RESILIENT FOOD SYSTEMS, RESILIENT CITIES:

A High-Level Vulnerability Assessment of Toronto's Food System

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ICIC

EXECUTIVE SUMMARY

The City of Toronto is part of a vanguard of global cities beginning to focus on the sustainability and resilience of their food systems. A food system includes all processes and infrastructure involved in feeding a population: growing, harvesting, processing, packaging, transporting, marketing, consuming, and disposing of food. The purpose of this study was to identify the most significant risks climate change would pose to food distribution and access within Toronto and make recommendations that would increase the resilience of the city's food system. The potential impact of climate change on food production in other parts of Canada and in other countries could have an impact on the overall cost and availability of food in Toronto, and thus on food access among more vulnerable populations and the general population; such impacts were however excluded as they are better addressed at a regional or national scale.

Toronto is at an advantage over most cities grappling with food system resilience because the City and Province have committed to addressing climate change resilience and already recognize food systems as a priority in resilience planning. At the time this report was published, only three other cities in North America, all in the U.S. (Baltimore, Boston, and New York City), have undertaken similar food system vulnerability assessments.

Goal: A resilient food system in Toronto that provides all residents with adequate and equitable access to food within walking distance immediately after an extreme weather event.

Is Toronto's food supply at significant risk right now? This report identifies risks to the food supply chain within Toronto and surrounding areas and examines potential public health impacts at the neighbourhood level, specifically considering the impact on vulnerable populations. The findings reveal that while extreme weather events could potentially disrupt Toronto's food supply, the current risk, especially on a massive scale, is relatively low. Instead, the report highlights that food access is the major risk because it could be significantly limited, especially in certain neighbourhoods, due to failures in electrical power, fuel distribution, telecommunication networks and transportation infrastructure. Therefore, involvement of organizations in these sectors is needed to minimize the risk and impact of these potential disruptions. Vulnerable populations face many barriers to accessing food; while this report does not address food security in general, it is expected that initiatives to increase resilience in the event of extreme weather events will contribute to more equitable food access in Toronto.

Approach

This study used Initiative for a Competitive Inner City (ICIC)'s Framework for Analyzing Urban Food System Resilience, Ontario's Climate Change and Health Vulnerability and Adaptation Assessment Guidelines and the City of Toronto's High-Level Risk Assessment (HLRA) Tool. Information was collected through a comprehensive literature review, the analysis of numerous public and proprietary data sets, a facilitated workshop with 23 stakeholders using the HLRA tool, and interviews with 49 individuals from public- and private-sector organizations.

The study examined food supply, food access and public health issues by analyzing the potential impact on various parts of the food system. The analysis included seven food system sectors and five critical, supporting parts of the city's infrastructure (Table 1). It also considered the prevalence of business continuity plans and adequate insurance (e.g., flood and business interruption) among private-sector food companies and nonprofit organizations. Further, it examined Toronto's existing emergency response plans related to food including preparedness planning, post-event communication with consumers and food companies, and post-event food safety inspections. Two attributes of Toronto that create unique food system vulnerabilities were also included in the analysis: a significant number of high-rise apartment buildings and the Ontario Food Terminal, the largest wholesale fruit and produce distribution centre in Canada and the third largest in North America.

The study considered the resilience of Toronto's food system to three extreme weather events: widespread flooding from significant rain, an extended heat wave, and a major winter ice storm. These events have caused extensive damage across the city in the past and are likely to become more severe with climate change.

In terms of public health, the study analyzed food insecurity and the capacity of food banks to explore the ability of Toronto residents (by neighbourhood) to secure sufficient food after an extreme weather event. The analysis of potential public health issues also included food sanitation vulnerabilities at commercial food businesses and food safety vulnerabilities associated with home meal preparation.

