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The effects of climate change, neoliberalization, corporate consolidation, declining access to healthy food and country food, and the overall lack of democratic accountability of the food system have left many to conclude that we are at a critical juncture for how food is produced, harvested, distributed, and consumed in Canada. While a Food Policy for Canada is only a first step towards achieving a more healthy, just and sustainable food system, it is an important one. We recognize that the upcoming policy will be just the beginning; many pressing questions remain about how the policy will be implemented and what mechanisms will be used to ensure its realization. There will be many perspectives and tensions within these discussions going forward. This special issue is intended to be a contribution to the crucial work ahead.

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Guest Editorial

Special Issue on building an integrated Food Policy for Canada: An open letter to the Canadian food policy community

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Dear Food Policy Community,

We write to you as the guest co-editors of this special issue of *Canadian Food Studies,* "Building an integrated Food Policy for Canada"*,* on the eve of the federal government's much anticipated development of a Food Policy for Canada. As food systems scholars, practitioners and engaged citizens, we have followed these developments closely over the past decade with hopes that an integrated policy approach at the federal level may finally begin to address the concerns of those most impacted by the challenges of our current food system: those struggling with food insecurity and poverty, low waged food workers, small and mid-scale farmers and fishers, and Indigenous people, to name only a few.

The effects of climate change, neoliberalization, corporate consolidation, declining access to healthy food and country food, and the overall lack of democratic accountability of the food system have left many to conclude that we are at a critical juncture for how food is produced, harvested, distributed, and consumed in Canada. While a Food Policy for Canada is only a first step towards achieving a more healthy, just and sustainable food system, it is an important one. We recognize that the upcoming policy will be just the beginning; many pressing questions remain about how the policy will be implemented and what mechanisms will be used to ensure its realization. There will be many perspectives and tensions within these discussions going forward. This special issue is intended to be a contribution to the crucial work ahead.

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Many civil society actors, including members of the Canadian Association of Food Studies (CAFS), the academic association which hosts the *Canadian Food Studies* journal, have been following the development of this initiative closely since 2015 when the Minister of Agriculture was instructed "to develop a national food policy that promotes healthy living and safe food by putting more healthy, high quality food, produced by Canadian ranchers and farmers, on the tables of families".[1] Later in May 2017, CAFS was honoured to host Minister Macaulay's official announcement of the consultation process at the annual CAFS conference. Many CAFS members also participated in a number of community-based roundtable discussions, submitted recommendations, and served as delegates to the Ottawa Food Summit held in June 2017.

Our interests in the development of Canada's national food policy, as editors of this special issue, come from a recognition of the need for better coordination of existing food-related policies and programs distributed among different federal departments and agencies, as well as other jurisdictions. Existing policies tend to work in isolation from one another and some in contradiction, leading to even more complex challenges. We were very happy to see the Government of Canada's commitment to develop a Food Policy for Canada that "will set a long-term vision for the health, environmental, social, and economic goals related to food, while identifying actions we can take in the short-term".[2]

A national food policy is not a new concept. Work towards a Food Policy for Canada emerged from decades of work by civil society actors, social movements, governments and businesses. While there has not been agreement on all aspects of what a national food policy should look like, there is consensus that the dominant food system is not working for many Canadians. This was expressed clearly by the United Nations Special Rapporteur on the Right to Food when he visited Canada in 2012. While praising the many achievements, Olivier De Schutter noted a host of challenges, including inadequate social assistance levels; health and chronic disease stemming from poor diets; the unacceptable conditions of Northern and Indigenous communities; and fragmented, short-sighted policy interventions. Echoing the call of many civil society organizations, De Schutter emphasized the need for a comprehensive national food strategy, rooted in the right to food, that would take an integrated and democratic approach to governing Canada's food systems.[3] It is also seems like more than just coincidence that the Food Policy for Canada consultations were launched exactly ten years after the initiation of the Peoples Food Policy's project and the subsequent report, *Resetting the Table: A People's Food Policy for Canada*.[4] Over the past decade, the call for a national food policy has been echoed by groups such as the Canadian Federation of Agriculture, the Canadian Agri-food Policy Institute and the Conference Board of Canada.

This special issue grew out of a collaboration between three organizations that are part of Canada's growing food movements including: CAFS, an academic and community-based

[1] https://pm.gc.ca/eng/minister-agriculture-and-agri-food-mandate-letter
[2] https://www.canada.ca/en/campaign/food-policy.html
[3] http://www.srfood.org/en/official-reports
[4] https://foodsecurecanada.org/people-food-policy

research association that promotes critical, interdisciplinary scholarship in the broad area of food systems; Food Secure Canada (FSC), a pan-Canadian alliance of organizations and individuals working together to advance food security and food sovereignty; and Community First: Impacts of Community Engagement (CFICE), an action-based collaborative research project that studies how community and campus players work together to positively impact their communities. Together, individuals and organizations associated with these networks and research projects sought to create a more open, collaborative and transformative food policy space that brings truly innovative ideas to the fore. As active participants in these organizations and networks, we sought to expand the food policy conversation in Canada in various ways, including through the production of this special issue.

The contributions to this special issue include original research articles, perspectives and commentaries that represent a wide range of ideas, critical reflections and proposals from scholars, practitioners and activists with extensive experience in the broad field of food studies. While some of the authors have been involved in this work for decades, others bring fresh perspectives to this complex debate. In the various contributions, you will find a range of proposals and recommendations for ways Canada's national food policy might evolve. While some of these ideas are actionable immediately, others provide a longer-term vision for processes of democratic engagement. Nonetheless, all of them are made earnestly and should be taken seriously. For instance:

- Andrée, Coulas and Bellamingie reflect on two earlier national food policy efforts A Food Strategy for Canada (1977) and Canada's Action Plan for Food Security (1998) along with experiences from national food strategies developed in seven other countries. Drawing on key lessons, they recommend establishing a multi-sectoral and inter-governmental National Food Policy Council to guide the Food Policy for Canada.
- Dachner and Tarasuk argue that eliminating household food insecurity must be viewed as a prerequisite to the promotion of healthy living and safe food in Canada. Drawing on extensive data to demonstrate that household food insecurity is linked to social and economic factors, they call for the integration of policy actions, and for the establishment of performance targets and ongoing monitoring mechanisms.
- Elliot and Cardwell note that food allergies are a growing public health epidemic but under-addressed at all levels of government. They suggest that a national food policy must consider, for example, the expansion of school-based policies, the introduction of standardized restaurant training programs and the provision of stock epi-pens.
- Rotz and Kepkiewicz ask if it is even possible for a national food policy to form the foundation for sustainable and equitable food systems in Canada given the current settler-colonialist government structure. They offer several suggestions regarding how settlers might begin to rethink investments in the Canadian state and ways forward that might include repatriating land and transforming private property structures, supporting Indigenous food provisioners, and building knowledge and support for non-extractive relationships.

- Seed and Rocha explore the possibilities of advancing sustainability principles within Canadian national dietary guidelines by drawing on experiences from four other countries. Their proposals include building cross-sector collaborations and alliances—including civil society participation—to support governments who may feel constrained to act and to counter-balance food industry influence, developing "win-win" messages to satisfy agendas of various sectors, and building on current political opportunities in Canada.
- Levkoe and Blay-Palmer analyze the development of Food Counts: A Pan-Canadian Sustainable Food Systems Report Card as an effort to bring together existing measures of social, environmental, and economic well-being to examine food systems from a food sovereignty perspective. They argue that while report cards and indicators can make visible numerous food systems' elements, they can also obscure diverse experiences, reinforcing unsustainable practices and policies.
- Weiler addresses the lack of dignity and justice for workers hired through Canada's temporary farm labour migration program. She argues that Canada's national food policy presents an opportunity to demonstrate global leadership on collective human rights for cross-border workers.
- Qualman, Akram-Lodhi, Desmarais, and Srinivasan provide an evidence-based analysis of the structural factors and forces driving Canada's agricultural sector with a focus on the growing crisis of generational farm renewal. They suggest that a national food policy built upon social, economic, and environmental sustainability can bring greater emphasis on sustainable and low-input agriculture, local food, organic production, agro-ecology, and food sovereignty.
- Soma takes on a national food waste agenda and argues that there needs to be a shift in the governing paradigm from a food recovery hierarchy to a regenerative closed loop food system.
- Nelson, Levkoe, and Kakegamic highlight some of the shifts and challenges facing food provisioning in Northwestern Ontario, to emphasize the importance of contextual, place-based food policy.
- Hernandez, Engler-Stringer, Kirk, Wittman, and McNicoll draw on an international review of different school food policies and approaches, to argue for the creation of a national school food program that is universal, health-promoting, comprehensive, education-integrated, sustainable, and contextualized as part of a Food Policy for Canada.
- Bacon, Vandelac and Petrie raise the issue of the increasing use of glyphosate-based herbicides and their impacts in Canada. They argue for the necessity to take into account a series of major issues within Canada's food and agriculture policy and for a more independent evidenced-based approach to pesticide approvals as a key component of an integrated national food policy.
- Berger Richardson and Lambek argue that the development of a national food policy for Canada offers an opportunity to harmonize law and policymaking, and clarify the key

roles that all levels of government play in the development and governance of food systems. However, this will require identifying sites of conflict and overlap, but also spaces for collaboration, coordination, and innovation.

- Smythe focuses on market access, standards, regulatory harmonization and procurement to argue that a national food policy must include real efforts to link up and develop coherent, whole of government food policy that includes the impact of trade and investment agreements.
- Laforge, Fenton, Lavallée-Picard, and McLachlan address the shifting demographics of farmers and the impact of agricultural and food policies on the decision-making and behaviours of new farmers. Drawing from a national survey and a review of existing literature they present four key recommendations: 1) Protect agricultural land and ensure accessibility for new farmers; 2) Ensure training and education are available and accessible; 3) Ensure financial resources are accessible to diverse farmers; and, 4) Support shared infrastructure and scale-appropriate regulation.
- Martorell and Abergel explore lessons from Quebec's approach to implementing agriculture and rural policies. They suggest that federal institutions could follow suit by integrating key operating principles that include the precautionary principle (a requirement of scientific certainty to mitigate risk), multifunctionality (support for both economic and noneconomic outcomes of agriculture), and subsidiarity (appropriately scaled policy and interventions).

Notwithstanding the growing scholarship and civil society efforts weighing in on the complexities and possibilities of a Food Policy for Canada, we believe this conversation is only beginning. There is much to be envisioned, negotiated and debated and we hope the ideas of the contributors to this special issue will be part of those discussions.

In closing, we would like to express our gratitude for the tireless efforts and supports from Ellen Desjardins and the *Canadian Food Studies* editorial team, input from Diana Bronson and members of CFICE and the Food: Locally Embedded, Globally Engaged (FLEdGE) research partnerships, as well as funding from the Social Science and Humanities Research Council of Canada.

Sincerely,

Peter Andrée, Charles Z. Levkoe, and Amanda Wilson

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Original Research Article

Governance recommendations from forty years of national food policy development in Canada and beyond

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Abstract

This paper contributes to Canada's current national food policy discussion by introducing lessons gleaned from the development of two earlier Canadian government food policy efforts, *A Food Strategy for Canada* (1977) and *Canada's Action Plan for Food Security* (1998), as well as lessons drawn from national food strategy development in seven other countries. By examining the strengths and weaknesses of these previous policy-making processes, we show how today's food policy conversation builds on the legacy of 1998's *Action Plan*. We then offer food policy governance recommendations designed to avoid the mistakes of the previous efforts. This paper explores international precedents for governance mechanisms designed to be inclusive of key food systems' stakeholders, and to meaningfully include multiple levels of government in food governance. Drawing on both our domestic and international research, we conclude by recommending the establishment of a multi-sectoral and inter-governmental National Food Policy Council. We show how such a Council, operating in close cooperation with other key mechanisms, could help govern the pan-Canadian food strategy we advocate.

Keywords: national food policy council; national food policy; Canadian food policy

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Introduction

History doesn't repeat itself, but it often rhymes. – Mark Twain

Building on Mark Twain's observation, this paper contributes to Canada's current national food policy discussion by introducing lessons gleaned from the development of two earlier Canadian government food policy efforts, *A Food Strategy for Canada* (1977) and *Canada's Action Plan for Food Security* (1998), as well as insights drawn from national food strategy development in seven other countries. This paper is grounded in an analysis of historical policy documents, an environmental scan of relevant international policy precedents, and a literature review. It is also informed by participant observation and interviews. The lead author, Peter Andrée, has worked closely with Food Secure Canada and other national food policy stakeholders on this file since 2012, including organizing and chairing round-table discussions with key national actors. The authors also interviewed a variety of civil society, industry, and government actors in early 2017. These latter activities encouraged the authors to hone in on the issue of inclusive food policy governance mechanisms.

This paper begins by relating 1977's *Strategy* and 1998's *Action Plan* to the political economies of their times. We examine the strengths and weaknesses of these previous policy-making processes before explaining why each failed to have substantive impact. Nonetheless, we show how today's food policy conversation builds on the legacy of *Action Plan*. We then offer a set of food policy governance recommendations designed to avoid the mistakes of these previous efforts.

Next, this paper explores international precedents for governance mechanisms designed to be inclusive of key food systems' stakeholders, and to meaningfully include multiple levels of government in food governance. Drawing on both our domestic and international research, we conclude by recommending the establishment of a multi-sectoral and inter-governmental National Food Policy Council. We show how such a Council, operating in close cooperation with other key mechanisms, could help govern the pan-Canadian food strategy we advocate.

Historical context

In the summer and early fall of 2017, the Canadian government undertook nation-wide consultations on "A Food Policy for Canada" (Government of Canada, 2017a). This consultation represented the latest step towards realizing the decades-old dream of a comprehensive, integrated, national food policy (or strategy)[1] for Canada held by many advocates for a health-

[1] A strategy is generally understood to be a plan, grounded in core principles or values, designed to advance broad goals and objectives. A policy is typically more focused and includes specific rules for decision making. In Canada, the terms "plan", "strategy" and "policy" have all been used at various times in history, though we argue (below)

promoting, sustainable and just food system (Kneen, 2010; People's Food Commission, 1977; People's Food Policy Project, 2011). MacRae and Winfield (2016) define an integrated, or "joined-up," policy approach to food in Canada:

> By joined-up food policy, we mean the coherent and comprehensive policy environment that links food system function and behaviour to the higher order goals of health promotion and environmental sustainability. A joined-up policy unites activities across all pertinent domains, scales, actors and jurisdictions (p. 141).

Canada has never had a functional, federal-level food policy, let alone one that is coherently integrated across levels of government. Instead, Canada has had a disparate array of food-related legislation, regulations, directives, standards, and guidelines (which we collectively define as "policy") at all levels of government. Canada's earliest federal legislation explicitly focused on food—the *Inland Revenue Act* (1875) and the *Adulteration Act* (1884)—both significantly influenced by British law, addressed issues of food safety and adulteration (Gnirss, 2008). But food policy extends beyond legislation deliberately focused on food products. Equally important are policies focused on agriculture, fisheries, nutrition, public health, the environment and economy, as established at all four levels of government (federal, provincial/territorial, municipal, and Indigenous governments), insofar as these policies help define the food that is produced, processed, distributed and consumed in Canada or exported. This diverse array of economic, social, health, and environmental policies has never been strategically connected through a shared set of goals and objectives. In fact, Canadian policy-makers have ventured into the domain of an integrated food policy or strategy only twice in the past, and as described below, neither had much impact.

