have been used in Toronto's Parkdale community and other municipalities to create a community plan<sup>25</sup>. These projects create a set of measurements that contrast with conventional national indicators like GDP (which can perversely increase with tragedy, as in a flood or hurricane that requires investment in rebuilding people's homes, or increases the flow of money to medical workers to help the injured).

One community and non-profit leader with many years of experience notes the intangibility and fragility of trust; that it takes time to build and can be lost in a second. Despite the reach of his work (province-wide), he still emphasizes the need for in-person contact to supplement e-mails. Limited funds and resources in a sector can mean destructive fighting amongst businesses or organizations with the same values; reductions in funding options have meant that many excellent programs have been lost as budgets are cut or priorities shift. Distrust can occur based on limited understanding of other sectors, and stereotyped characterizations of motives and activities. For instance, statements of mistrust between mainstream agriculture and organic are common; yet longer term exposure in rural communities has led to understanding and collaboration based on shared values around growing food and relations to the land (Miller 2016).

Another community leader working in urban agriculture outlines a set of circumstances that as a package can ensure good collaboration. He includes shared values and shared scale as well as clear roles for partners, and even written agreements that are constructive. Another leader noted the need for matching capacity, certainly an issue where well-resourced organizations press under-funded or overworked organizations or businesses to spend time in lengthy meetings. In an urban environment, the need for some agreement of conflict resolution or agreement on process in case of disagreement can be essential so that participants, with so many organizations to choose from as partners, do not just walk away if there are problems. In confirmation, another leader notes that partners need to recognize the need for good communication (following through on promises and being clear about needs in transactions) and a commitment to long-term efforts. Stability in the partnering organizations was identified as important, particularly in human resources. One manager noted that network meetings where organizations send a different person every time can be challenging, as the same ground has to be covered at every meeting. Continuity through multiple projects was also noted as important, as well as multiple kinds of engagement (projects, committees, funding applications, etc.).

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<sup>25</sup> One model that has been applied in many places is the Genuine Progress Indicator framework: [http://rprogress.org/sustainability\\_indicators/genuine\\_progress\\_indicator.htm](http://rprogress.org/sustainability_indicators/genuine_progress_indicator.htm) .

Organizations like the GHFFA, as well as the Ontario Food Terminal, are situated at a junction in the web of food systems that allows them to see the necessity of supporting actors across the food chain, and avoiding solutions that benefit one group to the detriment of others. Thus, one of the clearest statements on the problem of price competition came from Bruce Nicholas, General Manager of the OFT, who remarked that each actor must protect everyone down the supply chain, rather than, for example, offering short-term discounts to ensure immediate sales. This system perspective is a precious commodity in terms of system change in the GGH, and represents an irreplaceable resource for strengthening the system for everyone.

## Policy opportunities, systemic solutions and recommendations

As an IPES (2016: 6) report notes, “Farmers cannot simply be expected to rethink their production model, nor consumers to radically reorient their purchasing patterns, without a major shift in the incentives running through food systems.” Identification of opportunities for change is only a starting point; there must also be an understanding of how change has happened and can happen in the future. The research showed that rapid change at one time or another has affected every part of the food system; and that stakeholders can readily make recommendations for future positive change.

This report has several premises: 1) that every stakeholder group can easily identify aspects of their part of the food system that they would like to change; 2) that each group can also identify practical solutions and strategies to achieve the change they want to see and that 3) much of the expertise and capacity, if not actual examples, exist to achieve the change desired. The multi-stakeholder Task Force identified the overall vision for change as change towards a food system where everyone can afford healthy food that is sourced as regionally as possible from a stable agricultural sector. This next section addresses the question of change more directly; the focus is change that provides benefits and increased sustainability to the food system overall.

As noted in the key themes section, several factors have driven changes in the regional food system. These are also described quantitatively in the Situational Analysis Report. Primary factors for the GGH include ongoing consolidation of agricultural businesses, loss of farmland that is near markets, reduction in primary and secondary processing options, consolidation in markets, reduction in regional or independent (non-chain) markets, increasing export orientation, social and environmental pressures from increasing population, and ongoing increases in food insecurity and low nutritional outcomes from food.

Some innovations have a salutary effect in one sector while damaging functions in another. For instance, the success of farmers’ markets has led to by-laws and permitting review that can facilitate direct to consumer sales. The success has also led to private pop-up markets that may encroach on farmer sales. Sales in farmers’ market venues has tended to be oriented to the middle class. These markets can fuel the increase in artisanal markets that are not an option for lower income people (both by price and because they do not feel welcome). Market voucher programs have been inconsistently funded but are one solution that has been tested in Toronto. Foodshare’s Mobile Market combines the pop-up market with the good food market approach to get healthy, affordable food to neighbourhoods with limited access to fresh food.

Interviewees were asked the following questions:

What has changed and what drove that change?  
What is changing now?  
What will or should change in the future?

The examination of change in the past and anticipated in the future can pinpoint the drivers and patterns of food system change in order to stimulate the change that stakeholders want to see. Systemic changes, trends or opportunities for change were identified through interviews and secondary research. The focus has been on change for which assets, expertise and the will (of organizations or policy-makers) already exists. These include:

Local sourcing at independent retail  
Climate change responsiveness

Technology innovations  
Direct marketing from farmer to consumer  
Increase in local food at mass market  
Institutional procurement  
Aquaponics and other urban food production

Stakeholders were asked in interviews to name the changes they needed to improve the outcomes from their activities, and thereby strengthen the food system. Needs identified by stakeholders fell into the following categories:

Mid-scale infrastructure  
Level playing field  
Participation in decision-making  
Financial capacity, allocation of resources  
Scale-appropriate regulations and feasibility studies  
Education

The following sections summarize the changes and proposed solutions for resilience and system-wide impact based on the established indicators. The policy recommendations collated from these topics are identified at the end of this section.

### **Local sourcing at independent retail**

In addition to the increase in attention to locally sourced food at the independent retail level, new projects like Toronto's subway markets offer healthy food options (Grab2Go) at accessible locations. The city has also championed new Healthy Corner stores projects.

### **Climate change responsiveness**

Food growers are aware of and addressing the impact of climate change, as volatile weather patterns increase and the pattern and intensity of insect and disease shifts. The agricultural sector has also seen an increase in knowledge and application of techniques that improve soil health, prevent erosion, reduce chemical use and manage water sustainably.

### **Technology innovations**

Technology is also a site of ongoing change and upgrading, including the increase in online markets. The online marketing and home delivery businesses have increased the necessary level of technical expertise for many buyers and sellers.

In interviews, small scale and urban agriculture farmers mentioned the need to build their own equipment to meet the needs of intensive, diverse crop farming for direct markets. Fortier, a sustainable grower who has been inspiring a new generation of farmers with his innovative approach, cites his refusal to use a tractor as one key to his financial success on a ten-acre farm in Quebec, as well as the health of his soil (<http://www.themarketgardener.com/>). Durham College, with its combination of urban agriculture and chef training program, has also started to customize manual and small machines (push tillers, small cultivators) to meet the needs of the narrow plots and intensive, mixed crop production common to urban agriculture.

### **Direct marketing from farmer to consumer**

Although the retail sector has seen consolidation, with independent stores purchased by mass market chains or closing their doors, there has also been a rise in local procurement for retail and

restaurant markets. The retail sector has seen a proliferation of farmers' markets, box programs and local food sourcing at stores and institutions, as more consumers look for local and fresh food. Labeling initiatives to identify origin and other characteristics (e.g., Foodland Ontario and Local Flavour Plus) have accompanied these changes.

Producers can sell through existing markets that fit their volume better (farmgate, farmers' markets) rather than expanding to meet mass market requirements at considerable risk and expense. Local food maps and farm fresh associations, as well as regional food events, have increased the profile of local food; the infrastructure from distribution to year-round markets is still being built. Food security organizations mentioned that a significant barrier to spending their procurement budget on local producers is simply not knowing how to find the suppliers (given all the other demands on their time and lack of agricultural expertise).

Other innovations include by-law changes to facilitate urban agriculture (Hamilton) and farmers' markets (Toronto). These may be hard-won victories in the first municipalities that lead the way, but are more easily replicated once the benefits are proven.

### **Increase in local food at mass market**

There are several opportunities to increase local food at mass market, all of which depend on assets that are currently in operation to different degrees. Large distributors (and mass market distribution centres) can increase their efforts to access regional food as much as possible. This would be facilitated by permitting individual chain stores to purchase from regional producers again. An increase in promotion based on seasonality would help re-educate consumers not to expect the same product every day of the year.

