



Fresh City: Impacts of local food

Social, environmental, economic dimensions

SUMMARY REPORT

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Fresh City is a city farm. We deliver a local, organically grown food bag to thousands of Torontonians each week. We also run a series of educational programs and farm immersion opportunities. www.freshcityfarms.com

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Project Summary

0.1 Project overview

Fresh City is a social enterprise that delivers fresh produce in customized boxes to homes in the Toronto area. Box content is grown locally and using organic production methods. Fresh City partly grows this food on fields that they rent within the city limits of Toronto (Fresh City Farms), purchases it from suppliers from Southwestern Ontario, or – if not otherwise available – from the Ontario Food Terminal. However, Fresh City is not only a food producer and delivery service. The vision of Fresh City is "to be a thought and market leader in empowering all to make conscious food choices" (Fresh City website¹). To do so, Fresh City wants to re-connect city dwellers with farming – as educated and conscious consumers, as political advocates for a more sustainable food system, and hands-on, as part of their production enterprise.

Objectives and Food System Perspective

The general objective of this study is to assess the impacts of Fresh City enterprise from a social, economic, and environmental perspective. The study takes a holistic approach using a food system perspective. A qualitative holistic assessment was supplemented with technocratic assessments that quantify specific aspects. In particular, separate studies were carried out for greenhouse gas emissions of the distribution system, and for behavioural changes of consumers.

In order to capture the impacts as comprehensively as possible, a food system assessment framework was chosen. The food chain builds on local organic producers that supply to the Fresh City food box delivery system. This system is compared to a conventional food retail chain, where consumers purchase produce in large grocery stores. Impacts are assessed along the full food chain, including production, transportation, packaging & retail, and transportation to consumer homes. Results are expected to help verify the success of Fresh City in implementing their vision of a more sustainable food system, identify opportunities to improve current practices of Fresh City and local food distribution more broadly, and contribute to the public and scientific debate about the impacts of local food that is outlined in the remainder of this chapter.

Definitions

The Ontario government definition of *local food* as 'produced in Ontario' was adapted for this report. It should be noted that consumers especially tend to associate local food with direct marketing and relationships with farmers.

¹<http://www.freshcityfarms.com/about/our-vision>

Certified Organic food must comply with the Canadian Organic Products Regulations and its equivalency agreements for imported food. This requires explicit certification through an admitted certification body. In general, data availability for organic crops is low.

Many farms whose production methods comply with these principles use terms such as "natural", "naturally grown", "grown without pesticides" or such, without having third-party certification. These *self-declared organic farmers* represent a relevant proportion of direct marketers, but these terms are not defined legally.

Fresh City

Fresh City was established in 2011 and is rapidly evolving. The revenue-generating core of the enterprise is weekly food boxes. Customers order their boxes on-line and these are delivered to their home or to other convenient pick-up points, such as workplaces.

Fresh City consists of a farming operation, a packaging and distribution hub, partner farms that augment the products offered by Fresh City, supporting enterprises, educational and advocacy efforts, and ultimately, the customers that receive weekly food boxes.

Fresh City thus supports three actors in the food system: small farms with and without organic certification that primarily market directly; large farms with integrated packaging and delivery systems for wholesaling; and alternative retailers.

A survey of Fresh City customers was carried out as part of this impact assessment that characterizes customer households and their preferences, as well as their changes in food-related behaviour (eating, cooking, diet, shopping, eating out). The main reasons stated to join Fresh City was access to fresh and good-quality food. The most important altruistic reason was support to the local economy. Customers valued convenient access to good food at reasonable prices.

Education and advocacy activities of Fresh City are manifold and, at this point, their impacts are not easily assessable. Fresh City provides practical learning opportunities to citizens about growing food through its operations in production, packaging, and distribution. This included 22 member farmers in 2013, out of which at least three small-scale enterprises have been started. Volunteers and several hundred casual volunteers are additionally exposed to a farming experience.

0.2 Environmental impacts

Farming practices

Environmental practices on four farms were assessed through interviews with the farm owner or manager of a focal group of four representative suppliers that represent small-scale direct marketers, and larger, diversified wholesale producers. Interviews were conducted in person and included a visit to the farm and geospatial data. Questions related to land use, wildlife and habitat on the farm, pest control, soil management, nutrient management, energy uses, water management, and the production of waste. All farms use a multiple bottom line approach where profit is one important constraint, but wider considerations are made, including environmental sustainability. Both small farms are not certified organic but follow organic production principles, while both wholesalers are certified organic. Compared to surrounding farms, all farms provide a more diverse land use and larger areas that support wildlife, including buffer strips, pollinator strips, and edible hedgerows, as well as grass areas that are not mown. In general, farms put high emphasis on environmental practices that are beyond certification standards, especially on the small farms without certification.