The federal government has previously introduced two national policy documents that should inform the current national food policy conversation: *A Food Strategy for Canada* (Government of Canada , 1977) and *Action Plan for Food Security* (AAFC, 1998). While both the *Food Strategy* and *Action Plan* were formally adopted by the federal Cabinet, their respective impacts remain limited. Still, examining these documents reveals how the policy conversation about food has evolved in Canada, and which forces have dominated such conversations in the past. Further, their limitations highlight strategic mistakes to avoid this time.

In the next two sections, we look at these earlier efforts through a political economy lens informed by Grace Skogstad's periodization of agricultural policy. Agriculture played an important role in Canada's economic and political history (Winson, 1993), and Skogstad (2012) describes three paradigms of agricultural policy since the Second World War: the "Productivist Paradigm"—shaped by state assistance programs (1945–1980); the "Global Trade Regime Paradigm"—underpinned by liberal market competitiveness (1980–2000); and the still emergent

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that the term 'strategy' is really the most appropriate for the pan-Canadian response to food issues necessary at this juncture.

"Multifunctionality Paradigm"—influenced by the health and ecological value of food and agriculture (2000 to the present). Skogstad's periodization helps us make sense of these documents in the context of their times.

The government's two previous attempts to build a national consensus around food-related policies represented federal responses to moments of crisis in the food system (both global and national). Each effort also occurred at moments of transition between agricultural policy paradigms. Below, we show how the transition in the agricultural landscape that took place in the late 1970s to early 1980s helps to explain the failure of *Food Strategy*. Skogstad's framework also partially explains the limited impact of *Action Plan*.

A Food Strategy for Canada (1977)

Canadian federal agricultural policy has traditionally been structured to "serve national economic and political goals as well as the interests of those who are directly involved in and affected by Canadian agriculture—primary producers, food processors, distributors, retailers, and consumers" (Skogstad, 1999, p.1). In the productivist era (1945 to 1980), Canada had a regime of accumulation based on mass production and consumption, through the manufacturing and export of primary resources (Jenson, 1990). Conscious of the social, economic, and environmental impacts of the Great Depression, proponents of this regime focused on nation-building. In this period of "embedded liberalism" (Ruggie, 1982), Canada's government embedded the national economy within the liberal international economic order to bolster the domestic market, strengthen the welfare state, create high levels of employment, and increase manufacturing to feed into both domestic markets and international trade. Specifically, the emergence of high-input, high-yielding crop varieties, and a growing welfare state structure led to significant government interventions (such as the Canadian Wheat Board, supply management systems in dairy and poultry, and direct income-support programs) that effectively supported farmers in efforts to sustain high levels of primary food production.

However, the global economic recession of the mid-1970s, catalyzed by the OPEC (Organization of the Petroleum Exporting Countries) oil crisis coupled with a short-term decline in global food production and escalating food prices (Clapp, 2016), spurred the first stages in the neoliberal roll-back of the welfare state, including the dismantling of support programs vital to Canadian agriculture. A growing adherence to neoliberalism prompted policy-makers to reframe agriculture and food policy (Jenson, 1990; Koç & Bas, 2012). On the one hand, federal publications such as *Canadian Agriculture in the Seventies* (1969) and *Orientation of Canadian Agriculture* (1977) identified the main national objectives of "economic development, rising and stable incomes, full employment and harmonious international and federal-provincial relations" (Skogstad, 1999, p. 38). These documents also reiterated three traditional post-war agricultural policy goals: (1) stable and fair producer returns; (2) adequate supplies of high-quality, nutritious food at stable and reasonable prices; and (3) rural development and resource conservation. These values are associated with both the productivist period and embedded liberalism. However, these

documents were also informed by emerging neoliberal objectives of reducing government interventions and allowing markets a stronger role in determining the fate of Canadian agriculture. *Food Strategy for Canada* (1977), Canada's first attempt at a strategy encompassing the entire food system from production to consumption, is equally a product of this era, and embodies a similar mix of productivist and neoliberal values.

Food Strategy was produced as a public response to both social and political economic pressures. The federal government was confronted with two (sometimes opposing) groups of advocates. One group, comprised primarily of "agricultural economists committed to liberal markets" (Skogstad, 2012, p.20), pushed back against government intervention in agriculture. The other group, consumers, expressed concern over the rapidly rising food prices of the 1970s. Due to "events in international grain markets" and "general inflationary trends" spurred by the OPEC oil embargo, average food prices rose by 50 percent from 1972–1975 (*A Food Strategy*, 1977, p. 14). Canadians acutely felt inflationary pressures: at the time, food expenditures represented 18.7 percent of the average Canadian's disposable income as compared to 14.3 percent in 2015 (Statistics Canada, 2017). Consumers raised several additional issues, including the desire for better nutrition, concern over food additives, and the "widespread use of agricultural chemicals" (*A Food Strategy,* 1977, p. 14).

What can contemporary advocates of a national food policy learn from Canada's first attempt at developing a national, cross-departmental response to a diverse set of food-related issues? In this section, we focus on how *Food Strategy* was structured, comparing the way certain issues were conceived of by the federal government in the 1970s to how they were understood by food system activists at the time, as well as how they are discussed today. We then identify some reasons *Food Strategy* failed to have a lasting impact as an integrative policy document.

Co-signed by the Minister of Agriculture and the Minister of Consumer and Corporate Affairs, *Food Strategy (1977)* sought to link together a range of existing and "emerging" food-related policies and programs under one umbrella, aimed at aligning all federal legislation and policies related to food and agriculture through a shared set of "general principles" that include developing and expanding "Canada's production and export strengths", ensuring farmers and fishers "have the reassurance that they can earn a stable and adequate return on their labour and long-term investments", and that Canadian consumers have "reassurance that the food marketing system is fair and efficient and that, in any government involvement in the industry, the interests of both producers and consumers are taken into account" p. 17). *Food Strategy* proved to be a statement of general principles and policies. It had no budget, few specific directives, and no new monitoring mechanisms.

Food Strategy includes six short sections (each with federal policy goals): Income Stabilization and Support; Trade Policy and Safeguards; Research, Information and Education; Marketing and Food Aid; Processing, Distribution and Retailing; and Consumer Concerns. In the first section, for example, *Food Strategy* notes that "farmers and fishermen [sic.] have suffered from the severe effects of income instability or chronically depressed incomes" (p.17) and

advocates income support programs for these sectors, such as the promotion of orderly marketing, domestic market protection from depressed or inflated world prices, and the protection of producers from weather uncertainties. This section also states that chronically depressed incomes for some producers may reflect "serious structural problems" that may require "training programs, relocation assistance, programs to deal with special problems of regional food production", and "as a part of the broader approach to social security" (p.18).

In general terms, *Food Strategy* contains little new. It names existing policies and programs, seeking to concurrently protect producers and encourage market efficiencies. It does, however, identify areas of potential alignment among federal departments. For example, it identifies the need to address "administrative problems associated with the coverage of the self-employed…in the context of the Social Security Review" (p. 21)—an issue that received considerable attention in subsequent years. *Food Strategy* also focuses on "consumer" concerns and the impact of food prices in general terms. However, notably, *Food Strategy* pays scant attention to the variegation of poverty and food insecurity—the notion that some Canadians are affected disproportionately, and how their needs might best be addressed.

This omission is striking because only three years later, the report of the People's Food Commission (PFC), Canadian food activists' first attempt to develop a national position statement, highlighted explicitly how axes of social differentiation such as class, race, gender and age correlated with food insecurity resulting from rising food prices. While no systematic analysis of the incidences of hunger and/or food insecurity existed in Canada at the time, the PFC explicitly pointed out that rising food prices had particularly affected "low-income mothers", "persons on welfare", "senior citizens", "Canada's native population" and "Canadians living in more isolated areas" (PFC 1980, p. 14–17). While misunderstanding and prejudice continue to create blind-spots, scholars and practitioners now understand in much greater detail the sub-populations most vulnerable to food insecurity, and how government programs *do* or *do not* help them.[2]

Food Strategy also notes consumer concern that high food prices could be linked to "high concentration of ownership in some areas of processing, distributing and the retailing sector" and posits a "renewed examination of structure and performance in the provision of these services" (p.14), directing the Bureau of Competition Policy to study the sector. In their report, *The Land of Milk and Money*, the PFC (1980) echoed this concern. Strikingly, while *Food Strategy* identifies corporate concentration as problematic, none of the proposed actions intended to address consumer concerns (p. 20 of the report) target this specific issue. Rather, *Food Strategy* focuses on ensuring consumer representation on government marketing bodies and other regulatory agencies. Its authors, the (then) Ministers of Agriculture Canada and Consumer and Corporate Affairs Canada, explain:

> While Canadian consumers need not worry unduly about the sufficiency of food resources or supplies for the foreseeable future,

[2] See Tarasuk & Drachner in this issue of *Canadian Food Studies*.

> they need the reassurance that the food marketing system is fair and efficient and that, in any government involvement in the industry, the interests of both producers and consumers are taken into account (1977, p. 17).

This statement effectively shifts the policy focus from corporate concentration to ensuring consumer interests influence marketing systems (especially highly-regulated industries like dairy and poultry). *Food Strategy* (1977) states that the federal government will "ensure that, in any appointments to boards, agencies and other institutions involved in food production and marketing, it utilizes the services of persons with wide experience in marketing, economics, finance and administration, *and that the views of producers, processors and consumers are adequately represented*" (1977, p. 20, *emphasis* added). The issue of corporate concentration held resonance then, as it does today. The absence of concrete steps to address it in *Food Strategy* belies the restricted mandate writers of cross-national policy often place on themselves, and serves as a warning for contemporary food policy advocates with similar concerns.

Food Strategy (1977) appears to have been developed without active inclusion of the provinces and territories, despite the jurisdictional role of the provinces, in particular, over aspects of the Canadian food system.[3] *Food Strategy* recognizes their importance, stating the need "to initiate consultations and, in some cases, complex negotiations with the provinces" on issues such as the co-ordination of federal and provincial income stabilization programs, dietary and nutritional guidance, and land use policy, among others (p. 20). *Food Strategy* also recognizes the need to consider "the concerns of various…interest groups" (p. 20). Nonetheless, the document reveals no effort to consult with the provinces, territories, or these "interest groups" during its preparation. It was published on the assumption that the federal government can unilaterally "set out the basic principles of a food strategy for Canada to assure all Canadians that its policies and programs ensure adequate supplies of safe and nutritious food at prices which are reasonable to both producers and consumers" (p. 16). The lack of consultation in preparing *Food Strategy,* on policies that would require buy-in from the provinces and the private sector, in particular, to be effective, represents an important weakness of this policy document.

In terms of the history of agricultural policy in Canada, *Food Strategy* signals a shift from the "Productivist Paradigm" to the "Global Trade Regime Paradigm" (Skogstad 2012). While reinforcing policies of embedded liberalism, it aims to increase market competitiveness—a goal espoused by the increasingly influential neoliberals of the time. The authors advocate for an "efficient market system…which enhances the attainment of social goals within a framework of

[3] The Canadian Constitution Act of 1982 recognizes joint federal and provincial jurisdiction over agriculture in section 95. Further, several clauses of section 92 (outlining provincial powers) included food system-related jurisdiction over the "creation and administration of health-related institutions" (clause 7), "local works and undertakings" such as the building of railways and canals (clause 10), as well as control over how land is owned and sold (clause 13). Spending power (a power of both the provinces and the federal government) is another avenue through which the federal government indirectly exercises power over food-related policy and legislation within provinces. It is thus another area of government activity that requires federal-provincial coordination.

continuing government expenditure restraint with less, rather than more, direct government intervention in the economy" (1977, p. 16).

While this first attempt at a comprehensive food strategy was laudable, it never had much impact. *Food Strategy* was "subsumed" (Skogstad, 2012) and eventually overshadowed by a subsequent strategy, outlined in Agriculture Canada's (1981) *Challenge for Growth: An Agri-Food Strategy for Canada*. This subsequent strategy marked the real turning point towards neoliberalism, and generated controversy among consumer groups. Unlike *Food Strategy, Challenge for Growth* did not identify consumers as agricultural stakeholders, thereby excluding their concerns. Instead, *Challenge for Growth* forcefully championed market liberation and reduced state support for agricultural producers. Moreover, in *Challenge for Growth* the government merged the concepts of food and agriculture into "agri-food". In doing so, food policy became explicitly bound to agricultural policy—for the purposes of policy formulation and political decision-making. Further, because neoliberal ideology heavily influenced agri-food policy, *Challenge for Growth* did not mention, much less address, the socio-cultural, environmental, and health-related implications of agri-food at the household level. From its outset in 1981, then, Canadian "agri-food policy" has primarily focused on financial benefits for farmers, Canadian food processors, and governments (through taxation) from agricultural commodities competing on global markets.

The late 1970s and early 1980s was a time of profound ideological change. Neoliberalism influenced democracies around the world, including Canada. *Food Strategy* had impressive intentions by seeking to address, in an integrated approach, a wide range of domestic and international issues facing Canada's food producers, harvesters, processors and consumers. However, by 1981, the influence of neoliberalism on the government proved even stronger than in 1977. As a result, a narrow focus on the agri-food sector (and its potential to supply export markets) eclipsed Canada's first attempt at a national food strategy.

Canada's Action Plan for Food Security (1998)

Canada's *Action Plan for Food Security* (1998) emerged from a very different context than 1977's *Food Strategy*. Skogstad (2012) argues that the "Global Food Trade Regime Paradigm" dominated agricultural policy-making in Canada from 1980 to 2000. As the name suggests, this paradigm legitimized corporate restructuring for global markets, dismantled the welfare state, and emphasized the value of "free" trade agreements designed to lower tariff barriers and encourage international competition. The crowning achievement of this era, from the perspective of neoliberals, was the establishment of the World Trade Organization (WTO) in 1995. Meanwhile, in the 1980s and 1990s, government and new civil society actors increasingly sought to tackling food insecurity, both domestically and internationally. Together, this (sometimes conflicting) emphasis on international trade and growing attention to food security set the stage for a very different approach to food policy in 1998's *Action Plan*.

The concept of food security has its origins in post-World War II conversations about how to build on the successes of feeding Europe after the war to eliminate hunger globally (Martin & Andrée, 2014). Working as part of a coordinated international effort in the 1950s and 1960s, states such as Canada used food aid channels to dispose of surplus grain—thereby supporting Canadian farmers—and extend technical expertise to "needy" areas of the world (Cavell, 1952; Clapp 2012). In 1974, the global crisis brought on by the collapse of the Soviet grain crop, spurred the United Nations Food and Agricultural Organization (FAO) conference in Rome to formally adopt "food security" as an international policy goal. Until then, Western governments like Canada viewed food insecurity as primarily a problem that occurred in "developing" countries—an issue best addressed by the export of food and productivist agricultural technologies (Martin & Andrée, 2014).