For large buyers (mass market, hospitals, schools), a shift to local food can mean significant mismatch in scale as well as approach. The mass market strategy is to offer a few local items that move slowly to test the market, and to replace high volume items with privately labeled examples that are often supplied by the same local supplier, but may have adjustments to recipes and ingredients to meet lower price points or consumer preferences. The limited item approach has failed in some instances where the cost of delivering small amounts to mass market or food service companies was not matched by the revenues generated for the suppliers. If local food was part of the same supply chain as other products, this would not be an issue. When it is a separate supply chain, there are logistical and infrastructural challenges in increasing the flow of local food to mainstream markets.

### **Institutional procurement**

Many stakeholders have begun to work on facilitation of institutional procurement, to reduce the barriers for regional producers and to develop these new markets for regional supply. The shift requires transitions for suppliers and buyers; in order to move from direct sales to institutions, suppliers must meet the more restricted food safety rules, provide a year-round supply as much as possible, meet contract pricing (often low, based on volume) and be able to provide the volume that this market requires. Likewise, the institutions must be able to shift to a more cyclical menu, prepare from fresh ingredients, work with more than one supplier, and perhaps shift cost savings from food to another area of operation (although shifting from pre-prepared meals to fresh food can release budget surplus in itself, as raw ingredients are more affordable than prepared dishes, and tend to reduce waste (and the cost of disposal). The change would also better ensure the nutritional levels of meals in hospitals, long-term care, etc.) by controlling the ingredients from the start.



## Aquaponics and other urban food production

One important kind of change is specific to an area, but has the potential to be replicated or to lead to more system-wide change. Innovations like inland shrimp farming and aquaponics can increase the locally available protein; aquaponics can open new ways to produce protein in or near urban areas. Urban bee-keeping efforts, urban perennial (fruit) production, food processing waste reduction and edible forests may only exist in small numbers but with umbrella organizations like the Urban Toronto Beekeepers' Association, Not Far From the Tree, Provision Coalition and others to spread the word and offer tools for replication, the innovation can become systemic change.

## Mid-scale aggregation, distribution and processing infrastructure

Mid-scale infrastructure was by far the most frequently mentioned opportunity and need. Several interviewees emphasized the need to link sectors that tend to conduct their activities in siloes. Explorations of why regional producers continue to focus on mass market and export, despite dwindling returns, showed that part of the problem is lack of appropriate scale infrastructure, including lack of knowledge about how to access regional markets, whom to contact, and how to manage local distribution cost effectively.

The stakeholders explored a range of interventions that shorten supply chains, establish regional processing, distribution and transportation and rebuild the food systems around regional production for regional markets<sup>26</sup>. In this category, interviewees recommended:

- A return to direct producer sales to retail, including chain stores
- Further development of direct sales opportunities for small scale, near urban growers,
- Technology (online ordering, logistics) to facilitate the operation of food hubs
- The development of food hubs
- The implementation of small and regional processing facilities
- Support for traceability for regional producers

In each case, experimentation or demonstration of the viability of the solution has already been done. 100km Foods has been a leader in rebuilding local food infrastructure; the business has continually and rapidly expanded since it was launched, indicating that there is a ready market for the aggregation and distribution of local foods in urban areas. Supermarkets have begun to test direct procurement (for individual stores) to meet customer demands for local. Local food maps and support for new farmers' markets, as well as distributors like 100km Foods have increased access to urban markets for near-urban growers.

Examples of technology advances include the FoodReach online portal and Open Food Network Canada<sup>27</sup>, as well as other online technology used by food banks (Link2Feed), hubs (100km Foods) and food hubs for institutional buyers (e.g., the SCOR food hub).

A few food hubs have demonstrated the viability of the model; the business case is bolstered by the long-term effectiveness of organizations like Foodshare, and independent distributors like Flanagan's who began before the term "food hub" was in use. VG Meats provides an excellent example of sophisticated traceability for a regionally focused abattoir that aggregates and distributes from various farms, including their own.

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<sup>26</sup> See the Nourishing Communities work on food hubs: <http://nourishingontario.ca/publications-and-presentations/food-hubs-lit-reviews/>.

<sup>27</sup> See Nourishing Communities at <http://nourishingontario.ca/food-hactivism/>.

Mid-scale distribution and markets can be better supported by consumers and policy-makers alike as it may be the most promising solution to achieve food system regeneration. Mid-scale agricultural infrastructure can also be rebuilt, although that can take time. For instance, Niagara's extensive loss of fruit tree orchards following the CanGro plant closing would take years to regenerate even if the infrastructure was there. The trees and orchard infrastructure are gone on many farms, replaced by more feasible crops or sold for development. The new incubator projects in Toronto and Northumberland County consumed considerable time and money for start-up.

The Greenbelt Fund has invested over a number of years in the development and feasibility assessment of food hubs and regional food infrastructure in Ontario. The development of food hubs faces various challenges. Existing large scale markets have advantages of volume and supply that entrants have trouble matching. Consumers resist any significant premium on local food, despite the current lack of level playing field. As Naccarato from the Greenbelt Fund remarked in the interview, there are two quite separate systems now, one with efficiencies and economies of scale, and the other benefiting from flexibility and rapid response, with procurement matched to online ordering and little physical aggregation or storage. Although there may be a place for both systems, the latter offers some solutions to challenges that stakeholders have identified, but lacks policy and financial supports to expand smoothly and to meet its full potential.

Although only a few food hubs have been newly launched despite the high level of interest, their impact has been significant. For instance, the food processing/ aggregation hub in Smith Falls (outside the GGH) initially linked local producers, food entrepreneurs, a regional distributor (Wendy's Mobile Market<sup>28</sup>) and partnered with the municipality to increase the availability of regional food in eastern Ontario. They now offer their own distribution services.

Other innovations in distribution include FoodReach (aggregating food for community agencies and school food programs), and Foodshare (combining aggregation for agencies and school food programs with consumer direct programs like the Good Food Box, Good Food Market and Mobile Market, as well as kitchen training and meal preparation (both to sell and to provide). Innovations also include the shift towards distribution and local food procurement that was championed by Community Food Centres © but is also being taken up by the food banks with their strong logistics and infrastructure assets. These projects maintain a focus on food security solutions while developing models for the mid-scale infrastructure needed for the food system overall.

Innovations in processing and food business incubation infrastructure (e.g., Food Starter and the OAVFC, Two Rivers Food Hub) can be expensive; a review is needed to test feasibility and cost scenarios, as well as structural options (public/ private or public/ non-profit partnerships, etc.).

## Level playing field

The notion of a level playing field was raised by the agricultural community, particularly by mainstream producers who felt that non-Canadian producers have an unfair advantage in access to chemical tools and lower labour costs. The consolidated power of the retail chains has meant that food producers feel like the playing field is not level when it comes to price-setting (except in the case of supply management). One innovative thinker suggested we should consider supply management for vegetables in addition to the existing programs. The recent history of agriculture has been the erosion, except in the supply managed sectors, of the ability to maintain fair pricing in a sector, a function that before free trade could be undertaken by sector associations.

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<sup>28</sup> See From Miller (2010) *From Land to Plate* (<https://sustainontario.com/2010/11/10/3416/news/from-land-to-plate>) for a history of this company's early years; also a Nourishing Communities case study: <http://nourishingontario.ca/wendys-country-market/>.

The desire for a level playing field was noted also by alternative producers who do not have access to the support payments that mainstream producers can draw on. These payments are public funding totaling \$5.3 billion in 2015-2016 according to one Government of Canada report (2016: 9), but they are directed to mainstream production.

The proposal to establish community shops, that offer a full range of food with credit provided for low income shoppers (a model pursued on a small scale in Toronto with Parkdale's [Co-op Cred Program](#)) seeks to "level the playing field" in a different way, by making access to food no longer contingent on income level.

### Participation in decision-making

Although only one interviewee identified the need for more participation in decision-making, participation in decision-making was a theme that ran through discussions about bureaucracy. In many cases, interviewees did not objecting to regulations in general (particularly food safety regulations or protection of the environment). However, they voiced opinions that without consulting their interests or in some cases, new regulations could not address the actual sectoral context, or legislate a solution that actually addressed the problem.

In the case of food security organizations, unless they are a mandated committee of a municipality or region, the interviewees reported struggles to advocate and achieve engagement with their needs at a policy or regulatory level.

### Financial capacity, allocation of resources

Changes to the allocation of financial resources was a frequent recommendation from stakeholders<sup>29</sup>. Ten interviewees directly named access to financial resources as a need, both for their own sector and for food systems in general.

For food security organizations as well as many consumers, financial resources have dwindled, reducing their flexibility in food choices as well as the capacity to find fresh healthy food.

Most food security organization representatives named poverty reduction and basic or guaranteed income as a solution that was needed. The sector was also more likely to name the need for stable funding. For the entrepreneur-focused projects, access to start up and operational capital, as well as the ongoing and increasing costs of meeting bureaucratic requirements were all described. There is a clearly a place for a range of financial instruments to address transition to regional infrastructure for healthy food produced more regionally and accessible to everyone.