Greenhouse gas emissions within the distribution system

Greenhouse gases (GHGs) within the distribution system were estimated by combining business data with emission factors from generally accepted databases. Assessment was based on a representative foodbox such that it allows meaningful comparison between Fresh City and the conventional food chain.

Emissions in the following stages of the food chain were quantified for both the conventional food chain and for the Fresh City system: (1) farm to retailer/Fresh City, (2) handling at retail/Fresh City, (3) transport to consumer from retail/Fresh City, and (4) transport by consumer from retail/pickup.

When adding all emissions related to the transportation, packaging, storage, delivery, and consumer pickup of each Fresh City food box, total greenhouse gas emissions are 1.057 kg eCO₂. If the same produce were purchased at a regular supermarket, then emissions per box would be 4.246 kg eCO₂.

Within the conventional food distribution chain, trucking from the farm to the retailer is the most relevant source of emission. These emissions are attributed to the trucking of produce from Mexico, Florida, and/or California. The largest per-unit emissions come from those items flown in from overseas. Even though the conventional system benefits from economies of scale, transportation within the conventional system causes nearly 15 times the GHG emissions as the Fresh City system. A summary of emission data is given in Table 1.

Nr	Stage in food chain	Fresh City	Conventional	Ratio
Farm to retailer/Fresh City				
1	Transportation	0.193	2.809	14.6
2	Mobile Refrigeration	0.003	0.005	1.4
	<i>Sub total</i>	<i>0.196</i>	<i>2.814</i>	<i>14.3</i>
At retail/Fresh City				
3	Refrigeration electricity	0.085	0.303	3.6
4	Refrigeration (refrigerant leakage only)	0.121	0.153	1.3
5	Other electricity use (Scope 2 emissions)	0.057	0.098	1.7
6	Emissions for natural gas usage, per box	0.224	0.196	0.9
	<i>Sub total</i>	<i>0.487</i>	<i>0.750</i>	<i>1.5</i>
To consumer from retail/Fresh City				
7	Delivery vehicle	0.259	n/a	n/a
8	Mobile Refrigeration during delivery	0.000	0.000	n/a
9	Consumer pickup/shopping	0.114	0.681	6.0
	<i>Sub total</i>	<i>0.373</i>	<i>0.681</i>	<i>1.8</i>
TOTAL		1.057	4.246	4.0

Table 1 — Summary of distribution emissions per Fresh City Farms food box and the equivalent box content purchased at a conventional retail store

The Environmental Food Footprint of Consumers

The consumer survey indicated changes of consumer behaviour with respect to eating habits, shopping behaviour, and overall food-related interest. It was sent to 610 customers and 252 fully completed responses were returned.

- Nearly half of respondents reported a decrease in *shopping frequency*.
- The *dietary composition* and *cooking behaviour* has a strong impact on the environmental footprint, for example through land use, other resource use, and greenhouse gas emissions. Nearly half of the respondents reported that their consumption of meat, poultry, and fish

products has decreased. Even though neither the quantity of such shift is known nor whether these changes are permanent, a rough estimate with general dietary emission data shows that the overall environmental benefits from this behavioural shift could greatly exceed those quantified for the distribution system.

For example, it was assumed that a customer starts off with an average diet of a U.S. citizen and cuts meat consumption by half, by substituting the meat gap with typical vegetarian choices. Then, each person would save 7.67 kg eCO₂ emissions each week or 0.4 tons annually. Taking into account the average household size of Fresh City customers of 2.24 members and assuming that all members of the household shift their diet as described, then weekly savings would be 17.2 kg/household. When shifting shopping from grocery stores to Fresh City, each household has reduced weekly emissions from 4.2 kg eCO₂ to 1.1 kg eCO₂. Notably, the assumed dietary shift of consumption preferences outweighs the delivery savings 5.6-fold.

- *Food waste* proportionally increases the environmental footprint of food consumption. In the consumer survey, respondents indicated that only 12% of all groceries go to waste. For the highly degradable produce from the Fresh City foodbox, this waste percentage is on average nearly twice as high at 23.3%². Both percentages are significantly lower than in average Canadian households, where around 50% go to waste. Reasons for the higher percentage in food boxes include that these items degrade quickest and insufficient knowledge how to utilize box content.