Other perspectives were emerging, however, on the nature of the food security problem, where it occurred, and how it should be addressed. For example, the Canadian government funded several international civil society organizations (CSOs) based in Ottawa to attend the 1974 FAO World Food Conference. Unlike the government which sponsored their participation, organizations like Oxfam Canada were part of an emergent activist community who "diagnosed the world food crisis as a political problem, based in the structure of North-South relations" (Van Rooy 1997, p. 94-95). By the 1980s, several CSOs had also identified the problems of hunger and food insecurity in Canada, and increasingly worked to address this issue domestically. The first Canadian food banks were established in the early 1980s by charitable organizations (including churches) and organized labour (Riches, 1986). As with overseas food aid, food banks were designed to combat hunger by redistributing food surpluses from other parts of the food system (Riches, 2002). By the late 1980s, CSOs such as FoodShare in Toronto (founded in 1985) adopted a longer-term view to what they called "community food security," organizing cooperative buying clubs, collective kitchens, and community gardens to improve long-term community capacity to strengthen food security (Martin & Andrée, 2014).

These CSOs sought support from municipal, regional, and provincial governments, leveraging the fact that the Canadian constitution grants a high degree of autonomy to provinces (and even municipalities) to intervene in public welfare (Koç et al., 2008). Notably, the City of Toronto worked closely with CSOs and local academics to establish the Toronto Food Policy Council, an advisory body to the Toronto Board of Health, in 1990. Thus, by the 1990s, the political landscape of Canada's food system had changed significantly. The country still had its traditional agriculture and fishery sector lobbies, but also a host of new organizations working on food security, both internationally and domestically. Further, municipal governments became actively interested in food security, alongside the provinces and federal government.

Both CSO and government actors participated in the 1996 World Food Summit in Rome. That Summit developed the following definition which prevails today: "Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (reproduced in FAO, 2006). This definition is more multi-dimensional than earlier

understandings, emphasizing food access, availability, use and stability. Directly following the 1996 Summit, the Canadian government formed a consultative group including the Programs and Multilateral Affairs Division, and Marketing and Industry Services Branch of Agriculture and Agri-Food Canada to create *Canada's Action Plan for Food Security*. This consultative group also included many of the Canadian CSOs that emerged to work on both international and domestic food security issues (e.g., Oxfam Canada and the Daily Bread Food Bank in Toronto) (Agriculture and Agri-Food Canada, 1998 p. 50). Because of this wider engagement process, *Action Plan* is remarkably different from *Food Strategy* both in content and tone, providing further lessons to inform today's food policy conversation in Canada.

In contrast to the unilateralism of *Food Strategy,* 1998's *Action Plan* was prepared by a "joint consultative group" that included all relevant federal departments, under the shared leadership of the Ministers of Agriculture and Agri-Food and the Minister for International Cooperation. This group included broad participation among CSOs as well as some provincial representation (Alberta, New Brunswick and Ontario). Given the presence of civil society actors, it is notable that food industry actors were not involved in the plan's development. Koç and Bas (2012) argue that industry actors simply did not identify *Action Plan* as a priority for their participation in the 1990s, especially when compared with their active engagement in the drafting and implementation of the NAFTA (in the early 1990s) and the formation of the World Trade Organization (in 1995).

Another distinguishing feature of *Action Plan* is its broad scope. Shaped by a deepening understanding of the multiple dimensions of food security, it sought to address a wide array of issues, such as "Food Access", "Healthy Eating Practices", "Poverty Reduction", "Traditional Food Acquisition in Aboriginal Communities", "Sustainable Agriculture", and "Rural Development". It also advocated for inclusive food security governance processes—an issue at the fore of contemporary food policy discussion, evidenced by the 2017 joint industry/civil society call for a National Food Policy Council.[4]

Action Plan also included a commitment to "clarifying" the "implications" of the emerging concept of the "Right to Food" as an "important element of food security" (AAFC, 1998, p. 6). This was a significant development for its time. As a party to the International Covenant on Economic, Social and Cultural Rights (since 1976), and the Convention on the Elimination of Discrimination Against Women (1981), Canada has a legal duty to respect, protect and fulfil the right to food (OHCHR 2018).[5] However, to this day (and despite a promising commitment in 1998's *Action Plan*), Canada has not yet realized this right through formal constitutional or legal protections (de Schutter 2012; Berger Richardson & Lambek, this issue). Hence, the question of how to formally implement the right to food is back on the table in the 2018 debate over a Food Policy for Canada.

[4] See: *Broad Coalition Calls on Federal Government to Create a National Food Policy Council* (CFA, 2017).
[5] This duty was further strengthened when Canada became party to the Convention on the Rights of the Child in 1991 (OHCHR 2018).

Action Plan also tackled the contentious subject of trade. It argued that "fair trade" can make "positive contributions" to food security by "increasing incomes and employment for many and offering consumers a broader choice of foods" but noted that "freer trade" can also "decrease incomes for certain segments of the population," with the result that "food security for some Canadians may be compromised" (1998, p. 24). We see this attention to the benefits and drawbacks of free trade as progressive for its time, even though *Action Plan* ultimately contains strong language on Canada's desire to "continue to promote the benefits of rules-based trade through the next round of World Trade Organization (WTO) negotiations and regional trade negotiations" (1998, p. 39). Thus, Canada proved deeply entrenched then (and likely now) in the prioritization of trade liberalization above most other concerns.

While *Action Plan* contained a long list of actions and commitments, the following continue to resonate. (The departments, governments or actors responsible for carrying each out are identified in brackets):

- "Promote the participation of all stakeholders in the development of food security solutions at the national and community level. (Canadian International Development Agency (CIDA), civil society)" (p. 31)
- "Participate in a discussion to review the relationship between trade, trade agreements and food insecurity in order to develop and support research on the impacts of trade policies on food security. (Department of Foreign Affairs and International Trade, Agriculture and Agri-Food Canada (AAFC), CIDA, provincial agri-food ministries, civil society)" (p. 39)
- "Work together to build the dimension of food security and traditional food access into existing policies and activities that affect traditional food acquisition; for example, the promotion of food security in sustainable development activities and health promotion. (Department of Indian Affairs and Northern Development and its partners)" (p. 19)

Action Plan ends with a commitment to coordinate the implementation and monitoring of key actions and report findings to Canadians every two years. To accomplish this goal, Canada established the Food Security Bureau within the Global Affairs Branch of the Ministry of Agriculture and Agri-Food Canada. The Bureau produced annual reports for FAO on Canada's efforts to meet objectives from the WFS 1996 Declaration. Arguably, however, this was the only formal commitment ever realized from the *Action Plan*.

Koç and Bas (2012) note that the 1998 *Action Plan* was "stillborn" after being formally co-signed by the Minister of Agriculture and the Minister for International Cooperation in 1998. One of its core problems is that *Action Plan* was framed as a strategy with only broad "commitments" and "actions" to be taken by the "federal government", "civil society" and in some cases "provincial and territorial departments responsible for social services" (1998, p. 16). Such vague language is not easily implemented or monitored.

1998's *Action Plan* presents a comprehensive, integrative vision of how the federal government, with provincial governments and civil society, should work together to advance food security, agricultural sustainability, and human rights, both within Canada and overseas. However, the vagueness of its commitments and deadlines partly explain its limited impact. Skogstad's (2012) analysis of agricultural policy paradigms also provides explanatory value. She argues the most recent paradigm in food policy and governance, the "Multifunctionality Paradigm", emerged around 2000, which is just after *Action Plan* was written. Interestingly, while the "Multifunctionality Paradigm" is implicated in the implementation of more comprehensive policy approaches (such as that recommended in *Action Plan*) in a variety of international settings such as the UK (discussed shortly), multifunctionality has had only limited uptake in Canada to date.

A multifunctional agricultural policy "puts value on the non-commodity social, environmental, and rural development outputs of agriculture, and recognizes that the market either will not produce them or will under produce them—and rewards agriculture for doing so" (Skogstad, 2012, p. 22). This policy paradigm emerged in Europe in response to several moments of crisis which shook public confidence in food systems and regulators alike, as well as challenges to European Union (EU) subsidy programs for agriculture in WTO Agreement on Agriculture talks that began in the early 2000s (Grossman, 2003, p. 86). In the context of WTO negotiations, multifunctionality effectively became a way to argue for continued subsidies of agriculture, but for non-productive, often environmental or social, benefits (Garzon, 2005).

In Canada, a view commensurate with the "Multifunctionality Paradigm" can be found in a growing number of municipal food charters and planning policies (e.g. Vancouver's Food Strategy, Edmonton's Food and Urban Agriculture Strategy, Toronto's Food Charter), as well as provincial food policies including New Brunswick's Local Food and Beverage Strategy, Newfoundland and Labrador's Food Security and Agricultural Growth Strategy, Quebec's Agri-Food Policy, Manitoba's Food Charter, Ontario's Local Food Act, Bill 36 (2013) and Ontario's 2014 Provincial Policy Statement (FSC, 2017; Sustain Ontario, 2016; TFPC, 2017). These policies acknowledge the multiple benefits that well-functioning, sustainable, agricultural systems provide Canadian society (beyond the production of food and fibre). They show that the food policy realm has been evolving at the municipal and provincial levels in Canada. However, Skogstad (2012) argues that federal policy had simply not moved into the "Multifunctionality Paradigm" in the early 2000s, and we agree. Unfortunately, *Action Plan* presented an integrative vision that required a more multifunctionalist outlook to be realized.

Notwithstanding its limited direct impact, *Action Plan's legacy* is substantial. Bringing together CSO voices for the 1996 World Food Summit spurred AAFC to re-activate an interdepartmental committee where representatives of various government branches would periodically meet with invited civil society representatives. This committee supported the development of *Action Plan* and convinced the federal government to fund a food security conference to listen to civil society organization voices (Koç & Bas, 2012, p. 131). That conference, held in 2001, sowed the seeds for the membership-based, non-profit organization

known as Food Secure Canada (FSC). Today, FSC presents itself as the national "voice of the food movement" in Canada (PFPP, 2011, p. 25), and played a key role in encouraging the Trudeau government of 2015 to commit to a Food Policy for Canada. Furthermore, the comprehensive scope of *Action Plan*, and the inclusiveness through which it was prepared, sets a much better precedent upon which to build the current policy conversation than 1977's *Food Strategy*.

Implications for governance

Our analysis of *Food Strategy* and *Action Plan* lead to four specific recommendations for governance of a national food policy in Canada:

First, frame efforts as a "pan-Canadian food strategy" (inclusive of the provinces, territories, municipalities, and Indigenous governments, as well as the private sector and civil society) as opposed to a more narrowly-defined national food policy. The government's summer 2017 consultations took a small step in this direction. They included: an online survey to which over 40,000 people responded; a two-day Food Policy Summit in Ottawa that brought together over 300 representatives of diverse stakeholder groups; and six regional engagement sessions[6] (GoC, 2017b). While the consultations achieved were significant given the tight timelines, there was minimal inclusion of provinces and municipalities in Canada. Further mechanisms are needed to ensure the provinces and territories can participate in defining (and implementing, within their respective jurisdictions) pan-Canadian food policies. The research group *Food: Locally Embedded, Globally Engaged* (FLEdGE), working in partnership with FSC, conducted a scan of provincial, territorial, municipal, and Indigenous government (e.g. Treaty-based) food policy initiatives (FSC, 2017). It revealed important roles played by other jurisdictions in advancing food policy, as well as uneven engagement across the country. Ideally, a pan-Canadian food strategy would examine successful initiatives across the country to assess whether they could be scaled up and out. Better engagement could emulate formal Federal Provincial Territorial (FPT) processes (e.g. establish a FPT Council of Food Ministers that brings together Ministers of Health, Agriculture, Environment and Social Services for starters) or it could be organized informally, at least initially, through a learning exchange convened by a National Food Policy Council (discussed below).

Second, in response to one of the major weaknesses of *Action Plan*, it is important that *A Food Policy for Canada* define clear goals and targets and include transparent accountability mechanisms, rather than only vague "commitments". This recommendation might be difficult to achieve in its first iteration—given its swift formulation. *A Food Policy for Canada* is likely to simply state general principles and goals (much like *Food Strategy*). As a result, the food policy

[6] Held in: Charlottetown, Prince Edward Island; Saint-Hyacinthe, Québec; Vancouver, British Columbia; Yellowknife, Northwest Territories; Guelph, Ontario; and Winnipeg, Manitoba.

will require ongoing mechanisms for deliberating on targets and monitoring efforts to advance its goals.

Third, create mechanisms to avoid policies/strategies being captured by specific departments, especially AAFC, the current host of the national food policy conversation. Of our two case studies, departmental capture is most evident in *Food Strategy*, which framed food policy in narrow terms (notwithstanding attention to "consumer" issues). *Action Plan*, on the other hand, had a more comprehensive scope, prepared through a true cross-departmental process. One option for *A Food Policy for Canada* might be to have leadership of a high-level interdepartmental committee on food come from a central agency (e.g. the Privy Council Office or Prime Minister's Office) rather than a line department like AAFC. Another option might be to have committee co-leadership between two equally-powerful departments with distinct interests in food system issues like AAFC (which tends to pursue the growth of production and exports) and Health Canada (which focuses on health outcomes, and thus questions of equity and food access). We found the mandate letter of the new Minister of Health, appointed in 2017, encouraging. The 2015 mandate of the previous health minister did not include A Food Policy for Canada (this was only in the Minister of AAFC's letter), but the 2017 mandate letter did (Trudeau, 2017).

Fourth, ensure policy development as well as actual governance mechanisms include *both* civil society and agricultural and food industry actors and perspectives to achieve traction. *Action Plan* erred on this front by bringing in civil society, but with minimal industry input. The result was a lack of industry buy-in for the commitments made in *Action Plan*.

All four of these recommendations speak to mechanisms for ensuring the "joined up" approach to food policy advocated by MacRae and Winfield (2016). The literature on "co-governance" (aka collaborative governance) offers one way of conceptualizing what this approach looks like in practice. Co-governance can be defined most simply as multiple actors working together to meet shared governance goals (Kooiman, 2003). Emerson et al. (2012) similarly define collaborative governance as "the processes and structures of public policy decision making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the public, private and civic spheres in order to carry out a public purpose that could not otherwise be accomplished" (p. 2).[7]

How can governance of a national food policy address these four recommendations? The next section gleans insights from international examples of governance mechanisms, especially regarding multi-sectoral engagement and multi-level governance. We present constructive examples from Norway, Finland, Brazil and the UK. In cases where inclusive and transparent multi-stakeholder processes have not been fully realized (e.g. Australia, Scotland and Wales), considerable civil society and academic critique has resulted.

[7] While space restrictions do not allow for a deeper analysis of the contributions of this theoretical approach to a future Food Policy for Canada, we encourage further scholarship on this topic.

International precedents

In recent years, various countries have developed national food policies or strategies designed to address, in a more coordinated and harmonized manner, an array of complex food system issues. We analyzed national food strategies from Norway (1975), Scotland (2009), the United Kingdom (2010), Wales (2010), Australia (2013), Brazil (2013), Finland (2017), and Ireland (2017). To advance its food policy goals, each country developed an array of substantive, procedural and institutional policy tools. While the impetus behind each country's national food policy development varied, most introduced some form of intra-governmental and multi-stakeholder co-governance mechanisms to assist with implementation, stakeholder engagement and monitoring. These successes elsewhere provide examples that Canada can emulate.

Three approaches to multi-level and multi-sectoral co-governance are exemplary: Brazil's collaborative approach to achieve national food and nutrition and support for food as a human right; the United Kingdom's cross-sectoral governance to advance a national food strategy; and Norway and Finland's high level of intra-governmental coordination around its food and nutrition policies.