Financial resources are a challenge for consumers as well. Options that are convenient to people working long hours and multiple jobs have been reduced; rising transit prices may limit consumer shopping options as well. The reduction has increased car dependency as well as unhealthy eating practices, but may also increase interest in home delivery options for those who can afford them. The call for a guaranteed income reflects a desire for systemic change to a system that inevitably links poverty with hunger as well as to other abuses of human rights.

Another financial topic raised occasionally was the need for support for the next generation of farmers. Young people returning to the family farm face barriers to access such as the capital to

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<sup>29</sup> See also Nourishing Communities: <http://nourishingontario.ca/publications-and-presentations/food-hubs-lit-reviews/> .

purchase quota from their parents, or the lack of access to additional farmland in the area nearby (due to capital or because the land has been converted to another use). For farmers entering the field from non-farming families, the barriers are similar but greatly increased with the challenges of entering a new community, using alternative techniques (diverse crops, direct sales, organic farming), and with the need to access training for novel approaches to farming like agroecology, or mixed cropping.

### **Scale appropriate regulations and feasibility studies**

The question of scale-appropriate regulations and financing was also broached. The idea of scale appropriate regulations was frequently mentioned across the supply chain; permitting and food safety regulations have been designed with large scale operations in mind, and are often not well matched to the needs, capacity and physical characteristics of mid or small-scale. The mismatch can delay or halt projects that could meet some of the needs of regionalization of the food systems.

There was a clear recognition that the business case for novel (mid-scale) enterprises of all kinds was needed, as well as perhaps better assessment of the relative costs of different kinds of development. [Cost of Community Services](#) studies in the U.S. and in Canada for [Red Deer, Alberta](#) have shown that agriculture and industry bring money into a regional or municipal area. On the other hand, residential development is shown in these studies to have a negative impact on the public budget. Although development charges are used sometimes to transfer the cost of housing to the main beneficiaries (the developers) these are used unevenly and are not fully effective in Canada (Slack 2006).

### **Education**

Almost every stakeholder reported that their organization or sector engaged in some form of education, from practical training for new workers to specific business training offered at business incubators, to formal training at specialized high school or college programs. Several interviewees mentioned the need to revive extension-style services in which government staff provide expertise in the field for producers. The value of the Muck Research Station to agriculture north of Toronto has been recognized well beyond the Holland Marsh itself.

Research and education is particularly lacking and underfunded for measures that shorten supply chains. However, some excellent interventions can act as models for further action. For instance, the Ecological Farmers of Ontario mobilized funding to create extension and mentoring arrangements for ecological farmers (for whom there is little support of any kind from government). Durham College, with an excellent food and farming program that links budding chefs with urban agriculture to build new farm to table enterprises, is committed to increasing their already impressive research work. They hope to act as an extension agent with knowledge of the specific climate and soil in eastern Ontario.

### **Key policy recommendations**

The review of stakeholder input above provides guidelines for four key policy recommendations:

### Key Recommendation #1

Develop and support for transition to mid-scale infrastructure (regional processing, distribution, marketing)

### Key Recommendation #2

Establish financial resources that support a range of scales and stages

### Key Recommendation #3

Establish scale-appropriate regulations and feasibility assessments for mid-scale infrastructure like regional food hubs

### Key Recommendation #4

Increase research and educational opportunities directed at regional agriculture and regional infrastructure needs linked to shorter supply chains

In addition to these recommendations that were extrapolated from discussions, stakeholders were asked to name specific policy changes as part of the interviews. Stakeholder recommendations were often framed in terms of ongoing policy work in their networks. For instance, the Ontario Federation of Agriculture has clear policy recommendations for municipalities. Sustain Ontario has clear policy direction in a number of areas, reflected in their committee structure. Government at all levels has policies pertaining to GGH food and agriculture that are in various stages of redesign following or preceding the current coordinated review. The most frequently mentioned policy recommendations across the food systems were also policy strategies that have inspired significant collaborative efforts already. These are reviewed below.

The four policy recommendations that were cross-sectoral and most frequently mentioned in addition to the first four are reviewed below and summarized here:

- Provide sufficient social assistance, through a guaranteed income or other measures, to ensure that everyone can afford to eat healthy food
- Establish a national food policy and a national school food policy
- Ensure widespread formalization and implementation of public procurement policies for local food (with percentages and budgets to meet policy goals)
- Revise the labour practices, government support and subsidy programs to ensure the necessary skilled labour for all food system areas with tenure security and fair compensation for work

### Key Recommendation #5

Provide sufficient social assistance, through a guaranteed income or other measures, to ensure that everyone can afford to eat healthy food

The need for a basic or guaranteed income was frequently cited, with local activity from Toronto and Hamilton work to promote the basic income idea, and nationally with Food Secure Canada and others. The Basic Income activities link to more modest calls for changes to social assistance to allow low income people to afford food as well as rent, or to initiate a program like SNAP in the U.S. that can be used with credit-style cards to reduce the stigma associated with food stamps (e.g., Toronto's "Put

Food in the Budget” campaign). The recognition of the need for these solutions crosses sectors; food growers want a situation in which they are paid fairly for their products, and consumers can afford these fair prices. This lifts struggles for improvement into the realm of economic system change, where it seems that diverse stakeholders can agree.

### Key Recommendation #6

#### Establish a national food policy and a national school food policy

There was also widespread commitment to a national food policy, and a national school food policy, both measures where Canada lags behind comparable nations. This policy direction links to the widely supported strategy of local food procurement policies at publicly funded institutions: hospitals, schools, universities/ colleges, government offices. Again, these can easily find successful models elsewhere.

### Key Recommendation #7

#### Ensure widespread formalization and implementation of public procurement policies for local food (with percentages and budgets to meet policy goals)

Important work has been done (MacRae 2014) to identify the way forward for local procurement policies that avoids challenges under trade deal agreements, that formally restrict or prevent preferential treatment for local suppliers. In related recommendations, some stakeholders mentioned the need to prioritize food policy, even to enshrine it as an essential service (which would define it formally as necessary to life, and therefore could not be withheld or arbitrarily removed). This part of the recognition of the right to food (so far not implemented in Canada), which constrains governments to ensure that all people have sufficient food, regardless of their ability to pay.

### Key Recommendation #8

#### Revise the labour practices, government support and subsidy programs to ensure the necessary skilled labour for all food system areas with tenure security and fair compensation for work

Many stakeholders mentioned a need to change the agricultural labour system (a need that can be extended to food services as well). There was an interest in creating systems that made the jobs effective for Canadians. Stakeholders understand that agricultural jobs are both highly skilled and reasonably variable, requiring long hours from trained workers during the season, and a reduction of work hours in the off-season. These factors do not preclude the attraction of the jobs, as some of the characteristics are part of high quality and decent work.

The insecurity of the jobs (tied to seasonality and the vicissitudes of the agricultural economy) seems to be the central challenge in hiring Canadians; in fact, this problem would need to be addressed if the migrant workers movement demands for status on entry were met. However, sectors that have full-time and/ or permanent work (e.g. livestock, or integrated businesses like Martin’s Family Fruit Farm or Pfennings’, with value-added as well as fresh produce distribution activities occur) seem to have little trouble retaining and attracting local workers. Since farmers tend to “name” their migrant workers, so that the same person is brought back every year, providing more job security through status and access to Canadians’ workers’ rights does not conflict with general practices.



New mid-scale infrastructure (recommendation #5) would increase the security of workplace opportunities, as regional food hubs, farm-based value-added activities, and diverse marketing strategies are more likely to have full-time and/ or year-round positions. Public money could be devoted less to working out deals with countries with workers desperate for employment, even if it means leaving their families for most of the year, and more to supporting year-round work in agriculture. For the question of the low pay and low tenure security in other parts of the food system, from large retailers to cafeteria workers, the answers move back into the realm of economics and basic income; if people were able to pay more for food due to more stable incomes or affordable housing, they probably would, especially if some of the funding was directed to social assistance for healthy food access.

## Conclusion and next steps

The Phase 2 CRFS research showed that the food system is not a unitary flow of food but contains many parallel and interwoven systems. Change and innovation was a key component of interviews. Stakeholder insights offer a way to look at changes towards sustainability, barriers in need of solutions to improve the GGH food system, and the general cultural question of what impels change in the region. Has long-lasting change been driven by powerful stakeholders at the top, government or industry? Has some change occurred through the aggregated efforts of small and mid-scale actors? Has long-lasting change occurred through consumer-driven movements? Has successful change come about as actors typically in siloes recognized shared goals and values?