In general, changes of consumer behaviour and eating habits are likely to have a larger overall environmental footprint than the delivery of food boxes itself. Behavioural changes are manifold and far beyond a simple substitution of one grocery shopping destination with another, as will be discussed further for social impacts.

²The food waste percentage is slightly lower for families with one stay-at-home parent, respondents who shop frequently, and for low income groups, but no strong cross relationships were found.

0.3 Economic Impact of Fresh City

Economic impacts were derived from those businesses who immediately sell to Fresh City using a survey and the interviews with the focal group of farms. In addition, regional direct and indirect economic impacts were estimated using results from the consumer survey. The customer surveys highlighted that consumers' choices have a number of indirect impacts on the overall food system.

Direct impacts on suppliers

Fresh City directly supports produce suppliers, including large certified organic farms, small and "self-declared organic" farms, and Fresh City member farmers.

- Larger wholesaler producers who responded explicitly rely on a diversified marketing strategy. While Fresh City represents a small share of annual sales volume for these partners, producers stressed that foodbox programs are an extremely valuable marketing venue that offers stability and considerable independence from global price fluctuations.
- Smaller farms market to Fresh City as an additional revenue source that complements direct marketing. It is regarded as important learning opportunity for future business expansion.
- Fresh City Farms exclusively uses Fresh City distribution, and member farmers and their start-up businesses learn how to meet quality standards for wholesale marketing. As such, Fresh City also plays a role as an incubator farm that generates meaningful employment.

Direct impacts on the regional economy

At conventional retail stores, more than half of all fresh produce was imported even during Ontario's peak harvest time (August and September), based on the country of origin and the relative value of the content of a representative food box. During this time period, 100% of the Fresh City food box content is sourced from southwestern Ontario. Any shift from the conventional retail sector to Fresh City will maintain at least half of the shopping dollars for produce within this region and strengthens Ontario's alternative food chain.

Substitution effects from consumer spending were investigated:

- The consumer survey indicated that 75% of all customers have never been part of a foodbox or CSA program, so the majority of customers are not drawn from competing food box programs.
- 55% of all customers reported that the money spent for grocery shopping elsewhere has decreased since becoming a member of Fresh City, 6% reported an increase, and the rest indicated no change.
- The customer survey indicated that shopping dollars are mostly taken from the conventional retail sector, but also out of the direct marketing sector (farmers market, on-farm stores).

To quantify the re-circulation of money within the region further, the Local Multiplier 3 (LM3) was estimated. This approach is a simple index for quantifying how much consumer spending is re-spent locally³. Response rates were poor and required additional assumptions. Three scenarios were assessed separately: Fresh City is entirely supplied (a) by small farms, or (b) large organic

³A proper economic model far exceeds the scope of this study and requires intensive data collection efforts.

farms, and (c) customers purchase at conventional retail outlets. In order to fill gaps and account for uncertainty, optimistic assumptions were made that favour the conventional sector (Table 6.4, assumed values in brackets). Depending on ordering practices, the LM3 of the Fresh City food chain is in the range between 2.44 and 2.84. In comparison, the LM3 from the conventional food chain is estimated at 1.73.

Indirect impacts

When becoming Fresh City customers, the direct substitution effect is not the only impact. Customers also change their diet, their cooking, and their eating behaviour. Results from the customer survey indicated several potential indirect impacts on the regional economy linked to these behaviour changes.

0.4 Social Impact of Fresh City

Employees and Internships

Fresh City has both social and economic impacts through its growing staff. Currently, the company hires eight full-time positions and two full-time internships during the growing season. A staff survey indicated that management as well as regular staff feel fulfillment within their occupations, and that they are learning a wide range of skills and feel qualified for future jobs in the food sector.

Impact on Consumers

Social impacts on its customers are diverse. Behavioural changes include changes in customers' dietary composition, shopping, cooking, and eating. A majority of customers reported having learned about new food products and improving their ability to cook. The foodbox program directly impacts on knowledge about cooking and food ingredients.

Other behavioural changes seem to be part of a more complex behavioural shift which cannot be directly be attributed to the food box, but rather is part of a larger transformation of eating behaviour. These include healthier diets with reduced meat consumption, increased vegetable consumption, and a larger diversity of vegetables, as well as a change in cooking behaviour with more frequent from scratch cooking and less frequent eating out.