First, a whole-of-government approach, such as Brazil's Unified Health System, seeks to align food policy horizontally across departmental silos and vertically through the different levels of government (Leão & Maluf, 2013). Initially developed in 1999, Brazil's National Food and Nutrition Plan (Brazil Ministry of Health, 2013) seeks to address poverty and improve the diet, nutrition, and health of its population. This particular food policy is thus best characterized as a national food security policy. Implementation of the policy rests on both strong multi-level governmental coordination and active civil society co-governance. The main mechanism for intra-governmental coordination is Brazil's Intersectoral Committee for Food and Nutrition (part of the National Health Council). It co-ordinates policy across relevant ministries, with sub-national authorities, and with the National Food and Security Council (CONSEA)—the main civil society engagement mechanism—to turn proposals into policy. One-third of CONSEA's membership is comprised of high-level government officials responsible for areas related to food security, with the remainder from civil society organizations (e.g. non-governmental organizations, religious institutions, and professional associations) (Leão & Maluf, 2013). Brazil is the only example we investigated to entrench the Right to Food in its constitution. In fact, such pairing of legislation and constitutional entrenchment ensured commitment to carrying out a national food security policy in Brazil.

Second, a federal structure that offers flexibility might best accommodate Canada's physical and cultural diversity of food. The United Kingdom offers an example of a national food policy within a federal framework—an over-arching set of standards, principles, and goals set out for devolved governments to follow, enabling the latter to identify means suitable to their circumstances. To assist in the implementation of its food policy, the UK created a fifteen-member cross-sectoral advisory Council of Food Policy Advisors in 2008. The Council ensured multi-stakeholder input, though perhaps not active engagement. The Council also included a

secretariat (established under the Department of Environment, Food and Rural Affairs) with reporting functions. The Council then played a key role in developing and implementing a whole-of-government (cross-departmental) food strategy, *Food 2030* (UK DEFRA, 2010). A change of government in 2011, however, meant no further action was taken to implement the strategy.

Norway and Finland exemplify a third approach to bringing together intra-governmental coordination with the advice of external experts. Norway's Inter-Ministerial Council ensures food policy is coordinated across government departments. This Council then has an advisory mechanism for multi-stakeholder input into government policy. Created in 1975, Norway's National Nutrition Council sought to address two major issues: growing rates of cardiovascular disease within Norway, and the global food crisis of the mid-1970s (Food Strategy Blueprint, 2017, p. 26). Similarly, in the 1980s, Finland restructured its National Nutrition Council (set up in 1936) to better facilitate policy deliberation and coordination. Thirteen council members represent key government departments, industry, agriculture and consumer organizations. The Council proposes motions for the authorities, undertakes research and reports on efforts by industry and other actors to improve diets (Roos et al., 2002). In both countries, councils serve a coordinating and deliberative role, with no formal executive power (Klepp & Forster, 1985; Milio, 1981).

Norway and Finland's food policies are comparably as ambitious in scope as Canada's, including agricultural policies as well as nutrition and food security policies (the narrower focus of Brazil's policy). However, Canada's situation remains quite different. Canada is the world's fifth largest agricultural exporter. Both Norway and Finland are high-cost agricultural producers whose agricultural policies tend to focus on maintaining a high degree of self-sufficiency. (U.S. Department of Commerce, 2017a; 2017b). Like Canada, they are also major food importers.

What happens when countries do not find ways to work across multiple levels of government, and to engage productively with both civil society and industry actors? In 2013, Australia's proposed National Food Plan (Department of Agriculture and Water Resources, 2013) intended to work with the states and territories on food-related policy through traditional mechanisms, including the Council of Australian Governments Legislative and Governance Forum on Food Regulation, and the Standing Council on Primary Industries.[8] Australia also consulted and engaged stakeholders through the Australian Council on Food—comprised mostly of industry representatives. Further, Australia's high-level National Food Policy Working Group, serving as a conduit between the food industry and government, had ten of thirteen members coming from industry. No parallel mechanism was created for engaging with civil society stakeholders (Food Strategy Blueprint, 2017, p. 29). Civil society organizations challenged the Australian government at multiple stages in the development of its food policy, arguing its processes lacked inclusion and transparency (Carey et al., 2015). They ultimately formed the Australian Food Sovereignty Alliance and developed "The People's Food Plan" (2013).

[8] Australia's National Food Plan was never implemented due to a change in government.

A National Food Policy Council for Canada

The examples from Brazil, the UK, Norway and Finland above show that there are different ways of approaching food governance in different countries. There are also commonalities across these approaches, including the need for strong intra-governmental and inter-governmental coordination, and mechanisms for ensuring strong engagement with both civil society and industry players in one way or another. In Canada, we have worked with FSC to advocate for multi-stakeholder involvement in defining the parameters of a national food policy, and to advance the creation of a National Food Policy Council (NFPC) consisting of representatives and stakeholders from all parts of the food system. Our assessment of the governance requirements of a National Food Policy that avoids the pitfalls of the past, combined with evidence of what food policy councils have achieved at other levels, as well as the existing international precedents of multi-stakeholder advisory bodies, lead us to support this recommendation as one possible pathway forward in the Canadian context.

Currently, over two hundred food policy councils do creative work worldwide. Most advise municipal or (US) state governments.[9] McNicholl (2015) showed that the major stakeholders in Canada are ready for a food policy council (even drafting a National Food Policy Council of Canada Act). Since food issues are cross-cutting and complex, who better to populate a deliberative council than representatives from the relevant levels of government, industry, and civil society? Food policy councils are ultimately about co-learning between governments and the people they represent. Canada's National Round Table on Environment and Economy (NRTEE)—a force for sustainable development until 2013—demonstrated the role advisory bodies can play in designing innovative solutions. While a national food policy council (with the models' origins in the Toronto Food Policy Council of the 1990s) would prove a made-in-Canada solution, the international examples from Finland, Norway, Brazil and the UK discussed above all support diverse stakeholder engagement at the highest levels of food system planning.

NFPC membership should include representatives from key federal government departments and agencies, academia, food industry, farmers and food producers, civil society, the philanthropic sector and Indigenous organizations. It should also have a mechanism to ensure interaction between regulatory bodies and provincial and territorial governments (and possibly provincial and territorial policy councils). It should publish an annual state of food policy report and engage in benchmarking, data gathering and target setting. However, we caution that the NFPC, as a key advisory mechanism, can only exist within a larger architecture that listens to it and ensures coordination across multi-level governance structures. Other key elements include a Federal-Provincial-Territorial (FPT) process of pan-Canadian food policy engagement, and meaningful engagement with Indigenous peoples (Nation-to-Nation and Inuit-to-Crown) to

[9]One example of the many food policy councils that include a mix of government, civil society and industry representation is Michigan's Interdepartmental Collaboration Committee (ICC) Food Policy Subcommittee (http://www.michigan.gov/mdard/0,4610,7-125-1572_2885_70065---,00.html)

ensure coordination, as well an inter-ministerial committee at the level of Deputy Ministers (in the federal government) to align over sixteen federal departments and agencies with food policy goals.

Conclusions

Our analyses of 1977's *Food Strategy* and 1998's *Action Plan* support the following four recommendations: 1) Frame efforts as a 'pan-Canadian food strategy' (to include provinces, territories, municipalities, and Indigenous governments) as opposed to a more narrowly defined national food policy; 2) Set clear targets and accountability, and not just vague 'commitments'; 3) Create mechanisms to avoid policies/strategies being captured by specific departments; and, 4) Ensure governance is inclusive of both civil society and industry.

International precedents illustrate mechanisms to include multiple stakeholders in an advisory and monitoring capacity, and to ensure coordination across multiple levels of government. We support FSC's call for a National Food Policy Council as a key co-governance mechanism. In our view, the NFPC must be deliberative—not with tight organizational lines of accountability—and complemented by coordinating mechanisms with other levels of government (provincial, territorial, municipal, and Indigenous governments) and with federal departments and agencies.

Critical questions going forward include how the voices of those most affected (e.g. small producers, the food insecure, consumers) will inform food policy governance processes in Canada, and to what effect? If AAFC continues to take the lead on food policy in Canada, traditional agriculture stakeholders will likely dominate the conversation. Thus, there is a real risk that even if marginalized voices are included at the table (e.g. on the proposed NFPC), they will not be able to exert great influence.

Today's conversation about a Food Policy for Canada builds on a rich legacy. 1998's *Action Plan* made considerable strides forward compared to 1977's *Food Strategy*, but the core ambitions of both previous food policy efforts are yet to be realized. In 2018, the federal government has a unique opportunity to demonstrate leadership—nationally and internationally—by creating a successful joined-up policy and governance approach to the food system in Canada. Time will tell if the lessons have been learned from past attempts to do the same.

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Original Research Article

Federalism and fragmentation: Addressing the possibilities of a food policy for Canada

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Abstract

Canadian federalism poses unique challenges for the development of a national food policy. Under the *Constitution Act, 1867*, the federal government and the provinces are granted powers to govern exclusively in certain areas and to share jurisdiction in others. Where one level of government has exclusive jurisdiction, the other level of government is not permitted to interfere. However, good food system governance requires addressing policy coherence and coordination horizontally, *across* sectors such as agriculture, trade, health, finance, environment, immigration, fisheries, social protection, and vertically *between* the federal government, the provinces, and international and transnational actors. The development of a national food policy for Canada offers an opportunity to harmonize law and policymaking, and clarify the key roles that all levels of government play in the development and governance of food systems. This will require identifying sites of conflict and overlap, but also spaces for collaboration, coordination, and innovation. A national food policy will necessarily have to work within the constraints of Canadian constitutional law, but federalism and the division of powers can be harnessed to create a more just, equitable, democratic, and sustainable food system.

Keywords: federalism; food law and policy; divisions of power; fragmentation; democratic experimentalism; national food policy

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Introduction

Federalism is a fundamental feature of the Canadian legal system. Under the *Constitution Act, 1867*, the federal government and the provinces are each granted powers to govern exclusively in certain areas and to share jurisdiction in others. Where one level of government has exclusive jurisdiction, the other level of government is not permitted to interfere. For example, the provinces enjoy exclusive jurisdiction over farm workers and the development, conservation and management of non-renewable natural resources, and the federal government has exclusive jurisdiction over the regulation of inland fisheries, immigration, and trade. At the same time, the *Constitution Act, 1867* provides for shared jurisdiction between federal and provincial levels of government over social protection, health, and agriculture.

While some constitutional divisions of power are clear, many that relate to food law and policy are not. The implications of this ambiguity are twofold. First, governments may be reluctant to adopt broad reforms to food laws and policies out of concern that legislative overreach will expose them to constitutional disputes and litigation. Second, lack of clarity can be used as an excuse by governments to shirk responsibility by claiming no jurisdiction to act. Beyond ambiguity, Canadian federalism has contributed to fragmented food system governance by dividing up jurisdiction without requiring interaction or coherence between different legal structures and institutions that govern our food system.

Fragmentation in food system governance manifests itself across two broad axes: vertical and horizontal.[1] Vertical fragmentation occurs *between* the federal, provincial, territorial, and municipal levels of government as well as Indigenous governance structures that regulate aspects of the food system concurrently but not necessarily in a coordinated fashion. Domestic vertical fragmentation is further compounded by supra-national forces, such as international institutions and trade agreements that establish competing sites of regulatory authority. Horizontal fragmentation refers to divisions *within* every level of government or *between* the provinces. A range of governmental ministries, departments and administrative bodies divide and segment food system governance into categories such as agriculture, trade, health, finance, environment, immigration, fisheries, and social protection, each of which may be regulated separately.

The development of a national food policy for Canada offers a unique opportunity to address this fragmentation by harmonizing law and policymaking, and clarifying the key roles that laws and policies at all levels of government play in the development and governance of food systems.[2] Within this context, the constitutional constraints of federalism present certain challenges for systems thinking, but the principles of federalism also align neatly with many of the goals of a national food policy. The division of powers at the heart of federalism is meant to

[1] The concept of vertical and horizontal fragmentation in food governance is drawn from Grace Skogstad (2006, p. 161).

[2] For a comparative perspective, Emily Broad Lieb et al. discuss the value of developing national food policies (and strategies) in federalist countries in *Blueprint for a National Food Strategy: Evaluating the potential for a national food strategy in the United States* (2017).

encourage greater opportunities for citizen participation and public decision-making, create spaces for experimentation and innovation, protect minority values, and foster an inclusive political order (Buchanan, 1997). These are also foundational aspects of the right to food, food democracy, food justice, and food sovereignty movements respectively (Desmarais & Wittman, 2014; Lambek, 2018; Levkoe, 2015).

In this paper, we explore how federalism has shaped governance of the Canadian food system, and reflect on how a national food policy can address the fragmentation resulting from the division of powers, while at the same time drawing on the benefits of federalism. Employing the doctrinal research methodology, case law is reviewed and analysed to describe how the Supreme Court of Canada as well as other courts have interpreted the Constitution since Confederation with respect to the division of powers over food system governance and how this has changed over time. Drawing from this jurisprudential study, this paper goes on to reflect on and draw conclusions about how courts and legislatures might engage with questions of jurisdiction and divisions of power around food system governance going forward.

Part I provides an overview of the legal foundations of Canadian federalism and discusses the implications of the division of powers over food and agriculture governance. It then explores the benefits and challenges that federalism poses to ensuring policy coherence and a systems approach to food system governance in Canada. Part II provides three examples of how federalism and fragmentation impact key areas of food law and policy: food safety, agriculture, and food security. Finally, Part III turns to the subject of Canada's forthcoming national food policy and the opportunity it presents to create a more just, equitable, democratic, and sustainable food system within a federal framework. We offer reflections on how vertical and horizontal fragmentation can be addressed in a national food policy, and how the benefits of federalism can be leveraged to improve food system governance in Canada.

The Federalist state: A brief overview of federalism and food system governance

Canada's Constitution consists of multiple documents: the *Constitution Act, 1867*, the *Canada Act 1982*, including the *Canadian Charter of Rights and Freedoms*, and all amendments to each (*Constitution Act*, 1982, art. 52). When Canada was formed, the drafters of the *Constitution Act, 1867* carved out spheres of jurisdiction for the federal Parliament and provincial legislatures, dividing powers between them. This section provides a brief introduction to Canadian federalism and divisions of legislative power as they relate to the governance of the food system.[3] It highlights how federalism has shaped the architecture of contemporary Canadian food law and policy.

[3] It is beyond the scope of this paper to provide a detailed account of the evolving intricacies of federalism and judicial interpretations of the division of powers. For a helpful introduction to principles of Canadian federalism more generally, see Hogg, P. *Constitutional Law of Canada* (Hogg, 2016, 2007).

Federal and provincial division of powers over food and agriculture

At the time of Confederation, agri-food production was less industrialized and far more localized than our current food system. Although the drafters of the Constitution could not foresee the complexity to come, they nevertheless recognized the crucial role that agriculture could play in Canada's economic development. As a result, agriculture occupies a privileged place in the *Constitution Act, 1867*. It is one of only a few areas of concurrent jurisdiction between the federal and provincial/territorial governments. All other aspects of food system governance are split between the heads of power accorded to the federal government under section 91 and the provinces under sections 92, 92A and 93.