The primary research showed key shifts in the GGH food system over the last decade or more. Farms have become increasingly consolidated and automated. Market options have decreased with grocery chain consolidation. Trade agreements have facilitated export for food producers and processors but also opened Canadian markets to competition from cheap foreign products. Automation and price competition have constrained the job market in agriculture and food, creating more intense competition for fewer jobs, a dependence on migrant labour programs, and driven food system jobs towards low quality (insecure, lack of promotion options, low paid) food service positions.

At the same time, many positive trends and assets were identified in the research. For instance, farmers of all sizes have redirected materials, instituted better water management, and developed complex field systems that combine pest scouts, GPS and innovative cultivation methods to reduce spraying. One farm manages and uses a 30,000 foot area for composting, drawing on their own residue from vegetable processing as well as cattle and chicken manure from a neighbouring farm. All of the compost goes onto their fields. No till and cover crops are in widespread use, improving resistance to erosion and the health of the city-region agricultural soil. Integrated Pest Management, especially through the support of the Muck Research Station, continues to expand, recently in tests of a beneficial nematode to address carrot weevil that works better than the insecticides in use.

Programs like Alternative Land Use Services (ALUS) as well as the new coordinated review have established new strategies to support cohabitation of stakeholder groups—representing farms, natural areas, housing development, urban growth—in the GGH. Consumer preferences have shifted agricultural trends towards ethnocultural crop production, and specialty varieties like the new EarthFresh low carb potato.

Options for direct to consumer sales have increased. Municipalities and the Ontario government have supported these options with local food maps, food-themed trails for agri-tourism, committees and by-law development to facilitate urban agriculture and public farmers' markets.

The challenges for more regional production for regional markets include a general lack of capital to make necessary changes (consumer preferences and government regulation can change faster than farm infrastructure that meets the new demands). The decades of increasing consolidation and commodity crop focus have depleted the expertise and infrastructure to transition to diverse crops. A farmer who has focused on carrots and onions for most of their farming life would need some time to learn to do lettuce on a commercial scale. For instance, the Muck Research Station is exploring disease that crosses between crops, a problem that would increase with greater diversification. On the other hand, diversification can help to reduce infestations, as the pest that affected one crop may die out for lack of food if something else is planted there, or may fail to reach epidemic proportions if the favored food is only one of many food crops.

It is well-known that organic and small-scale farmers can have trouble accessing loans from the Farm Credit Canada, conventional banks, or even credit unions (source). In Ontario, there is no aggregated

capital option committed to local food such as FarmWorks in Nova Scotia, or the food-focused Community Economic Development Corporations in the U.S. like Coastal Enterprises. Only supply-managed farmers have real security to borrow against, as they can use their quota as security for loans.

The history of Canadian agriculture began with diverse crops grown in small parcels of land by a community of farmers. The model has been supplanted by a focus on efficiency, single or dual crop production and a parallel loss of knowledge and infrastructure for other crops. The encroachment of suburban housing has depleted the GGH of certain key infrastructure and production resources such as livestock, as they are more likely to cause problems for non-farming neighbours (see GHFFA Synthesis report 2015).

Regionalization of food systems requires the rebuilding of scale-appropriate (small and mid-scale) processing, storage, distribution, etc. Infrastructural challenges include the barriers to small and mid-scale processing (for instance, regulatory, tax and capital barriers). New regulations may allow more on-farm processing, improving the landscape for farmers who primarily produce but may do light processing to create higher margin value-added products. The farm tax rules are behind this problem; on-farm processing can result in the much higher industrial tax rate, even if it is a small percentage of the operation. Maple syrup producers, who typically boil and bottle on the premises, are taxed at a non-agricultural rate, creating a challenge for small-scale syrup production or for farms doing maple syrup to balance the slow cash flow in the off-season.

Many of the necessary assets are in development or exploration, like the Toronto food business incubator at Food Starter, and the Ontario Agri-Food Venture Centre in Northumberland County to the east of Toronto. Existing regional distributors draw on the food terminal for local stores, restaurants and institutions. The development of food hubs that has been supported by the Greenbelt Fund, the Local Organic Food Co-ops Network, Wilfrid Laurier's Centre for Sustainable Food Systems, and others. These assets will be essential in any regionalization of the GGH food systems.

Longer term and systemic changes would re-level the playing field for producers of every kind. The new artisan and small flock chicken program established by the Chicken Farmers of Ontario is an excellent model for moving forward; small flocks have been challenged by supply management regulations and the cost of quota. Mixed crop farms selling direct have had to come up with creative solutions to get the chicken and eggs they would like to offer customers, and the manure that raising chickens provides for a small farm. The new program, rather than proscribing small flocks, regulates them instead to ensure that food safety standards are met. The program is ground-breaking in that it has avoided putting significant new barriers on small farming, while ensuring the outreach and support that will maintain Canadian food safety standards (Mount forthcoming).

In the distribution and retail sector, change has seen a shift at both ends of the market spectrum, at mass market with consolidation, and through direct sales at farmers' markets, farm stores, CSA's and other outlets. These large and small supply chains reduce the need for wholesale or independent distributors, who facilitate mid-scale food system flows.

Nonetheless, the rise of local food has made mid-scale distributors that focus on local food, like 100km Foods in Toronto, see rapid growth and strong financial outcomes (see also Stahlbrand, 2016 [presentation](#) for IFSA 12<sup>th</sup> European Symposium). Sysco and Gordon's food service distributors, two transnational corporations, have launched initiatives, supported by the Greenbelt Fund, to increase their procurement of local food. Consolidation has made some of the top players unwieldy and unsatisfactory for suppliers, opening opportunities for local producers, independent regional distributors, local food hubs and local retail or online marketing. Success at the farmers' market and CSAs can lead some farm operations to seek higher volume sales through distributors, with less time

spent on transportation and marketing. Mid-scale operations can have higher quality jobs, not necessarily in terms of pay, but in terms of supportive workplaces, opportunity for advancement, and a broad set of responsibilities that can bring a job out of the realm of routine. Co-ops, collectives and many family run businesses offer an opportunity for democratic functions (consulting with workers, providing for innovation by individuals) that large corporations cannot afford.

The flow of carrots and other fresh products to food insecure households is still largely based on a charitable model, although innovations and strategies are developing for both community organizations that provide meals and food banks that strive to replace the charity model and access regional fresh food to improve health outcomes. The right to food is inadequately met through voluntary donations of fresh food from local farmers, procurement when funding permits by non-profit and charitable agencies, and corporate donations of food, often processed food, from supermarket chains or directly from manufacturers.

An economy that left no one behind would allow farmers to stay in business, and all people to be able to eat healthy food that met their household food practices and traditions.

Food insecurity needs overlap with other food system areas in requiring economic solutions rather than charity. An economy that left no one behind would allow farmers to stay in business, and all people to be able to eat healthy food that met their household food practices and traditions (see Ballamingie et al. forthcoming).

The integration of policy recommendations with ongoing activities in order to establish scenarios for a transition to more resilient and sustainable food systems will be addressed in Phase 3 of the CRFS Toronto project, with additional feedback and input from key stakeholders. Scenario assessment will establish action planning around timelines, resources (physical and human), and financial considerations. As Hill and MacRae (1995) have pointed out, systems transitions tend to move through various stages, from efficiency (improving the existing system preparatory to larger changes), substitution (implementing parallel or different practices within the existing system) and redesign. Many of these policy recommendations (particularly the ones shared by several stakeholders) take a holistic perspective, and fit into the system redesign stage in the resilience framework referenced earlier (Walker and Salt 2012). Intermediate steps can be established through consultations to explore these ideas further.

The CRFS Toronto project occurred in a context of significant transition and policy activity, with an increase in coordinated demands for a guaranteed income and other poverty reduction measures, a national call for coordinated food policies, a rise in local food policy networks and groups both within government and in communities at large, and the coordinated review of plans in the GGH.

The coordinated review has demonstrated that isolated sectoral actors who have been focused mostly on their internal activities, policies and changes, can recognize shared issues and establish shared solutions across systems, sectors and communities. In most cases, these organizations (see Appendix B) are involved in shaping and advocating for policy change. The research shows a trend towards policy change that is cross-sectoral and system wide, suggesting that the potential exists for Canada's food systems to move towards the Task Force

The coordinated review has demonstrated that isolated sectoral actors who have been focused mostly on their internal activities, policies and changes, can recognize shared issues and establish shared solutions across systems, sectors and communities.

vision for food system change: “Healthy food for all, sourced as regionally as possible, and as sustainably produced, processed, packaged, and distributed as possible”.