TABLE 1 Food System Sectors Analyzed for Toronto Vulnerability Assessment

Food System Sectors	
Regional and local food production	All agricultural production including urban farms, vertical farms and community gardens within a 160 km radius of downtown Toronto.
Food processing	All food cleaning, packaging, processing and manufacturing facilities.
Food distribution	Primary warehouse suppliers (also known as wholesalers or distribution centres) and secondary suppliers that move food from processing facilities to food retail stores and other food access points (e.g., restaurants, food banks, etc.). This includes the Ontario Food Terminal.
Food retail	Supermarkets, grocery stores, convenience stores and farmers markets.
Restaurants	Chain and independent restaurants.
Food assistance network	Food banks, food pantries, meal delivery programs, soup kitchens, and mobile soup kitchens that collect and distribute food to communities or individuals.
Home meal preparation	Home food storage and meal preparation. This includes high-rise apartment units.
Food System Interdependent Infrastructure	
Public transportation	Trains, subways, buses and streetcars that allow Toronto residents to access food or workers in the food sector to commute to work.
Road network	Trans-Canada or National highways, major highways, secondary highways (major streets and arterial roads), collector roads, local roads, bridges and culverts in GTA used to distribute food to retail stores in Toronto and allow residents to access food.
Electrical power system	The system of transmission terminal stations, municipal substations, switches, transformers and overhead and underground wires used to provide electrical power to residential, commercial, and industrial customers.
Telecommunications	The network of land, mobile phones and internet service over which communications are transmitted.
Fuel supply transportation, storage and distribution	All infrastructure required to process, transport, store, and distribute liquid fuels. Liquid fuels relevant to the food system include gasoline, diesel, propane and natural gas.

Findings: Key Vulnerabilities in Toronto's Food System

The analysis identified six key vulnerabilities to extreme weather events for Toronto's food system. In order to address these vulnerabilities and strengthen the resilience of the food system in Toronto and create *equitable* resilience, the City of Toronto will need to work with many different public and private organizations as it considers actions to increase Toronto's resilience to extreme weather that is expected to become more severe with climate change.

1. **Urban flooding**: The impact of an extreme rain event is the least well understood compared to extreme heat and an ice storm, because "urban flooding" has not yet been fully modeled for the city. Given the research to-date, however, river and urban flooding pose the greatest risk of the three extreme weather events studied for dairy processing, commercial bakeries, warehouse suppliers, the Ontario Food Terminal, food retail stores, and restaurants.

2. **Infrastructure**: The impact of extreme weather events on critical infrastructure poses the greatest risk to Toronto's food system, with electricity, the road network, and access to fuel posing the most significant potential vulnerabilities.

3. **The Ontario Food Terminal:** The Terminal represents a significant vulnerability for the supply of fresh produce in Toronto because of its market dominance, especially for smaller, independent food retail stores. The Terminal's location in a flood risk zone and its power supply configuration make it susceptible to power outages and it does not have sufficient backup power.

4. **Vulnerable neighbourhoods**: Food access in parts of Toronto's inner suburbs (York, Scarborough, Etobicoke) will be disproportionately impacted by extreme weather events because of a lack of large food retail stores, higher rates of food insecurity and numerous older residential high-rise communities. Seven neighbourhoods are the most vulnerable: Dorset Park, Downsview-Roding-CFB, Humbermede, Ionview, Rustic, Scarborough Village and Thistletown-Beaumond Heights.

5. **Food insecurity:** Food insecurity is a systemic vulnerability in Toronto that would be exacerbated by extreme weather events. Although food banks and other food assistance organizations were created to help people in need during times of severe financial constraint, they are supporting those in need for longer periods of time than intended. Therefore, while they are not part of Toronto's emergency food distribution plans, their limited capacity to meet a prolonged increase in demand for food assistance as more households become food insecure due to disaster-related expenses or loss of income is a critical component of equitable food resilience.

6. **Coordination:** Various municipal and provincial government agencies will need to be actively engaged in helping the food system recover quickly after an extreme weather event. In Toronto, the food system stakeholders that informed this report worried about inadequate and uncoordinated preparedness planning among government agencies, a lack of private sector participation in the planning process, a lack of clear communication about road closures and power outages in the aftermath of an extreme weather event, and food safety inspection delays. During an extreme weather event, businesses may be confused about who to contact in the government for relevant and timely information and, in turn, government agencies may not know the best way to effectively share information to all food businesses. The numerous reports and working groups focused on various aspects of resilience planning in Toronto could create additional confusion if left uncoordinated.