Under section 91, the federal government is tasked with making "laws for the peace, order and good government of Canada." It is granted exclusive jurisdiction over a number of areas related to the food system including trade and commerce, sea coasts and inland fisheries, criminal law, the census and statistics, navigations and shipping, immigration in Canada, and Indigenous peoples and land (*Constitution Act*, 1867, s. 91). A constitutional amendment in 1940 also granted the federal government exclusive jurisdiction over employment insurance (*Constitution Act, 1940*; *Constitution Act*, *1867*, s. 91(2)(a)). Under sections 92, 92A and 93, the provincial governments have exclusive jurisdiction over municipal institutions in the province, the incorporation of companies, property and civil rights in the province, forestry resources, and education. As of 1982, the provinces also have exclusive jurisdiction over natural resources (*Constitution Act, 1982*, s. 50; *Constitution Act*, *1867*, s. 92A). Where Parliament or provincial legislatures enact legislation that is beyond their power (*ultra vires*), courts can declare the legislation invalid.

Over the last 150 years, the courts have been tasked with interpreting the scope and content of these different heads of power. A series of legal cases have made their way through the courts, many to the Supreme Court of Canada, providing opportunities for the judiciary to clarify the somewhat vague and ambiguous language of sections 91 to 95 and to define the contours of the complex system of federalism within which food system governance operates.

Interpreting Canadian federalism: Subsidiarity, cooperative federalism, and the living tree

While modes of interpretation of the constitutional division of powers have changed over time (Brouillet & Ryder, 2017), a few features of Canadian federalism and constitutional interpretation are particularly relevant for food system governance. The first is cooperative federalism. Despite the complicated constitutional framework for the division of powers in Canada, for the most part Parliament and the provincial legislatures manage to cooperate quite well (Hogg, 2013). At its most basic, cooperative federalism is described as:

> […] a network of relationships between the executives of the central and regional governments. Through these relationships mechanisms are developed, especially fiscal mechanisms, which allow a continuous redistribution of powers and resources without recourse to the courts of the amending process (Hogg, 2013, p. 5-47).

The network principle underlying co-operative federalism allows for a generous interpretation of legislative powers at both the federal and provincial level, which in turn encourages a high tolerance for overlap and interplay between federal and provincial governments (Brouillet & Ryder, 2017). Since the mid-twentieth century, through the application of cooperative federalism, the courts have regularly recognized concurrent jurisdiction and maintained the validity of statutes enacted simultaneously at multiple levels of government (Brouillet & Ryder, 2017).[4]

A second feature of Canadian federalism is decentralization, which encourages an expansive reading of the scope of provincial legislative power and thus preserves provincial autonomy. Underlying decentralization is the principle of subsidiarity, which has been evoked by the Supreme Court on a number of occasions (Brouillet & Ryder, 2017). Subsidiarity is rooted in ancient Greek philosophy and Catholic social thought, and frames power-sharing in such a way as to allow different levels of government to contribute to law and policymaking without undue constraints from other levels of government, but also with the possibility of obtaining assistance if it cannot achieve its goal on its own (Blank, 2010). In the words of Justice L'Heureux-Dubé, the rationale for subsidiarity flows from a recognition that "law-making and implementation are often best achieved at a level of government that is not only effective, but also closest to the citizens affected and thus most responsive to their needs, to local distinctiveness, and to population diversity" (*14957 Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town)*, 2001, para. 3).[5]

Over the past 150 years, the courts have interpreted provincial jurisdiction over property and civil rights in a manner consistent with the principle of subsidiarity, granting power to the provinces over many areas of food system governance, including property law, commercial law, consumer law, environmental law, labour law, health law, and social-services law (Hogg, 2013). However, the principle of subsidiarity in Canadian federalism is not fully settled and the courts continue to carve out a significant sphere of jurisdiction for the federal government (Brouillet & Ryder, 2017). Indeed, since World War II, the Supreme Court of Canada has articulated an expansive view of federal power, and held that Parliament can regulate matters that have a

[4] The Supreme Court refers to the notion of cooperative federalism in several decisions, including *Husky Oil Operations Ltd. v. Minister of National Revenue*, 1995, para. 162; *Reference re Employment Insurance Act (Can.), ss. 22 and 23*, 2005, para. 10; *Rogers Communications Inc. v. Châteauguay (City)*, 2016, para. 85 (concurring reasons of Gascon J.). *See also Multiple Access Ltd. v. McCutcheon*, 1982; *Law Society of British Columbia v. Mangat*, 2001; *OPSEU v. Ontario (Attorney General)*, 1987.

[5] See also *Canadian Western Bank v. Alberta*, 2007, para. 45 [*hereinafter* "*CWB*"].

national dimension under its powers over peace, order and good government, trade and commerce, transportation, or communication (Hogg, 2013).

Moreover, in situations of conflict or where inconsistencies are identified between a valid statute of Parliament and a valid statute of a provincial legislature, the doctrine of federal paramountcy provides that the federal law prevails (*Rothmans, Benson & Hedges Inc. v. Saskatchewan*, 2005). Federal paramountcy applies in two types of cases: where it is impossible to comply simultaneously with the federal and provincial statute, or where provincial legislation frustrates the purpose of federal legislation. As a result, despite principles of subsidiarity and the unique provision of concurrent jurisdiction over agriculture under s. 95 of the *Constitution Act, 1867*, the federal government enjoys ultimate legislative power. It should be noted, however, that federal paramountcy cannot be used to prevent provinces from establishing and imposing higher standards (for example, in the case of environmental protection) than the federal government.

Finally, the scope of Canadian federalism—that which falls within the jurisdiction of the federal or provincial governments—continues to evolve under the living tree doctrine. This principle dates back to 1930, when Lord Sankey famously wrote that the *British North America Act* "planted in Canada a living tree capable of growth and expansion within its natural limits." (*Edwards v. Attorney-General for Canada*, 1930). The living tree doctrine has since become firmly rooted in Canadian constitutional law. It allows interpretive space for the Constitution to address areas of jurisdictional power not yet solidified, as well as adaptability to changing circumstances and conditions, and evolving areas of governance. This is important because the courts continue to adjudicate cases that require them to iron out the content and scope of the division of powers. For example, in 2018 the Supreme Court of Canada released its decision in *Her Majesty the Queen v. Gerard Comeau*, about the authority of the provinces to regulate cross-border trades of alcoholic beverages. The Court upheld the right of provinces to regulate the consumption and sale of alcohol widely within their borders, even if this has an incidental impact on the free flow of goods between provinces (*R v. Comeau*, 2018).

The playing out of federalism in three areas of food law and policy

Canadian federalism and the division of powers over food and agriculture are firmly entrenched in the *Constitution Act, 1867*. However, as a living document, the Constitution must adapt to changing circumstances. When the federal government launched its consultation process for *A Food Policy in Canada* in 2017, it identified four proposed themes: 1) increasing access to affordable food; 2) improving health and food safety; 3) conserving our soil, water and air; and 4) growing more high-quality food (Government of Canada, 2017). Each theme raises distinct questions for a national policy within a federalist framework. For example, food safety governance is shaped by multiple levels of government as well as international and transnational actors. Environmental conservation and agri-food productivity will require negotiated cooperation in light of concurrent jurisdiction over agriculture. And increasing access to food

raises questions about the obligations of the federal and provincial governments to ensure food security. Rather than rely on the government's framing of issues, which has been contested by civil society groups, we focus below on three broad issues of food system governance that intersect with those identified by the government. These three areas—food safety, agriculture and food security—provide a lens for understanding how fragmentation is manifest in food system governance today.

Food safety

In 1997, the Codex Alimentarius Commission defined food safety as "the assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use." (Codex Alimentarius Commision, 1997). Recognizing that absolute protection from harm is both impossible and undesirable (the costs of absolute protection outweigh the benefits), the assurance of freedom from harm is generally understood as protection from *unacceptable levels of risk* caused by hazards in food (Motarjemi, 2014). Food safety can refer to the qualities of a product. It can equally refer to methods of production, processing, distribution, and preparation that protect products from contamination on the path from farm to fork.

The coordination of responsibility for ensuring the safety of our food supply has been described by the World Health Organization (2000) as a "shared responsibility temple" between government, industry, consumers, international organizations, and academia. In Canada, responsibility under the pillar of government is split vertically across federal, provisional, territorial, and municipal jurisdictions, and horizontally between departments and agencies.

Parliament's power to regulate food and agricultural products for the purposes of ensuring food safety is rooted in the federal power over criminal law under s. 91(27) of the *Constitution Act, 1867*. Parliament also has authority to regulate food and agricultural products under its s. 91(2) power over trade and commerce. Health Canada and the Canadian Food Inspection Agency (CFIA) are the two main federal institutions responsible for food safety in Canada. Health Canada establishes food safety policies, regulations, and standards for all food sold in Canada, and the CFIA enforces them. In addition to Health Canada and the CFIA, the Canada Border Services Agency (CBSA) has responsibility for ensuring that food imports are safe. Food products that are imported to Canada are subject to the requirements of federal law. Import regulations are enforced by the CBSA through initial import inspection services at airports and other Canadian border ports.

The provinces have power to regulate food and agriculture in relation to property and civil rights (s. 92(13)), municipal institutions (s. 92(8)), and all matters of a merely local or private nature (s. 92(16)) (*Constitution Act*, 1867). This allows them to enact laws and regulations relevant to the inspection of agricultural production and food processing, as well as establishments that sell food and agricultural products. They can also implement regulations that promote food safety, public health, and the economic interests of the province (Buckingham,

2014, para. HFD-6). Each province and territory has its own legislation to regulate food premises, including safe food preparation, food handling, and food service. While provincial food safety measures must conform to minimum federal standards and regulations, they may also impose food safety measures that are more stringent than federal ones, provided they do not impact food that is traded interprovincially or internationally. Determinations of whether or not provincial regulations interfere with the federal power over trade and commerce have been the subject of multiple constitutional disputes, and will be discussed in further detail below.

Municipal institutions are also key actors in food safety governance. Section 92(8) of the *Constitution Act, 1867* permits the provinces to empower cities and municipal institutions to carry out a limited mandate of activities, including inspecting and regulating local establishments that manufacture, prepare, or process agricultural and food products, and premises that serve food (Buckingham, 2014, para. HFD-7). Empowering legislation has been enacted in all provinces and territories. Moreover, over the past twenty years, industry has become an important partner in Canadian food safety management. As the relationship between the government and industry shifts from one of policing to partnership, governments are increasingly delegating responsibility to producers and processors to decide how best to comply with safety standards (Skogstad, 2006, p. 165).

In practice, the policy objectives of food safety governance do not always align with one constitutional provision to the exclusion of all others. This has resulted in conflicts between Parliament and the provinces over the years. On several occasions, the Supreme Court of Canada has been called on to clarify the scope of federal and provincial powers over food safety. For example, a seminal case in Canadian constitutional law is the Supreme Court's decision in the *Reference re Validity of Section 5 (a) Dairy Industry Act*, [1949] SCR 1 (known as the *Margarine Reference*). The case dealt with a prohibition in the *Dairy Industry Act* on the manufacture or sale of margarine. At issue was whether this prohibition could be justified under Parliament's criminal or trade and commerce powers. The sale of margarine was originally prohibited in 1886 in response to concerns that margarine was injurious to health, but by 1949, new medical facts established that margarine was not a dangerous product. The provinces argued that the ongoing prohibition amounted to overreaching by the federal government and interference with provincial powers over property and civil rights. The Supreme Court agreed, holding that while it was within the federal government's criminal law power to prohibit the sale or manufacture of products that are injurious to health, the objective of the margarine prohibition was in fact economic and thus outside Parliament's jurisdiction.

In *Labatt Brewing Co. vs. Canada*, [1980] 1 SCR 914 the Supreme Court further clarified the scope of Parliament's jurisdiction over food safety, ruling that Parliament's criminal power over food law is distinct from its power to regulate marketing practices. At issue was whether provisions in the *Food and Drug Act* establishing compositional and food labelling standards for beer were an acceptable exercise of federal power. Since there was no health justification for the standards, the Court held that Parliament's detailed regulation of the brewing industry was outside the scope of its criminal law powers. This case marked a turning point from previous

case law that found that food standards and compositional recipes were indeed valid exercises of federal power.[6]

Following the Supreme Court's ruling, Parliament amended the *Food and Drugs Act* to clearly separate provisions relating to food safety standards and standards for any other purpose. In practice, however, the lines between health, trade and commerce, property, and civil rights, or matters of a purely local nature are not always clear when it comes to food policy (something Chief Justice Laskin noted in his dissenting judgment[7]). Moreover, distinguishing between food standards as they relate to health and food standards for the purpose of trade and commerce goes against recent trends in global food safety governance, which make explicit the connections between health and trade. Indeed, in today's global food market, food safety standards and international trade are closely linked. The proper functioning of global markets demands quality assurances that food being traded across borders is safe. Since the 1990s, multilateral trade negotiations have attempted to harmonize international regulatory structures for food safety to reach a common system to manage risks that restricts trade-distorting practices and promotes the freedom of movement of food products internationally. This has in turn influenced Canada's domestic food safety regulations (Health Canada, 2008).

Furthermore, while constitutional disputes over divisions of power narrow the scope of what constitutes a legitimate food safety concern, there are good reasons to broaden the definition of food safety. Currently, the main focus of Canada's food safety regulatory system is human health, but another conception of food safety could also address issues such as workplace safety and occupational hazards for agricultural labourers, as well as environmental health risks associated with agricultural pollution. This would allow for a more holistic approach to food safety governance and address the federal government's stated objective of improving health and food safety under a national food policy (Government of Canada, 2017). For now, however, constitutional constraints on federal and provincial actors encourage regulatory approaches to food safety that operate in isolation from other socio-economic dimensions of food policy.

Agriculture

Agriculture is one of three areas of shared jurisdiction under the Constitution (the other two being immigration into the provinces and pensions). This power-sharing formula under section 95 has helped the courts navigate constitutional disputes about who has authority over aspects of food system governance that were not explicitly laid out in the Constitution or in cases of overlap between ss. 91 and 92. However, concurrent jurisdiction also comes with challenges, most notably a lack of accountability between different levels of government.

Agricultural law in Canada is contingent on the willingness of governments to be proactive and to cooperate with each other. In some cases, cooperation and harmonization have

[6] See for example *Standard Sausage Co v Lee*, 1993 and *Berryland Cannon Co v Canada*, 1974.
[7] See *Labatt Brewing Co. v Canada,*1980, pp. 918-922.

been successful. In 2005, Agriculture and Agri-Food Canada and all provinces and territories signed the intergovernmental Agricultural Policy Framework (APF) Agreement, which articulated a long-term strategic vision for agri-food policy across the country (Agriculture and Agri-Food Canada, 2005). The APF reflects careful balancing of federal, provincial, and territorial interests and efforts towards harmonizing economic, social, and environmental goals around agri-food production (Skogstad, 2011). The APF was followed by Growing Forward (2008-2012) and Growing Forward 2 (2013-2018), which successively renewed the intergovernmental agreement on agri-food sector goals.

In 2018, Growing Forward 2 was replaced with the Canadian Agricultural Partnership, a five-year, $3 billion investment by federal, provincial, and territorial governments to strengthen the agriculture, agri-food, and agri-based products sector, signaling an ongoing commitment to principles of cooperative federalism (Agriculture and Agri-Food Canada, 2018). National supply management initiatives in the egg and dairy sectors are another example of successful cooperation across jurisdictions (notwithstanding ongoing debates about the desirability and legality of supply management in the context of international trade agreements[8]).