The vision framed by the CRFS Toronto Task Force knits two key parts of the food system together that are structurally and systemically disconnected: the agri-food economy from production to markets, and the uneven flow of food to people who cannot afford to pay (who are therefore without access to the food economy). Historical developments in policy, regulation and economic supports have created this context. “Industrial agriculture requires certain institutional, political and market arrangements in order to flourish, and those arrangements systematically lead to an industrial mode of agriculture. For example, the political imperative of export-led agriculture could not exist without the development of highly-specialized commodity cropping, and vice versa.” (IPES 2016: 41). Measures that focus only on strengthening the agricultural economy (higher prices for food, for instance) maintain solutions to hunger in the realm of donations and charity rather than structural solutions.

The report seeks solutions that marry the two disconnected poles of the food system. Consensus from stakeholders also is directed towards systemic solutions, an indication of the level of whole systems perspective that is available, and of the real possibilities of a transition to a better system for all. The possibility of system change has been recently inaugurated in the new concept of “agricultural systems” proposed in the draft GGH plans. Stakeholders also consistently recommended an increase in measures and tools to promote system change, such as food policy councils that are stable and tied to the apparatus of decision-making.

Stakeholders tend to seek additional representation and activity for their sector, specifically around the mid-scale, a key part of the transition to more resilient food systems. They also seek solutions that are either long-term public commitments or can achieve economic self-sufficiency. They tend to emphasize linking sectors through shared solutions. The instinct to seek holistic solutions is testament to the thoughtfulness of stakeholders, and their ability during discussion to identify future change that can support their work and benefit (or not harm) the work of others. As the GGH food systems go through rapid change and growth, the rich input drawn from these conversations bodes well for the goal to make system change that benefits everyone.

## Appendix A: Interview Questions

The following questions were the template for the interviews. Participants were drawn from the full range of sectors in the GGH food systems; the semi-structured interviews posed a customized version of the questions to match the context as well as any prior knowledge or exchanges the participants might have had with the project.

### Interview template

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Business: \_\_\_\_\_

Date: \_\_\_\_\_

1. How did your business [or organization] get started?
2. Tell me about what you do (this can be part of a tour; should include size of organization/ business and volume of product, number of workers, etc.).
  - a. What are your key markets and where do you expect future growth to occur?
  - b. How much of the food that you sell or offer is produced regionally? Do you have plans to increase that amount?
  - c. How much is sourced through or produced for export?
  - d. What are the barriers for sourcing or marketing regionally?
  - e. Other aspects of the business: workforce, waste processing, environmental services, community/ social benefits (this should come up in the tour, but follow up questions can be asked as well)
3. What are major changes that have occurred during your history? What triggered those changes?
4. What are your key goals; how do you know when you are successful (measures of success)?
5. What inspires or forces you and similar groups to change what you are doing?
6. Who are your key partners [i.e., links in food system chain]? suppliers? collaborators?
7. How long have you worked with each partner? Has the relation evolved over the years in some way? How do you maintain good relations? What can make these partnerships fail? How do you identify or develop new partners?
8. What are challenges to overcome or that have been overcome in your networks?
9. What infrastructure is missing or hard to access for your work?
10. Does the available funding and support programs (government, private or non-profit) fit your needs? If not, how could they be improved?
11. Do you engage with member associations to support policy development, advocacy and/or for other reasons? What makes these successful (examples)?
12. Do you engage in training for yourself, the workforce, consumers, public, or other partners?



## Appendix B: Interview Participants

The following people and organizations participated in the Phase 2 interviews. The commodity section at the top is sorted by commodity; the rest of the list is sorted by region.

| Last name            | First name    | Organization                         | Area           | Sector                  |
|----------------------|---------------|--------------------------------------|----------------|-------------------------|
| <b>Commodities</b>   |               |                                      |                |                         |
| Bakker               | Sarah         | Field Sparrow Farms                  | Kawartha Lakes | beef, chicken           |
| Brubacher            | Don           | Ontario Potato Board                 | Ontario        | potatoes                |
| Ciceran              | Kelly         | Ontario Apple Growers                | Ontario        | apples                  |
| Downey               | Trevor        | Downey Farms                         | Simcoe         | potatoes                |
| Martin               | Steve         | Martin's Family Fruit Farm           | Waterloo       | apples                  |
| Mous                 | Cathy         | Chicken producer                     | Niagara        | chicken                 |
| Opsteen              | John          | Chicken producer                     | Halton         | chicken                 |
| Schillings           | Hubert        | White Feather Farms (chicken)        | Durham         | chicken                 |
| <b>Holland Marsh</b> |               |                                      |                |                         |
| Eek                  | Avia and Bill | vegetable producer                   | Holland Marsh  | carrots                 |
| Hambly               | Christina     | Gwillimdale Farms                    | Holland Marsh  | carrots                 |
| De Haan              | John          | Gwillimdale Farms                    | Holland Marsh  | carrots                 |
| MacDonald            | Mary Ruth     | Muck Crops Research Station          | Holland Marsh  | research and education  |
| Mott                 | Jody          | Holland Marsh Growers Association    | Holland Marsh  | network                 |
| Shepphard            | Matt          | Bradford Co-op                       | Holland Marsh  | agricultural supply     |
| Schrestha            | Jane          | Simcoe Muskoka District Health Unit  | Simcoe         | health                  |
| Smith                | Paul          | Smith Gardens                        | York           | carrots                 |
| <b>Toronto</b>       |               |                                      |                |                         |
| Conway               | Shawn         | FoodReach                            | Toronto        | food security           |
| Dwyer                | Jacqueline    | Black Farmers Collective             | Toronto        | vegetable producer      |
| Livingston           | Noel          | Black Farmers Collective             | Toronto        | vegetable producer      |
| Cheng                | Amy           | Red Pocket Farm                      | Toronto        | world crops producer    |
| Dinner               | Ayal          | Greenest City                        | Toronto        | urban agriculture       |
| McCauley             | Dana          | Foodstarter (with Lisa Reed, intern) | Toronto        | food business incubator |
| Martyn               | Emily         | Regent Park Community Food Centre    | Toronto        | food security           |
| Nicholas             | Bruce         | Ontario Food Terminal                | Toronto        | food hub                |
| Leo                  | Gianfranco    | Ontario Food Terminal                | Toronto        | food hub                |
| Noble                | Ryan          | North York Harvest                   | Toronto        | food security           |
| Pearlman             | Mark          | FoodReach                            | Toronto        | food security           |
| Rebick               | Alvin         | Foodshare                            | Toronto        | food security           |
| Sawtell              | Paul          | 100km Foods                          | Toronto        | food hub                |

|   |           |   |                |                         |
|---|-----------|---|----------------|-------------------------|
| Teitel-Payne                            | Rhonda    | Toronto Urban Growers                   | Toronto        | urban agriculture       |
| Kuhns                                   | James     | Toronto Urban Growers                   | Toronto        | urban agriculture       |
| <b>Durham and Northumberland Region</b> |           |   |                |                         |
| Drummond                                | Mary Ruth | Durham Food Policy Council              | Durham         | network                 |
| Znajda                                  | Sandra    | Durham Food Policy Council              | Durham         | network                 |
| Jibb                                    | Stacey    | Durham Region                           | Durham         | government              |
| Mellor                                  | Trissia   | Ontario Agri-Food Venture Centre        | Northumberland | food business incubator |
| Mullin                                  | Joe       | Ontario Agri-Food Venture Centre        | Northumberland | food business incubator |
| Stevenson                               | Ross      | Durham College Food and Farming program | Durham         | education               |
| Werry                                   | Marlene   | Durham College Food and Farming program | Durham         | education               |
| <b>City of Hamilton</b>                 |           |   |                |                         |
| Hickey-Evans                            | Joanne    | City of Hamilton                        | Hamilton       | government              |
| Jacks                                   | Mike      | Goodness Me (Hamilton)                  | Hamilton       | retail                  |
| Kalinowski                              | Katherine | Good Shepherd (Hamilton)                | Hamilton       | food security           |
| Lukasik                                 | Lynda     | Environment Hamilton                    | Hamilton       | food security           |
| Lee                                     | Juby      | Environment Hamilton                    | Hamilton       | food security           |
| Santucci                                | Joanne    | Hamilton Food Share                     | Hamilton       | food security           |
| Taylor                                  | Celeste   | Hamilton Food Share                     | Hamilton       | food security           |
| <b>Peel Region</b>                      |           |   |                |                         |
| Hatch                                   | Chris     | Mississauga Food Bank                   | Peel           | food security           |
| Williams                                | Melanie   | Peel Region                             | Peel           | government              |
| Hutchinson                              | Karen     | Headwaters Communities in Action        | Dufferin, Peel | network                 |
| Wong                                    | Anita     | Ecosource                               | Peel           | urban agriculture       |
| <b>Halton Region</b>                    |           |   |                |                         |
| Burr                                    | Chris     | Halton Food for Thought                 | Halton         | food security           |
| Cruikshank                              | Gayle     | Halton Food Council                     | Halton         | network                 |
| Matsubuchi-Shaw                         | Moir      | Halton Food Council                     | Halton         | network                 |
| DeMarchi-Meyers                         | Anna      | Region of Halton                        | Halton         | government              |
| McKay                                   | Jessica   | Region of Halton                        | Halton         | government              |
| Mikulak                                 | Michael   | Region of Halton                        | Halton         | government              |
| Garrison                                | Lynn      | Region of Halton                        | Halton         | government              |
| Richardson                              | Meagan    | Feeding Halton                          | Halton         | food security           |
| Hadju                                   | Brenda    | Feeding Halton                          | Halton         | food security           |
| Reaume                                  | Jamie     | Country Heritage Park                   | Halton         | education               |
| Fiset                                   | Lorraine  | Country Heritage Park                   | Halton         | education               |