Power sharing under s. 95 also creates divergences across jurisdictions. At the federal level, pressure to coordinate and cooperate with provincial and territorial governments is counterbalanced with international and transnational agri-food policies and priorities (Phillips, 2004, at p. 288). Meanwhile, political and economic factors at the provincial/territorial level can contribute to regional disengagement from national coordination efforts. For example, despite a healthy working relationship between Quebec and the rest of Canada in national supply-managed sectors, Quebec farmers have a long history of disengagement from the federal system. During the late 20th century, a combination of Quebec nationalism and an extraordinarily organized provincial farmers' union contributed to a boom of provincial agri-food policies to strengthen rural and agrarian communities, which were often portrayed as the keystone of Quebec society (Skogstad, 1998). At a time when federal spending on agriculture was decreasing, Quebec strategically used its expenditure and regulatory powers to vigorously promote its agri-food sector to the point where Quebec farmers were recorded as having the highest net operating income of all farmers in Canada (Skogstad, 1998).

Disengagement can strengthen local food systems. But it also presents risks, particularly race-to-the-bottom policies that promote productivity at the expense of environmental conservation and resilient rural communities. For example, when a failing wheat industry during the late 1980s and 1990s threatened farmers' livelihoods in Manitoba, the provincial government responded by declaring that lower prices contributed to the so-called "Manitoba Advantage," an economically competitive environment where producers could raise hogs on cheap local grain (Novek, 2003, p. 6). Pork producers who faced strict environmental and regulatory constraints abroad were encouraged to invest in Manitoba instead. Hog production became a lucrative business for hog farmers; however, the expansion of Manitoba's hog industry came at a cost.

[8] See for example Trebilcock, 2014, pp. 81-94; Trebilcock and Pue, 2014.

Foreign investment was geared towards export markets and this was best served by a model of intensive production with little concern for environmental stewardship and rural sustainability (Novek, 2003).

Section 95 signifies the importance of agriculture at the time of Confederation, and its unique role as a tool for nation-building and cooperation between the federal and provincial levels of government. However, 150 years later, as methods of production have evolved and given way to highly industrial agricultural practices that threaten ecosystems and public health, it may be time to consider s. 95 in a new light. Concurrent federal and provincial powers over agriculture are not only a privilege that can be used by each level of government to their advantage. They must also be understood as an obligation for both to regulate food systems sustainably and holistically.

Food security

According to the most recent national estimates, 12.7 percent of Canadian households—including 1.15 million children—experience food insecurity (Tarasuk, 2012). Food security in Canada is defined as existing when "all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preference for an active and healthy lifestyle" (Statistics Canada, 2018).[9] Food insecurity occurs when people do not have this access at all times. The *Constitution Act, 1867* does not designate jurisdiction over food security and unlike many other areas of food system governance, no one key governmental body at the federal level or within the provinces is tasked with ensuring food security. Nor does the *Charter of Rights and Freedoms* grant protection to an adequate standard of living or to the right to food.[10] As a result, food insecurity is most often addressed through a collection of policies and legislative frameworks at the federal and provincial levels, very few of which are directly concerned with food insecurity itself.

Both the federal and provincial governments participate in measuring food insecurity. The federal government has jurisdiction over the census and statistics (*Constitution Act*, 1867, s. 91(6)). Pursuant to this power, since 2005, Statistics Canada has measured food security through the Canadian Community Health Survey (CCHS) (Statistics Canada, 2018), which contains a series of questions that address household food security. Although the federal government is responsible for the CCHS, it is the provinces and territories that administer it and they can, and often do, elect not to administer the portion of the CCHS concerning food security. Furthermore, as it is the provinces that administer the CCHS, there is no data measuring food insecurity for populations under federal jurisdiction such as First Nations living on Crown Lands and full-time members of the Canadian Forces (PROOF, 2017). With no level of government taking full

[9] This definition is used widely in Canada and beyond. It is adopted from the *Rome Declaration on World Food Security* (Rome Declaration, 1996).
[10] While Canada ratified the *International Covenant on Economic, Social and Cultural Rights* (ICESCR) in 1976, which enshrines the right to food, Canadians do not have a legally enforceable right to food.

ownership of the collection of data on food insecurity, Canada lacks consistent and comprehensive data, and very few national statistics measuring food insecurity across the country exist.[11]

Ensuring food security in Canada is largely about ensuring economic access to food (i.e., ability to pay for or purchase food or the inputs to grow or gather food), though questions of physical access (i.e., ability to travel to locations where food can be purchased) do arise particularly in northern and remote communities. Food security is thus often dependent on a household member's employment and wages. The general regulatory power over labour relations falls to the provinces under their s. 92 competence over property and civil rights.[12] Through different provincial statutes, the provinces regulate the workplace for most industries (including agricultural work). Each province sets its own minimum wages, maximum hours, and other employment conditions. At the federal level, Parliament has carved out jurisdiction for itself under the *Canada Labour Code* (1985, c. L-2) to set a minimum wage (s. 178) for those working in federally regulated industries, including shipping, railway, air transport, radio broadcasting, and banking, as well as those areas under Parliamentary control (s. 2).

In recent years, civil society groups have pushed for increases to minimum wages. While the federal minimum wage will hit $15 per hour on October 1st, 2018, the majority of those employed in Canada are subject to provincial and territorial minimum wages, which are by and large significantly lower (Government of Canada, 2017). Alberta will match the federal government's minimum wage increase in 2018 (Alberta, 2018). Ontario will match to $15 per hour in 2019 (CBC News, 2017). The question remains, however, whether $15 per hour is a liveable wage in Canada, and whether precarious work prevents people from making livable wages despite rising minimum wages.

Where people in Canada are unable to work or unable to find work, various social protection schemes provide income support. Theoretically, these should ensure the food security of recipients. In practice, however, this is rarely the case. At the time of Confederation, little to no social protection existed, and what protection did exist was often provided by private sources, such as churches (Hogg, 2007). Power was given to the provinces to regulate these entities under 92(7) of the *Constitution Act, 1867*, which provides for the establishment, maintenance, and management of hospitals, asylums, charities, etc. Initial attempts by the federal government to offer social protection in limited circumstances were struck down by the courts as unconstitutional (Hogg, 2007). In 1935, Parliament enacted legislation creating a national unemployment insurance plan; however, the Privy Council held that the scheme fell within the ambit of provincial jurisdiction over property and civil rights, and struck down the legislation as *ultra vires* (*A.G. Can. V. A.G. Ont. (Unemployment Insurance)*, [1937] A.C. 355). The *Constitution Act, 1867* was subsequently amended, and in 1940, Parliament was given authority

[11] National statistics are only available for survey cycles in 2007-2008 and in 2011-2012 (PROOF, 2017).
[12] For an early Supreme Court discussion on the provincial power over labour relations, see *Toronto Electric Commission v. Snider*, 1925.

over unemployment insurance. A second amendment was passed in 1951, giving Parliament jurisdiction over old age pensions.

Other social protection schemes, such as income-support programs that do not involve compulsory contributions, fall under the jurisdiction of both the federal and provincial governments. Both levels of government are permitted to use their spending powers to spend public money, so long as they do not involve any form of compulsion and do not violate the *Charter of Rights and Freedoms*. For this reason, social programs that solely involve the expenditure of money cannot be challenged on the grounds of federalism or distribution of powers (Hogg, 2007). Both Parliament and the provincial governments use their spending power to create social programs, though provincial governments tend to have more robust social protection schemes. Federal intervention in social protection tends to come in the form of grants to provinces to support provincial schemes (Hogg, 2007).

In many parts of the world, it is common for social protection schemes to provide food directly to food insecure populations or to offer vouchers used only for the purchase of food. In the United States, for example, the Supplemental Nutrition Assistance Program provides vouchers that can be used for the purchase of food. No similar federal programs exist in Canada; instead, households receiving social assistance divide their funds to cover food, transport, rent, and other daily expenses. Some provinces provide additional income support in the form of a dietary supplement, which provides supplemental funds to recipients who have special dietary requirements.[13]

Under s. 91(24) of the *Constitution Act, 1867*, the federal government has jurisdiction over "Indians, and Lands reserved for Indians". Northern communities and Indigenous peoples have the highest rates of food insecurity in Canada. In 2014, 36.2 percent of households in Nunavut experienced severe or moderate food insecurity, and 46.8 percent experienced any level of food insecurity (Tarasuk et al, 2014; Statistics Canada, 2012). The Northwest Territories also had high levels of food insecurity, with 24.1 percent experiencing any level of food insecurity (Tarasuk et al, 2014). The federal government manages programs meant to improve access to food in northern communities. One such program is Nutrition North Canada, a retail subsidy program aimed at providing northern and isolated communities with improved access to perishable food. It is not aimed at food security per se, but at improving nutritional outcomes. Current programing, however, fails to address food security concerns for Indigenous peoples as well as northern communities. Nutrition North has been heavily criticized over the years for not meaningfully lowering the price of food or preventing food insecurity (Galloway, 2017; Skura, 2016). And the federal government has been severely criticized recently for its failure to address drinking water advisories in First Nations communities (EcoJustice, 2017; MacClearn, 2016)[14].

[13] For details on the special diet allowance in Ontario, see http://www.mcss.gov.on.ca/en/mcss/programs/social/special_diet_apply.aspx.

[14] In 2014, four Alberta First Nations launched a lawsuit against the federal government, alleging it failed to provide resources and investments to ensure safe drinking water on reserves (*Tsuu T'ina Nation et al v. AGC*, FC T-1429-14).

National food policy: A tool for addressing fragmentation and federal challenges

While a national food policy for Canada will have to operate within the constraints of the constitutional division of powers, it can also push us to re-examine the values underlying past agri-food policies and their continued relevance in the 21st century. The division of powers, as laid out in the Constitution, cannot be altered by a national food policy and cross-jurisdictional governance of the food system in Canada will persist. Yet, recognizing that effective food law and policy requires governmental coordination and collaboration, there are ways that a national food policy can negotiate the existing division of powers to address the negative impacts of fragmentation, while embracing its benefits. This paper will now address two such ways: norm setting to build coherence and leaving space for experimentation.

Norm setting to build coherence

A national food policy is an opportunity for the federal government to build coherence in the areas in which it has exclusive or shared jurisdiction. Already, work on the policy has brought together sixteen federal ministries, agencies, and departments, with Agriculture and Agri-Food Canada as chair.[15] These governmental bodies rarely work collectively on policy-making related to the food system. Providing a venue for representatives of the different bodies to get together is an important step for cross-pollination of ideas, collective learning, the sharing of perspectives, creative problem solving, and system thinking.

Furthermore, a national food policy can shift the language and practice of food system governance in two key ways. First, it encourages policymakers across vertical and horizontal axes of government to think seriously about the food system as a *system*, and to engage with its interconnections and mutually interdependent areas of governance. Second, a national food policy offers an occasion to articulate what norms, values, or principles we want as the foundation of our food system. In his Mandate Letter to the Minister of Agriculture and Agri-Food, Prime Minister Trudeau requested the development of "a food policy that promotes healthy living and safe food by putting healthier, high-quality food, produced by Canadian ranchers and farmers, on the tables of families across the country" (Trudeau, 2015). Some of the priorities articulated in this Mandate Letter are vague: What is "high-quality food"? Does it require producing more or importing less food? How does healthy living align with a food policy? Yet, some values are clear, such as the emphasis on supporting domestic production, improving diets and health outcomes, and ensuring food is safe. The Government of Canada subsequently

[15] These ministries, departments, and agencies include: Agriculture and Agri-Food Canada (Chair), Canadian Food Inspection Agency, Canadian Institutes of Health Research, Canadian Northern Economic Development Agency, Employment and Social Development Canada, Environment and Climate Change Canada, Finance Canada, Fisheries and Oceans Canada, Global Affairs Canada, Health Canada, Indigenous and Northern Affairs Canada, Innovation, Science and Economic Development, Public Health Agency of Canada, Privy Council Office, Statistics Canada and Transport Canada. Notably the Justice Department and Heritage Canada are not at the table.

expanded on the Mandate Letter, introducing the four themes already articulated above. Various civil society groups have articulated other possible guiding principles, with Food Secure Canada, for example, suggesting that the right to food form the basis of the policy (Food Secure Canada, 2017). Other questions include: should a national food policy place an emphasis on ensuring access to food for all Canadians or all people living in Canada? Should a national food policy focus on growing the agri-food sector or promoting a sustainable agri-food sector? Answers to these questions will reflect normative positions about what our food system should look like.

Requiring food system thinking and clarifying values, principles, and norms is an important step for addressing fragmentation and strengthening cooperative federalism. Another important step is determining what to coordinate and on what basis to be coherent. Although it may not—at least immediately—produce the coherence and coordination we need, the national policy can lay the groundwork and serve as a decisive turning point. At the very least, it provides a space for discussion, debate, and contestation. Moreover, the articulation of norms, values, or principles that will frame the national policy may also have a trickle-down/cross-pollination effect on the various federal ministries engaged in the governance of certain aspects of our food system, as well as provincial governments and ministries. This would foster more principled decentralization of power and subsidiarity.

Leaving space for experimentation

Democratic experimentalism is heralded as one of the great benefits of federalism. As Justice Brandeis famously described in early jurisprudence of the United States Supreme Court: "It is one of the happy incidents of the federal system that a single courageous state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country." (*New State Ice Co. v. Liebmann,* 1932). The core constructs of democratic experimentalism are: (1) public-oriented pragmatism in policy-making; (2) coordinated decentralization based on local knowledge, continuous monitoring by a central authority, and benchmarking of performances; (3) participatory transparency; and (4) collaboration as a premise for political action of all kinds (Colburn, 2004). By underscoring the importance of localized decision-making, democratic experimentalism builds on conventional normative defenses of federalism, while at the same time highlighting "the virtues of mutually beneficial cooperation between and among local decision-making units" (Scheuerman, 2004, para. 24).

Democratic experimentalism is key to developing more sustainable, just, and equitable food policies, and for deepening their democratic legitimacy. Many of Canada's greatest legislative and policy achievements are a result of democratic experimentalism. Medicaid started as an experiment in the province of Saskatchewan and laid the foundation for universal health care in the rest of Canada. Ontario is currently experimenting with universal basic incomes, initiating pilot programs in the province (Government of Ontario, 2018). If the universal basic

income pilots are successful, they will offer a transformative new model for addressing income insecurity at the heart of food insecurity in Canada.

Similarly, many of the most innovative moves in food law and policy are currently happening at the local level through deep participatory processes. For example, in Quebec, both the provincial government and the municipality of Montreal launched new food strategies in the past year following extensive public consultations (Government of Quebec, 2018; SAM, 2017). The themes identified at the provincial and municipal level in Quebec are different from those identified by the federal government for a national food policy, and this may be a good thing. In some cases, regional variation is desirable because it reflects more accurately local preferences and preoccupations. A robust practice of democratic experimentalism will see these local initiatives as complementary and inspirational to the design of federal initiatives. Creating spaces for creativity, innovation, and experimentation is extremely important to achieving more democratic, just, equitable, and sustainable food systems. A national food policy can encourage further provincial and municipal experimentation – while also articulating overarching principles, values, and norms as well as a food systems framework to guide it.