|   |           |  |           |                     |
|---|-----------|--|-----------|---------------------|
| <b>York Region</b>                      |           |  |           |                     |
| Banfield                                | Charles   | York Region  | York      | government          |
| Stonehocker                             | Joan      | York Region Food System Alliance and York Region Food Network    | York      | food security       |
| Greavette                               | Kate      | York Region Food System Alliance and York Region Food Network    | York      | food security       |
| Gomes                                   | Antonio   | Cavaleiro Farm   | York      | mixed crop producer |
| <b>Guelph/ Waterloo</b>                 |           |  |           |                     |
| Pfenning                                | Jenn      | Pfenning's Organic Farm  | Waterloo  | vegetable producer  |
| Armitage                                | Simon     | The Seed, Guelph Community Health Centre                         | Guelph    | food security       |
| <b>Niagara Region</b>                   |           |  |           |                     |
| Barron                                  | Rhonda    | Bridges Community Health Centre/ Fort Erie Food Security Network | Niagara   | food security       |
| Corkum                                  | Diane     | Project Share  | Niagara   | food security       |
| Hodgson                                 | Bill      | Niagara Region   | Niagara   | government          |
| Acs                                     | Eric      | Niagara Region   | Niagara   | government          |
| Souter                                  | Betty-Lou | Community Care   | Niagara   | food security       |
| <b>Provincial and regional networks</b> |           |  |           |                     |
| Hassanali                               | Meena     | Provision Coalition  | Ontario   | waste               |
| Freeman                                 | Anne      | Greenbelt Farmers' Market Network                                | Greenbelt | network             |
| Geerts                                  | Helma     | Ontario Ministry of Agriculture, Food and Rural Affairs          | Ontario   | government          |
| Groff                                   | Phil      | Sustain Ontario  | Ontario   | network             |
| Macpherson                              | Kathy     | Friends of the Greenbelt Foundation and Greenbelt Fund           | Greenbelt | network, funder     |
| Naccarato                               | Franco    | Greenbelt Fund   | Greenbelt | network, funder     |
| Puterborough                            | Carolyn   | Ontario Ministry of Agriculture, Food and Rural Affairs          | Ontario   | government          |

## Bibliography

- Advisory Panel on the Coordinated Review of the Growth Plan for the greater Golden Horseshoe, t. G. P., the Oak Ridges Moraine Conservation Plan and the Niagara Escarpment Plan. (2015). *Planning for the Health, Prosperity and Growth in the Greater Golden Horseshoe: 2015- 2041*.
- Aitken, J. (2014). *Ethno-Cultural Vegetable Value Chain Structure and Supply Characteristics in Ontario*. (Master of Science in Capacity Development and Extension), University of Guelph, Guelph, Ontario.
- Allen, R., & Campsie, P. (2013). *Implementing the Growth Plan for the Greater Golden Horseshoe: Has the strategic regional vision been compromised?* Retrieved from Toronto, Ontario: <http://www.neptis.org/publications/implementing-growth-plan-greater-golden-horseshoe>
- Alliance of Ontario Food Processors. (2013). *Ontario's Food and Beverage Processing Industry Strategy: The New Engine of Ontario's Economy*. Cambridge, Ontario.
- Baulieu, M. (2015). "Demographic Changes in Canadian Agriculture". Statistics Canada, Agriculture Division. <http://www.statcan.gc.ca/pub/96-325-x/2014001/article/11905-eng.htm>
- Baumeister, M. (2012). *Development Charges Across Canada: An Underutilized Growth Management Tool*.
- Blay-Palmer, A., R. Sonnino, and J. Custot. 2016. "A food politics of the possible? Growing sustainable food systems through networks of knowledge." *Agriculture and human values* 33.1: 27-43.
- Bure, C., Laban, S., Chung, H.-D., & Steenhoven, J. v. d. (2015). *Building a Resilient Tender Fruit Industry in Ontario*.
- Caldwell, W. (2015). *The Agricultural System: Components, Linkages, and Rationale*.
- Caldwell, W., & Proctor, K. (2013). *Farming in Ontario's Greenbelt: Possibility Grows Here*. Retrieved from online: <http://www.greenbelt.ca/farming-in-ontario-s-greenbelt-possibility-grows-here>
- Campbell, B. L., Lesschaeve, I., Bowen, A., Onufry, S., & Moskowitz, H. (2010). Purchase Drivers of Canadian Consumers of Local and Organic Produce. *HortScience*, 45(10), 1480-1488.
- Campsie, P. (2004). *The Ontario Food Terminal: A Unique Asset in the Central Ontario Economy*. Canadian Urban Institute. (2004). Ontario's Foodprint: Overcoming that Long Distance Feeling.
- Carter-Whitney, M., & Miller, S. (2010). *Nurturing Fruit and Vegetable Processing in Ontario*. Metcalf Food Solutions Papers. Toronto: Metcalf Foundation.
- Cheng, A. (2016). *Broadening the 'World Crops' Discourse: Exploring Ecological and Cultural gaps in 'World Crops' Research for the Greater Toronto Area*. Masters of Environmental Studies paper. York University.
- Chicken Farmers of Ontario. (2013). *Economic Contribution of the Ontario Chicken Industry*.
- Christianson, R. (2015). *York Region Food Collaborative: Report of Proceedings November 20, 2014 Meeting*.
- City of Toronto. (2015). *A Climate of Concern*.
- Colby, K.C. 2016. "Crops in the Holland Marsh shredded, destroyed by Friday's hail storm". July 11, 2016. <http://barrie.ctvnews.ca/crops-in-the-holland-marsh-shredded-destroyed-by-friday-s-hail-storm-1.2982495>.
- Coppolino, Andrew. (2016). "The Holland Marsh, Ontario's vegetable patch: Andrew Coppolino". CBC News Kitchener-Waterloo. <http://www.cbc.ca/news/canada/kitchener-waterloo/holland-marsh-brantford-west-gwillimbury-1.3679263>. July 15, 2016.
- Harry Cummings and Associates Inc. (2005). *Region of Waterloo Food Flow Analysis Study*.
- Deaton, J., & Vyn, R. J. (2010). The Effect of Strict Agricultural Zoning on Agricultural Land Values: the Case of Ontario's Greenbelt. *American Journal of Agricultural Economics*, 141-155.
- Desjardins, E., MacRae, R., & Schumilas, T. (2010). Linking future population food requirements for health with local production in Waterloo Region, Canada. *Agriculture and Human Values*, 27, 129-140.

- Dixit, A., Subedi, Y., McMahon, T., & Moench, M. (2013). *Mainstreaming Climate-Sensitive Indicators into an Existing Food Monitoring System: Climate Change and Food Security in Nepal*. Eat in Sustainia. (2015). *Eat in Sustainia: Taste the food systems of tomorrow*.
- Econometrics Research Limited et al. (2014a). *The Economic Impacts of Regional Agriculture and Food Systems in Southern Ontario*.
- Econometrics Research Limited et al. (2014b). *The Environmental Impacts of Regional Agriculture and Food Systems in Southern Ontario*.
- Econometric Research Limited. (2012). *Evaluating the Economic Benefits of Greenbelt Assets*. Econometric Research Limited. Retrieved from online: <http://greenbelt.ca/research/greenbelt-research/evaluating-economic-benefits-greenbelt-assets>
- Ecosource. (2015). *2015 Annual Report*.
- Food and Agriculture Organization. N.D. *Food, Agriculture and Cities: Challenges of food and nutrition security, agriculture and ecosystem management in an urbanizing world*.
- Food Banks Canada (2015). *HungerCount 2015*. Retrieved from Online: <http://www.foodbankscanada.ca/HungerCount>.
- Foster, C., Green, K., Bleda, M., Dewick, P., Evans, B., Flynn, A., & Mylan, J. (2006). *Environmental Impacts of Food Production and Consumption: a report to the Department for Environment, Food and Rural Affairs*. Defra, London.
- Fridman, J. (2014). *Settlement, Food Lands, and Sustainable Habitation: The Historical Development of Agricultural Policy and Urban Planning in Southern Ontario*. (Masters of Arts in Geography, Collaborative Program in Environmental Studies), University of Toronto.
- Gaudin, A. et. al. (2015). Increasing Crop Diversity Mitigates Weather Variations and Improves Yield Stability. *PLoS ONE*, 10(2). doi:10.1371/journal.pone.0113261
- Golden Horseshoe Food and Farming Alliance (2015). Public Land Putting Food on Our Plates, and Farmers on Our Soil: the Benefits of Prioritizing Agricultural Land. Retrieved from <http://www.foodandfarming.ca/public-land-putting-food-on-our-plates-and-farmers-on-our-soil-the-benefits-of-prioritizing-agriculture-land/>.
- Gooch, M., Feifel, A., & Marenick, N. (2010). *Food Waste in Canada: Opportunities to increase the competitiveness of Canada's agri-food sector, while simultaneously improving the environment*.
- Government of Canada (2016). *International Trade Agreements: A Summary Guide for Canadian Municipalities*.
- Government of Ontario. Greenbelt Plan 2005 (2005). Retrieved from <http://www.mah.gov.on.ca/Page189.aspx>.
- Government of Ontario. Provincial Policy Statement (2005). Retrieved from <http://www.mah.gov.on.ca/Page1485.aspx>.
- Government of Ontario. Places to Grow Act, 2005, S.O. 2005, Chapter 13 C.F.R. (2005). Retrieved from <https://www.ontario.ca/laws/statute/05p13>.
- Government of Ontario. (2013). *Places to Grow: Growth Plan for the Greater Golden Horseshoe, 2006, Office Consolidation*. June 2013. Ministry of Infrastructure.
- Graves, M., Deen, B., Frase, e., & Martin, R. C. (2015). *Planning for Resilience*. Manitoba: University of Manitoba Press.
- Greenbelt Farmers Market Network & Informa. (2015). *Tracking Market Farmer and Vendor Performance: Greenbelt Farmers' Market Network 2015 Research Report*.
- Group, J. C. (2014). *Agriculture by the Numbers: Understanding the Greenbelt's Unique Advantages*.
- Halton Food Council (2011a). *2011 Halton Community Food Assessment Community Food Programs*.
- Halton Food Council (2011b). *Halton Community Food Assessment: Environmental Scan*.
- Henderson, S., Nink, E., Nierenberg, D., & Oakley, E. (2015). *The Real Cost of Food: Examining the Social, Environmental, and Health Impacts of Producing Food*. Retrieved from <https://cf.dropboxstatic.com/static/javascript/pdf-js/pdf-js-9e9df56/web/viewer-vflfjDkOg.html>

- Hennebry, J. (2012). *Permanently Temporary? Agricultural Migrant Workers and Their Integration in Canada*.
- Hertel, S., & Markovich, J. (2015). *Local Leadership Matters: Ontario Municipalities Taking Action to Strengthen the Greenbelt*.
- Holtslander, C. (2015). *Losing Our Grip 2015 Update*. <http://www.nfu.ca/issues/losing-our-grip-2015-update>
- House of Commons, Canada. (2016). *Temporary Foreign Workers Program: Report of the Standing Committee on Human Resources, Skills and Social Development and the Status of People with Disabilities*.
- IPES-Food. (2016). *From Uniformity to Diversity: A paradigm shift from industrial agriculture to diversified agroecological systems*. Retrieved from <http://www.ipes-food.org>:
- JRG Consulting Group. (2014). *Agriculture by the Numbers: Understanding the Greenbelt's Unique Advantages*. Retrieved from online: [http://www.greenbelt.ca/agriculture\\_by\\_the\\_numbers\\_understanding\\_the\\_greenbelt\\_s\\_unique\\_advantages](http://www.greenbelt.ca/agriculture_by_the_numbers_understanding_the_greenbelt_s_unique_advantages)
- Khandor, E., & Koch, A. (2011). *The Global City: Newcomer Health in Toronto*. Retrieved from Knechtel, J. (Ed.) (2008). *Food*. Cambridge, MA: The Massachusetts Institute of Technology and Alphabet City Media, Inc.
- Kornelson, S. A. (2010). *An Apple A Day: Exploring Food and Agricultural Knowledge and Skill Among Children in Southern Ontario*. (Masters of Geography in Geography and Environmental Studies), Wilfrid Laurier University, Scholars Commons @ Laurier. Retrieved from <http://scholars.wlu.ca/etd> (980)
- KPMG. (2011). *Study of the Ontario Economic Impact of Ontario VQA Wines*. Retrieved from Ontario: <http://www.winecouncilofontario.ca/Resources-Media/Reports-Studies>
- Kwon, N. (2014). Independents want more protection amid industry consolidation. Canadian Grocer. Retrieved from <http://www.canadiangrocer.com/top-stories/independents-call-for-more-protection-as-competition-gets-stiffer-39330?print>.
- Lee, M. S. (Writer). (2016). *Migrant Dreams*. Film.
- Lengnick, L., & Miller, M. (2015). Metropolitan foodsheds: a resilient response to the climate change challenge? *ResearchGate*. doi:10.1007/s13412-015-0349-2
- Low, S. A., & Vogel, S. (2011). *Direct and Intermediated Marketing of Local Foods in the United States*. Economic Research Service.
- Lynch, D. (2009). Environmental Impacts of Organic Agriculture: A Canadian Perspective. *Canadian Journal of Plant Science*, 89(4). Retrieved from [http://www.cielap.org/pdf/Lynch\\_EGSOA\\_CJPS.Final.SSV2\\_doc.pdf](http://www.cielap.org/pdf/Lynch_EGSOA_CJPS.Final.SSV2_doc.pdf)
- MHBC Planning Urban Design and Landscape Architecture. *Land Evaluation & Area Review (LEAR)*. Region of Peel & Town of Caledon.
- MHBC Planning Urban Design and Landscape Architecture. (2015). *Edge Planning Report: The Region of Peel & The Town of Caledon LEAR Study and MDS Review: A Review of the Implemented Practices to Address Planning on the Rural-Urban Fringe*.
- MacLaughlin, J. (2009). *Migration and Health: Implications for Development A Case Study of Mexican and Jamaican Migrants in Canada's Seasonal Agricultural Workers Program*.
- MacRae, R. (N.D. a). *Food system change and transport policy*.
- MacRae, R. (N.D. b). *Sustaining work and food: a joined-up approach to labour force improvements in the Canadian food system*. In review.
- MacRae, R. (2012). Empowering the Citizen-Consumer: Re-Regulating Consumer Information to Support the Transition to Sustainable and Health Promoting Food Systems in Canada. *Sustainability*, 4. doi:10.3390/su40x000x
- MacRae, R. (2014). Do trade agreements substantially limit development of local/ sustainable food systems in Canada? *Canadian Food Studies*, 1(1), 103-125.