Conclusion

Canadian federalism poses unique challenges for the development of a national food policy. Good governance requires not only addressing policy coherence and coordination horizontally, across sectors such as agriculture, trade, health, finance, environment, immigration, fisheries, and social protection, but also interjurisdictional vertical coordination and coherence. A national food policy can be cross-cutting, implicating all levels of government and reversing past trends of governing in silos, with limited communication between different government agencies and levels of government.

Despite Canada's history of food policy fragmentation, this paper has shown how the division of powers at the heart of federalism can now be harnessed to support a national food policy that encourages citizen participation and public decision-making, creates spaces for experimentation and innovation, protects minority values, and fosters an inclusive political order. A national food policy for Canada will necessarily have to work within existing constitutional constraints, but the principles of federalism are also consistent with a shift towards a food system that fosters equitable power-sharing under the unifying influence of a shared policy goal.

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Original Research Article

Food Counts: Food systems report cards, food sovereignty and the politics of indicators

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Abstract

The International Panel of Experts on Sustainable Food Systems recognized that "current systems will be held in place insofar as these systems continue to be measured in terms of what industrial agriculture is designed to deliver, at the expense of many other outcomes that really matter in food systems" (IPES-Food, 2016, p. 57). In response, they called for new food systems indicators rooted in social justice, support for local economies, ecological regeneration, and democratic engagement. This paper reflects on the ways that indicators can serve as a tool to understand the current state of food systems, challenge existing approaches, and (re)frame a future vision of equity and sustainability. Our analysis focuses on the development of *Food Counts*: *A Pan-Canadian Sustainable Food Systems Report Card*, a first attempt to bring together existing measures of social, environmental, and economic well-being to help researchers, policy makers, and practitioners examine food systems more comprehensively. The report card used a food sovereignty framework and an integrated systems perspective and makes connections to a global movement for collective social change. Beyond its practical value, and particularly in the context of Canada's development of a national food policy, our analysis illuminates the limited kinds of data available, the privileging of scientific expertise over traditional knowledge, the assumed value of certain indicators, and the reductionist nature of using data to represent complex food systems. We argue that while report cards can make visible numerous food systems' elements, they can also obscure diverse experiences, reinforcing unsustainable practices and policies.

Keywords: food sovereignty; food systems; indicators; report card; sustainability

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Introduction

Within Canada, there is growing concern about how food systems are organized and governed and who has the power to make decisions that impact people and the natural world. While governments are obliged to manage food systems in the public interest, there is growing evidence that benefits are unequally distributed. Controlled primarily by corporate interests, the systems that bring food to our plates privilege private economic interests over social and ecological well-being (Howard, 2016; Clapp & Fuchs, 2009). Despite supplying large amounts of foods to global markets, the dominant food system is contributing to a host of negative outcomes, including: degradation of land, water and ecosystems (Sage, 2011; FAO, 1999); high levels of greenhouse gas emissions (GRAIN, 2011); persistent hunger and under-nutrition together with a rise in diet-related diseases (Tarasuk, Dachner, & Loopstra, 2014); and the precarity of farmer and fisher livelihoods around the world (Beaulieu, 2015). Practical tools are needed to help understand the current state of Canadian food systems and to guide a fundamentally different way of governing food systems that can (re)frame a vision of health, equity, and sustainability.

In a recent report, the International Panel of Experts on Sustainable Food Systems (IPES-Food) recognized that "current systems will be held in place insofar as these systems continue to be measured in terms of what industrial agriculture is designed to deliver, at the expense of many other outcomes that really matter in food systems" (IPES-Food, 2016, p. 57). In response, they called for the development of new indicators for sustainable food systems that are rooted in an alignment of social justice, support for local economies, ecological regeneration, and democratic engagement. Others have also identified the need to establish indicators to better understand how food systems function and to determine where to intervene (Blay-Palmer, Turner, & Kornelson, 2008; Marsden, 2010). A food systems report card is one tool that brings together a range of indicators and can support several practical, reflective and visionary functions. Report cards can provide a lay of the land, act as a benchmark to inform a historical and contextual analysis as well as identify patterns that point towards future developments. They can also help to make visible gaps in existing data and identify areas requiring further research and examination. These tools are particularly relevant in Canada given the federal government's announcement in May 2016 to develop a Food Policy for Canada (Levkoe & Wilson, 2017). Recognizing there is a lack of existing data to assess the state of Canada's food systems, a national report card would bring together a range of essential information, point to opportunities and gaps, and help monitor changes over time.

However, report cards are not politically neutral, with many revealing implicit bias towards promoting a narrow set of objectives and neoliberal logics (Hacking, 2007). Existing report cards on the state of food reveal significant limitations based on narrow foci and scale. For example, the Conference Board of Canada's Food Report Card 2015 (Le Vallée & Grant, 2016) and the Global Food Security Index (The Economist Group, 2016) presented at the World Economic Forum are both rooted within a primarily economic perspective; the Food Banks

Canada's annual Hunger Count Reports (Food Banks Canada, 2016) focus primarily on food access; and, the Diabetes Association of Canada linked food with particular health expenditures through their report *The Economic Tsunami: The Cost of Diabetes in Canada* (Diabetes Canada, 2009). Each of these contribute to a broader conversation, yet none of these reports focus on measuring or supporting the cross-cutting, multi-sectoral dimensions needed to assess the state of food systems. While comprehensive report cards do exist at the municipal or regional scale, we lack an assessment tool that takes a Pan-Canadian food systems approach with an integrated focus on social, economic, ecological, and political sustainability.

In this paper, we critically reflect on the ways that report cards can serve as a practical tool to understand the state of food systems, challenge current practices, and help to (re)frame our vision of a healthy, equitable and sustainable food system. These reflections draw on our collective experience developing *Food Counts: A Pan-Canadian Sustainable Food Systems Report Card* between 2016 and 2017[1]. Bringing together existing measures of social, environmental, and economic well-being, *Food Counts* was developed to help researchers, policy makers, and practitioners examine sustainable food systems at the national level. It uses a food sovereignty framework to embed food within an integrated systems perspective and makes connections to a global movement engaged in efforts towards progressive social and ecologic change. We argue that while report cards are a valuable tool that can make visible numerous food systems' elements, using indicators to represent complex systems can also obscure different food systems experiences and direct us towards and reinforce unsustainable practices and policies. In the following section, we explore the scholarly literature on measuring food systems and sustainability. We then describe the process of developing the *Food Counts* report card, along with some of the findings from this initiative, followed by a critical discussion about the opportunities and limitations of using indicators to represent food systems. Considering that the development of a national food policy will require establishing a monitoring and reporting system, we conclude with some suggestions for the kinds of indicators that could be tracked as well as recommendations for institutionalizing the responsibilities of a reporting body.

Measuring sustainable food systems

Measuring sustainability

Indicators are increasingly viewed as an essential part of informed decision-making (Hezri & Dovers, 2005; Bell & Morse, 2011). In general, indicators can be described as the quantification of social and ecological conditions and can be used to assess the historical and current state of affairs, and predict future trends. While the kinds of indicators vary widely, they are typically selected based on criteria that meet the needs of a specific project, program, or policy and are

[1] www.fledgeresearch.ca/foodcounts

defined by their ability to evaluate a specific phenomenon (Tanguay, Rajaonson, Lefebvre, & Lanoie, 2010; Schader et al., 2016). Many governments, organizations and researchers use indicators to inform decision-making; however, the value of individual indicators examined in isolation has faced criticism (Blay-Palmer et al., 2008). According to the IPES-Food (2015) "...a critical mass of evidence must be attained and transposed into policy recommendations in order to create the momentum for food systems reform" (p. 17). Key here is the idea that it is vital to bring together existing indicators to provide a more complete picture of the phenomenon under study, for example, food systems sustainability.

The United Nations Sustainable Development Goals (SDG) are arguably the most ambitious attempt to measure sustainability and to understand a range of considerations in developing adequate indicators. The SDGs were launched in 2015 and focus on human and ecological prosperity, which includes targets to be achieved by 2030. The process involves data collection from 193 member countries organized around seventeen sustainability goals measured by 244 indicators. The rationale for this ambitious project as asserted in the Sustainable Development Solutions Network report (2015) is that,

> Effective SDGs and their targets will serve as a management tool to help countries develop implementation strategies and allocate resources accordingly. They will also serve as a report card to measure progress towards sustainable development and to help ensure the accountability of all stakeholders for achieving the SDGs. Indicators will be the backbone of monitoring progress towards the SDGs at local, national, regional, and global levels (p. 8).

In terms of implementation, the report goes on to explain,

> The SDGs require annual reporting of high-quality data from all countries. This in turn will require much greater investments in building *independent, impartial* national statistical capacities and strengthening quality and standards…The SDGs will be goals for the world—applicable to all countries, as well as multiple, diverse actors. As such, the best input from business, science, academia, and civil society should be sought in their development, as well as in the development of the accompanying monitoring architecture (emphasis added, p. 8).

These are lofty expectations, and loaded with assumptions that need to be unpacked. While the proposed list of actors to be consulted is inclusive of all parts of society, in reality there is an uneven capacity for actors to engage based on disparate power. This discrepancy is most evident in the unequal wealth and resources between different countries but also in the limited resources available to civil society organizations and social movements in relation to the private sector in all countries. It is also important to consider the type of information being

gathered. Technical indicators do not usually reflect traditional knowledge so the nature of the indicators, how information is gathered, and what knowledge is relevant are all points of tension (IPES-Food, 2015). Concern has been raised that the kinds of indicators used have the potential to further marginalize groups that are already struggling to be heard (Blay-Palmer et al., 2008; Bauler, 2015; Binimelis et al., 2015).

The assumption that indicators will be 'independent and impartial' reveals misplaced confidence in the objectivity of metrics. While indicators can play an important role, it is essential to consider their execution and associated outcomes. For example, recent approaches to food production that use Sustainable Intensification and Climate Smart Agriculture privilege technical innovation and scientific knowledge over social innovation and traditional/experiential knowledge (Climate Smart Agriculture CONCERNS, 2015). Similarly, indicators that adopt a narrow food security lens can lead to the conclusion that increasing production is the best solution for ensuring people have access to food while ignoring negative social and ecological implications (Patel, 2009). While they do deal with some dimensions of sustainability, these two examples use approaches that ignore the systemic impacts of climate change, food waste, and ecosystem decline and can push us further away from an integrative perspective.

These kinds of insights have led to the increasing recognition that the complexities of food demand a systems approach to capture interactions, understand feedback loops, and identify tradeoffs between the environment, the economy, political, cultural and social justice considerations (Ericksen et al., 2010a). Indicators can enlarge or narrow the lens we use to understand a set of challenges. To make these types of dynamics more apparent, Erickson argues, "more sophisticated analytical lenses are needed to comprehend both how food makes its way from 'field to fork', and how to frame policy that corrects for the negative social and environmental outcomes of food system activities" (p. 26). For example, research by Pullman, Maloni, & Carter (2009) measuring the sustainability of firms in the food industry determined that only including environmental indicators missed important social and economic benefits. Despite recommending more diverse indicators, these authors acknowledge that capturing the complexities and interconnections inherent to sustainability is challenging. Garnett and Godfray (2012) confirm the importance of using indicators to measure sustainability from a systems perspective. Their research explored the contradictions in assumptions about sustainable intensification in the context of developing agricultural policy that integrates environmental, animal welfare, and health policy. Their findings suggest that developing a set of indicators that adopt a systems perspective could provide insights into interactions among policies, reflect specific goals, and guide the implementation of more targeted, successful policy.

Bauler (2015) suggests that indicators can help shape norms and conventions and can bridge knowledge gaps between policy, science, and society if understood as "boundary institutions" (41). He further contends that this steering of indicators to bridge knowledge gaps, find consensus regarding the usability of indicators across policy actors, and, ultimately, affect policy decisions should be seen as a political process, what he calls a "politics of policy indicators" (44). Directing policy tools and policy instruments at such a meta-level has been

addressed by concepts such as reflexive governance (Beck, 2005), adaptive food system management (Ericksen et al., 2010b), and adaptive planning (Weber, 2006, 42). Bauler's ultimate concern is how indicators can be developed to have the most useful profile possible such that information is gathered and diffused in ways that impact policy decisions around sustainability. Consistent with the IPES-Food report (2015), he questions the ability of traditional forms of scientific/modernist knowledge to be usable across policy actor groups or to represent changing data about climate change in ways that are useful for policy decision making.

Frameworks for measuring sustainable food systems

In the context of sustainable food systems, Hamm (2015) prompts us to recognize what our dominant food system does in its current state and the alternatives we need to be considering for the future,

> …we could take a step back and re-evaluate the current situation in the developed world for what it is – a global system of production and distribution that works well for *relatively* small numbers of people over a *relatively* short period of time within a given set of environmental and resource availability conditions…[it] doesn't work well when the environmental bill comes due. Nor does it seem to ensure food access and security for everyone.

Report cards and other knowledge-sharing tools tell stories through the indicators selected. Taken together, the indicators provide benchmarks and signal whether we are moving towards or away from the desired goals (Hezri & Dovers, 2005; Tanguay et al., 2010; Binimelis et al., 2014). More important, the way that the analysis is shaped can have a significant impact on the results. According to the IPES-Food (2015),

> Food systems initiatives at the interface of science, policy and practice must therefore unify in their diversity, together tracing out pathways to sustainable food systems. In doing so, conscious and continued reports will be needed to build on the transdisciplinary advances of recent decades. This will ensure that the emerging science of sustainable food systems is informed by the immense knowledge of practitioners, and appropriated by those to whom it seeks to be useful (p. 17).

Building from work on the right to food (Anderson, 2008; McIntyre, Herren, Wakhungu, & Watson, 2009; FIAN, 2016; Forster & Mathieson, 2016), the IPES-Food 2015 report proposes we connect silos to create an integrated, inclusive and empowering basis for food systems,

> There has been a tendency to address the problems as individual pieces of the puzzle, and to overlook the power relations that play a

> major role in shaping these systems. And crucially, the knowledge of those affected by food systems problems has not been fully harnessed in framing the problems and diagnosing the solutions. The challenge, therefore, is to produce a joined-up picture of food systems and their political economy, and to do so in ways that reach across the scientific disciplines, and reach beyond the traditional bounds of the scientific community (p. 2).

This proposed analytical framework calls for extensive consultation to build and consult through iterative processes that engage across the food system in order to challenge the existing political economy of food and challenge existing power structures for transformation towards sustainability (IPES-Food, 2015, p. 3). A further goal is to foster a new transdisciplinary science of food systems, to break down silos in order to co-produce knowledge across the full range of food system actors (IPES-Food, 2015, p. 8). An example of this approach comes from members of the Wisconsin Foodshed Research Project (Kloppenburg, Lezber, De Master, Stevenson, & Hendrickson, 2000) who explored attributes of food systems sustainability with a broad range of "ordinary" and "competent" people (p. 177). A series of fourteen attributes were abstracted from 323 data points grouped into clusters and described sustainable food systems as: ecologically sustainable, knowledgeable/communicative, proximate, economically sustaining, participatory, just/ethical, sustainable regulated, sacred, healthful, diverse, culturally nourishing, seasonal/temporal, value-oriented (associative) economics, and relational. While many of these attributes challenge conventional uses of the term sustainability, they also illuminate the multiple and interrelated dimensions of food systems with respect to a transformative project.