- MacRae, R. et al. (2016) *Making better use of what we've got: strategies to minimize food waste and resource inefficiency in Canada*. Canadian Food Studies. Vol. 3, No. 2, pp. 145-215.  
<http://canadianfoodstudies.uwaterloo.ca:8082/index.php/cfs/article/view/143>
- MacRae, R., Cuddeford, V., Young, S., & Matsubuchi-Shaw, M. (2013). The Food System and Climate Change: An Exploration of Emerging Strategies to Reduce GHG Emissions in Canada. *Agroecology and Sustainable Food Systems*, 37, 933-963.
- MacRae, R., Martin, R. C., Juhasz, M., & Langer, J. (2009). Ten percent organic within 15 years: Policy and program initiatives to advance organic food and farming in Ontario. *Renewable Agriculture and Food Systems*, 24(2), 120-136.
- Miedema, J. M., & Piggott, K. (2007). *A Healthy Community Food System Plan for Waterloo Region*.
- Miller, G., Gilmour, B., & Nichols, S. (2006). *Nature Count\$: Valuing Southern Ontario's Natural Heritage*.
- Miller, S. (2016). *Belongings: The Fight for Land and Food*. Fernwood Publishing. Halifax, Nova Scotia.
- Miller, S. (2013a). *Finding Food: Community Food Procurement in the City of Toronto*.
- Miller, S. (2013b). *Places to Farm*. Metcalf Foundation.
- Miller, S. (2010) *From Land to Plate: the dilemmas and victories of alternative food distribution in Ontario*. Ontario Culinary Tourism Association and Sustain Ontario.  
<https://sustainontario.com/2010/11/10/3416/news/from-land-to-plate> .
- Ministry of Agriculture and Lands, Province of British Columbia. (2005). *Direct Financial Contribution of Farming Areas to Local Governments in British Columbia*. (860.600-1). Retrieved from  
[http://www.agf.gov.bc.ca/resmgmt/sf/.../Direct\\_Financial\\_Contributions.pdf](http://www.agf.gov.bc.ca/resmgmt/sf/.../Direct_Financial_Contributions.pdf).
- Molnar, M., Stewart, K., & Iseman, S. (2012). *Watersheds of the Ontario Greenbelt: Policy options to preserve, protect, and restore the watersheds of the Greenbelt*.
- National Farmers Union. (2010). *Losing Our Grip: How a Corporate Farmland Buy-up, Rising Farm Debt, and Agribusiness Financing of Inputs Threaten Family Farms and Food Sovereignty: A report by Canada's National Farmers Union*. Retrieved from  
[http://www.nfu.ca/sites/www.nfu.ca/files/06-07-losing\\_grip.pdf](http://www.nfu.ca/sites/www.nfu.ca/files/06-07-losing_grip.pdf).
- National Farmers Union. (2011). *Farms, farmers and Agriculture in Ontario: an overview of the situation in 2011*. Retrieved from Ontario:  
[http://www.nfu.ca/sites/www.nfu.ca/files/farm\\_ontario.pdf](http://www.nfu.ca/sites/www.nfu.ca/files/farm_ontario.pdf).
- Noakes, Susan. (2015). "Club Coffee creates compostable pod that can go in green bin". CBC news. September 23, 2015. <http://www.cbc.ca/news/business/club-coffee-biodegradable-pod-1.3240163> .
- Oved, Marco Chown (2013). "Egg fight: Quotas holding back organic farmers". *Toronto Star*.  
[https://www.thestar.com/news/gta/2013/10/07/egg\\_fight\\_quotas\\_holding\\_back\\_organic\\_farmers.html](https://www.thestar.com/news/gta/2013/10/07/egg_fight_quotas_holding_back_organic_farmers.html)
- Parizeau, K., Von Massow, M., & Martin, R. (2015). Household-level dynamics of food waste production and related beliefs, attitudes, and behaviours in Guelph, Ontario. *Waste Management*, 35(2015), 207-217. Retrieved from  
<http://dx.doi.org/10.1016/j.wasman.2014.09.019>
- Parker, R. R. (2014). *Southwestern Ontario Land Values*. Retrieved from Online: [justfarms.ca/land-values.asp](http://justfarms.ca/land-values.asp) .
- Planscape. (2009). *Holland Marsh Agricultural Impact Study*.
- Poce, V. D., Goarley, E., & Mausberg, B. (2009). *Greenbelt Grown: A Profile of Agriculture in Ontario's Greenbelt*. Retrieved from Online: <http://greenbelt.ca/research/food-farming/greenbelt-grown-profile-agriculture-ontarios-greenbelt>
- Scharf, K, et al. (2010). *In Every Community a Place for Food: The Role of the Community Food Centre in Building a Local, Sustainable, and Just Food System*.
- Scott-Dupree, C. (2016). *Neonicotinoids and Bee Health: Issues and Potential Next-Steps!* School of Environmental Sciences: University of Guelph.

- Slack, E. (2006). *The Impact of Municipal Finance and Governance on Urban Sprawl*. Paper presented at the International Symposium on Urban Impacts: Global Lessons for the Great Lakes Basin, Chicago, Illinois.
- Sommerfreund, J., Cook, B., & Emanuel, B. (2015). *Toronto Food Strategy: 2015 Update*. (June 2015). Toronto, Ontario.
- Stahlbrand, L. 2016. "Short food supply chains and "infrastructure of the middle": The role of university food procurement in sustainability transition". Presentation for IFSA 12<sup>th</sup> European Symposium. Harper Adams University. Shropshire, U.K. <http://www.harper-adams.ac.uk/events/ifsa-conference/papers/5/5.9%20Stahlbrand.pdf>
- Statistics Canada. (2011). *2011 Farm and farm operator data*. Retrieved from <http://www29.statcan.gc.ca/ceag-web/eng/community-agriculture-profile-profil-agricole?geoId=350000000&dataType=1>.
- Statistics Canada. (2012). *2011 Census of Agriculture*. Retrieved from <http://www.statcan.gc.ca/daily-quotidien/120510/dq120510a-eng.htm>.
- Sturgeon, J. (2014). Here's who's really winning Canada's grocery wars. Global News. Retrieved from <http://globalnews.ca/news/1678970/heres-whos-really-winning-canadas-grocery-wars/>.
- Sustain Ontario. (2015). *Local Sustainable Food Procurement for Municipalities and the Broader Public Sector: Toolkit*.
- Synthesis Agri-Food Consulting. (2011). *A Global Hub for Food Processing: Agri-Food Asset Map*.
- Synthesis Agri-Food Network & 4DM. (2016). *Analysis of Food and Farming Assets in the Greater Golden Horseshoe*.
- Tarasuk, V., & Mitchell, A., Dachner, N. (2011). *Household food insecurity in Canada, 2011*. Retrieved from Toronto: Research to identify policy options to reduce food insecurity (PROOF).
- Tarasuk, V., & Mitchell, A., Dachner, N. (2014). *Household food insecurity in Canada, 2014*. Retrieved from Toronto: Research to identify policy options to reduce food insecurity (PROOF): <http://nutritionalsciences.lamp.utoronto.ca/>
- Tomalty, R. (2012). *Carbon in the Bank: Ontario's Greenbelt and Its Role in Mitigating Climate Change*.
- Toronto Food Policy Council. (2015). *Toronto Food Policy Council 2015-2016 Annual Report* Toronto, Ontario.
- Toronto Food Policy Council. (N/A). *growTO: an urban agriculture Action Plan for Toronto*. Toronto, ON: City of Toronto.
- Toronto Public Health. (2015). *Toronto Food Strategy Update 2015*. The Food Strategy Team, Toronto Public Health, Toronto Food Policy Council.
- Toronto Public Health. (2010). *Cultivating Food Connections: Toward a Healthy and Sustainable Food System for Toronto*.
- Tyrchniewicz, A., & Tyrchniewicz, E. (2007). *Alternative Land Use Services (ALUS): A Preliminary Overview of Potential Cost Reductions and Financial Benefits to Canada*.
- Uzea, N., Gooch, M., & Sparling, D. (2013). *Developing an Industry Led Approach to Addressing Food Waste in Canada*.
- Van Bers, C., & Robinson, J. B. (1994). Farming in 2031. *Journal of Sustainable Agriculture*, 4(1), 41-65.
- Van Groningen, C. (2015). Eastern Local Food Conference presentation. Belleville, Ontario.
- Various. (2015). City Region Food Systems. *Urban Agriculture Magazine*. May 2015.
- Vidoni, M. (2011). *Community Composting in Toronto: Closing the Food-Waste Loop*.
- WCM Consulting. (2002). *Food Industry Outlook: A Study of Food Industry Growth Trends in Toronto*.
- Walton, M. (2012). *Food and Farming: An Action Plan 2021*. Retrieved from Ontario: <http://www.gtaa.ca/food-and-farming-an-action-plan-2021/>
- Walton, M. (2014). *Agriculture and Agri-Food Economic Profile for the Golden Horseshoe*. Retrieved from online: [https://www.dropbox.com/s/o2xga89sl633jgw/Golden Horseshoe Economic Profile FINAL REPORT 10-Oct-2014.pdf?dl=0](https://www.dropbox.com/s/o2xga89sl633jgw/Golden%20Horseshoe%20Economic%20Profile%20FINAL%20REPORT%2010-Oct-2014.pdf?dl=0)

Watersmartpeel. *Indoor Water Efficiency Audit Case Study: Maple Lodge Farms*. Retrieved from Weber, C. L. and H.S. Mathews (2008). Food-Miles and the Relative Climate Impacts of Food Choices in the United States. *Environmental Science & Technology* / Vol. 42, No. 10, 2008 10.1021/es702969f CCC. 2008 American Chemical Society Published on Web 04/16/2008.

Wilson, S. (2008). Ontario's Wealth, Canada's Future: Appreciating the Value of the Greenbelt's Eco-Services. Retrieved from <http://www.davidsuzuki.org/publications/reports/2008/ontarios-wealth-canadas-future-appreciating-the-value-of-the-greenbelts-eco-serv/>

Wilson, S. (2013). Nature on the Edge: Natural Capital and Ontario's Growing Golden Horseshoe. Retrieved from <http://www.davidsuzuki.org/publications/reports/2013/nature-on-the-edge-natural-capital-and-ontarios-growing-golden-horseshoe/>.

York Region Food Network. (2015). *York Region Food Network Annual General Report 2015*.

Zizys, T. (2015). *Good Food, Good Jobs: Seeking Better Employment Outcomes in the Food Sector in Toronto*. The Food Strategy Team, Toronto Public Health, Toronto Food Policy Council.