More recently, food sovereignty has gained significant traction among practitioners and researchers across the globe as a framing concept that moves considerations from a narrow focus on production, economics, or food and nutrition security to include the interrelationships between the environment and social justice (Patel, 2009; Wittman, Desmarais, & Wiebe, 2010). Food sovereignty evolved from a collaborative dialogue among social movements in response to concerns that concepts of sustainability were being co-opted by both governments and corporations. As a master frame of global food movements, food sovereignty prioritizes "the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems" (Nyéléni Forum for Food Sovereignty, 2007). Food sovereignty pushes back against the economic growth and individualism fostered by the mainstream development paradigm and provides the basis for a global movement focused on food as a means for collective social change.

As an integrated, rights-based approach, food sovereignty has the potential to empower the most vulnerable in the food system and build collaboration across sectors, scales, and places. At the same time, food sovereignty is an evolving place-based concept and provides opportunities to establish interconnected priorities, actions and strategies between different regions. These principles have been adopted into legislation by several national governments

including Mali in 2006, Nepal in 2007, Ecuador in 2008, Venezuela in 2008, Bolivia in 2009, and Nicaragua in 2009. Food sovereignty ideals have been formative for Brazilian food policy over the last decade. Constituent groups of the Civil Society Mechanism in the UN Food and Agricultural Organization Committee on Food Security have also adopted principles of food sovereignty to protect their right to food and land. This work is supported by international organizations including FIAN International and La Via Campesina as well as regional and continental food sovereignty alliances (e.g., Alliance for Food Sovereignty in Africa, the Australian Food Sovereignty Alliance). In Canada, the National Farmers Union, Québec's Union Paysanne, Food Secure Canada, Indigenous movements, and others have brought food sovereignty into the national discourse through projects like the People's Food Policy (PFP, 2011; Levkoe & Sheedy, 2018).

While there has been increasing enthusiasm surrounding food sovereignty, Binimelis et al. (2014) argue, "most organizations and governments working to promote it do not have the tools for monitoring and evaluating their projects or actions in this area, or simply to allow them to systematize policies from this perspective" (p. 327). In an attempt to develop food sovereignty indicators, they point to both the clarity of food sovereignty as a political and values-based concept and a clear guiding goal that supports and shapes a range of perspectives and outcomes founded on place-based considerations (p. 327). Using a process to develop food sovereignty indicators, Binimelis et al. (2014) argue that these processes can "contribute to providing political direction at different geographical scales. . . . At the same time, they favor the movement's self-reflexivity in its practices while supporting the collective shaping of future actions" (p. 324).

Food systems report cards

There are a number of approaches used to gather food systems information. Below the international scale, indicators tend to be more grounded in place-based priorities. For example, in 2010, the United Kingdom undertook a national initiative to develop sustainable food systems indicators through the Department for Environment, Food and Rural Affairs (DEFRA, 2010). Founded on the Food 2030 Strategy, the assessment includes indictors such as health, food affordability, food safety, productivity of agriculture, animal welfare, capacity building, and environmental aspects. The national-scale assessment developed by Gustafason et al. (2016) includes food nutrient adequacy, ecosystem stability, food affordability and availability, sociocultural wellbeing, resilience, food safety, and waste and loss reduction. In another example, Landert, Schader, Moschitz, & Stolze (2017) demonstrate that adapting the Food and Agriculture Organization's Sustainability Pathways: Sustainability Assessments indicators in Basel, Switzerland, incorporated a number of indicators related to food sovereignty and Indigenous knowledge under the themes of cultural diversity and social well-being.

In Canada and the United States, there are many examples of report cards at the municipal and regional level that use a sustainable food systems approach. A few examples

include: Assessing San Diego County Food System: Indicators for a More Secure Future (Ellsworth & Feenstra, 2010); Community Food Security Indicators Report Card (Sudbury-Manitoulin Food Security Network, 2005); Community Food Security Report Card (Thunder Bay and Area Food Strategy, 2015); Determining Food Access and Food Literacy: Indicators for the Ontario Food and Nutrition Strategy (Manafò, 2016). In another example, Feenstra, Jarmillo, McGrath, & Grunnell (2005) identified 22 goals for sustainable food systems in California with community and academic partners.

More specifically, there are a number of indicator-based evaluations that apply food sovereignty principles. Internationally, the Global Network for the Right to Food and Nutrition uses food sovereignty principles to guide assessments of national food systems in more than 80 countries. Potential indicators include the extent of child marriage, degree of land concentration, political participation for the right to food, stunting, people living in rural areas, anti-discrimination laws, and people's sovereignty over natural resources. The indicators used depend on the information available in each country. Applying a more conceptual approach, an international-level assessment was developed through a process of literature review and expert consultation (Ortega-Cerdà & Rivera Ferré, 2010). In this case, the researchers identified five themes with 35 sub-categories linked to 128 indicators as the basis for an international assessment. This process identified several data gaps that need to be filled to fully consider food sovereignty at the international scale.

To provide the basis for comparison, Binimelis et al. (2014) also assessed a local scale project in Catalan undertaken by Badal, Binimelis, Gamboa, Heras, & Tendero (2011). The comparison of the two scales revealed that while there are common objectives, the projects diverge in terms of information gathered, with local projects adopting a place-based, community perspective and the other projects using either national or global lenses. In the case of Cuba, Reardon and Perez (2010) offer insights into indicator development in support of agroecology where they also apply a food sovereignty lens to small-holder farms. This work began with a literature review followed by participatory consultation to identify simple indicators that reflect the multiplicity of sustainability. This included indicators around environmental (e.g., Integrated Agrobiodiversity and Functional Diversity), economic (e.g., Land Equivalent Ratio, Household Food Production and Contribution to Community Food Supplies), and social (e.g., Commitment to Social Good, Gender Equity and Participation in MACAC) factors, as well as integrated factors (e.g., Access to and Control over Seeds). Tested with 400 farmers, their relevance is summarized as follows,

> The development of indicators of food sovereignty, applicable at the smallholder farm level, provides a useful tool for identifying trends towards such a resilient agriculture. With this new tool at their disposal, more smallholder farmers and their allies will have the ability to evaluate the agroecosystem components currently hindering the emergence of food sovereignty (p. 920).

Despite these many excellent examples of measuring sustainable food systems and more specifically food sovereignty, there is no report card that provides information about food system sustainability at the national level. Given this gap, we developed *Food Counts: A Pan-Canadian Sustainable Food Systems Report Card* using a food sovereignty framework. In the following section, we discuss the process of developing *Food Counts* and share some of the findings revealed by the report card.

Food Counts: A pan-Canadian sustainable food systems report card

The objective of the *Food Counts* report card was to establish a framework for benchmarking and assessing the state of Canada's food systems using available measures of social, environmental and economic well-being from a sustainability perspective. The report card used a series of indicators to better understand the interconnections within the food system to inform decisions about how to ensure it could be more healthy, equitable, and sustainable into the future. In consultation with a range of researchers and food movement organizations, the report card adopted food sovereignty as a crosscutting, multi-sectoral framework to assess how food systems function. The report card also highlighted the gaps in available indicators, pointing to new information needed to guarantee the right to adequate food, protect our water-based ecosystems, soil, and forests, and to include all people living in Canada as part of democratic deliberation. By providing practical information and a visionary framework, the report card is aimed at supporting food movement organizations, policy makers and researchers by providing access to relevant data. It is expected that over time, as new data becomes available, the report card could be enhanced as a metric of food systems sustainability.

Building the report card around food sovereignty provided a strong political and values-based focus that defined indicators that were practical, but also visionary. Unlike frameworks that take a narrow view of singular aspects of food systems, food sovereignty reframes food within a comprehensive, integrated systems perspective. Further, as a concept in evolution it demands critical reflexivity and engagement with social movements working for collective social change.

The framework used the six core pillars of food sovereignty developed at the Nyéléni Forum for Food Sovereignty (2007) (i.e., focuses on food for people, builds knowledge and skills, works with nature, values food providers, localizes food systems, puts control locally), as well as a seventh pillar (food is sacred) developed with members of the Indigenous Circle of the People's Food Policy project (PFP, 2011).

Developing Food Counts

The first step to developing *Food Counts* was to conduct a scan of existing report cards and the different criteria and indicators they used. This enabled an assessment of the kinds of data available in Canada at the national level or at other scales that could be aggregated. From there,

we developed a set of criteria to asses which data sources to include in the report card (See Table 1). Since the report card aimed to create a benchmark to assess changes in the food system over time, whether the data would be available in the future was a key consideration. It was also essential that the data be publicly accessible and understandable. Because of these criteria, the report card does not reflect a comprehensive set of food systems measures. For example, certain indicators were not selected and some were prioritized over others according to the validity and reliability of the data. We also avoided choosing indicators which would require significant primary data collection.

Table 1: *Food Counts* indicator selection criteria

Scale-relevant	Data is available on a national/pan-Canadian scale
Measurable	Indicator is quantifiable
Available	Data is available to the public
Cost-effective	Data is accessible with little monetary input
Stable	Data is consistently collected and replicable
Reliable/credible	Data collected is methodologically sound
Understandable/usable	Indicator is easily interpreted and applicable
Sensitive to change	Indicator responds to change over a reasonable length of time

The process began by building on our existing research including the initial iteration of *Food Counts* conducted by Blay-Palmer et al. (2008). We searched for indicators using Statistics Canada datasets, the Canadian national data collection agency that conducts a census including the Canadian Community Health Survey and the Census of Agriculture, and about 350 other surveys on a variety of social, environmental and economic aspects of Canadian life including municipal, regional, provincial, national, and international sources. We searched for indicators that were comparable to those we identified in our environmental scan using key word searches and subject browsing. We also searched well-known Canadian and international organizations that collect relevant data (e.g., the United Nations Food and Agriculture Organization, the Organization of Economic Cooperation and Development). The available indicators were then classified within the seven food sovereignty pillars, and information was recorded regarding the source of data, geographic scale, timeline for data collection, most recent data points, and whether or not the indicator met all eight of the selection criteria. Some indicator data was disaggregated across specific population groups to highlight the differential impact of current and historical policies. Finally, the data for the selected indicators were downloaded and organized in tabular format. Graphical representations of the data were produced.

For those indicators which we were able to extract historical data, we evaluated the data by noting if the trend showed a positive or negative change with respect to food sovereignty goals. We depicted these trends by indicating “getting better” and “getting worse” but we did not attempt to indicate what absolute values are most favourable. Due to certain considerations, it was difficult to determine whether trends were positive or negative for some indicators. In such

cases, we labeled these indicators as a "mixed" interpretation. For many indicators, data was only available for one point in time. For these indicators, we expected that this data would continue to be collected on a regular basis and that current data points would act as a baseline for future reports. In all cases, the data represented the most recent time point in which the information was available at a national level. The availability of recent data varied depending on the data source.

To acquire feedback on the indicators selected, the food sovereignty framework, and the general *Food Counts* findings, we consulted with a wide range of food systems researchers and practitioner networks through roundtable conversations and individual meetings. This feedback was incorporated into the report card prior to its launch. For example, feedback pointed to missing indicators which informed the research process and data collection as well as the accompanying wish list indicators (i.e., desired indicators not currently available). Accompanying the online *Food Counts* report card, we developed a feedback form to collect additional comments and suggestions surrounding future iterations.

Food Counts findings

The final version of the *Food Counts* report card included six categories and 61 indicators (two of the seven food sovereignty pillars - localizes food systems and puts control locally - were synthesized). The indicators were organized into the categories and themes presented in Table 2 (the full list of categories, themes, indicators, and status are presented in Appendix 1).

Table 2: Indicator Categories and Themes

Category	*Theme and Number of Indicators Available*
Focuses on Food for People	food access (7); poverty and income (6)
Values Food Providers	farm characteristics (11); farm profitability (6); farm operator characteristics (9); food worker characteristics (1); farm safety (1)
Works with Nature	agriculture-related (9); ecosystem protection (3); compound indices (4)
Localizes Food Systems and Puts Control Locally	networks and policy initiatives (2); breastfeeding (1)
Builds Knowledge and Skills	funded projects (1)
Food is Sacred	(0)

There were a number of indicators that we wanted to include in this *Food Counts* report card, but could not because sufficient data was unavailable or it required primary or secondary data collection and/or analysis. To identify these indicators, we created a Wish List that outlines knowledge gaps that, if filled, could support a more comprehensive understanding of our food

system. Some of the major themes that we identified included: food access, poverty/income, local food processing and purchasing, networks and policy initiatives, food literacy, and farmer education (see Appendix 2 for a summary of the Wish List themes and indicators). In addition to the Wish List, it could be important to operationalize indicators to assess the following areas: wild food resources, wild fisheries and aquaculture, cultural dimensions of food, corporate concentration in the food system, recycling of food packaging, food labelling, and advertising.

Discussion: Whither food systems indicators?

The *Food Counts* report card illuminates the ways that indicators can provide practical information to better understand the current state of food systems. *Food Counts* brought together a range of data using a comprehensive, pan-Canadian food systems lens in a way that had not been done before. Drawing on a food sovereignty framework that inherently implies principles of sustainability, *Food Counts* makes food systems' realities visable using measurable, available, stable, and reliable national-scale indicators, which provide baseline measurements. For researchers and food movement organizations, without the capacity to collect and consolidate this kind of data on their own, the report card is an extremely valuable tool to initiate dialogue, inform policy and program development, and assist with strategic planning and advocacy. The report helps to make food systems realities more transparent and fosters more informed discussions about what kind of food system Canadians want. Furthermore, *Food Counts* provides a way to dissolve boundaries as we identify the "politics of policy indicators" (Bauler, 2015, p. 44). Adopting food sovereignty as a guiding framework opens a pathway to reframe the way we understand food as part of integrated and interdependent systems. By identifying relevant indicators, *Food Counts* highlights connections between a range of interrelated issues that inform pressing social and ecological concerns such as climate change, food and nutrition security, white supremacy, patriarchy, poverty, to name only a few. Further, as *Food Counts* highlights potential leverage points for change and potential trade-offs it can contribute to initiatives working towards more socially just, ecologically regenerative, and economically localized food systems.

Beyond this more obvious value, the *Food Counts* report card makes it clear that there are major gaps in the data available to understand the complex and interrelated nature of food systems. For example, the fact that there are no indicators available within the *food is sacred* category illustrates the kinds of information that is valued—or not valued—through public data collection. Our Wish List of 33 indicators (and many more that could be named) highlights just some of these gaps. Currently, data is collected at the national level for a particular purpose and by particular interested parties (e.g., governments, corporations, private consultants, universities). Many of these indicators are collected to understand economic strengths or weaknesses, to indicate areas to boost agricultural exports, or to identify new market opportunities. The indicators presented in *Food Counts* point to several shortcomings in data

availability. For example, despite serious challenges within Indigenous food systems (e.g., food access, food insecurity and high levels of diet-related disease) (Council of Canadian Academies, 2014) no data is collected at the national level to show paths forward that might lead to strengthening traditional food systems and food self-determination. Further, most government data in Canada is not collected on First Nation's reserves, which misses this important, underserved segment of our population. Some of this data may be accessible for those with more resources and capacity, such as the means to purchase data from government- or industry-compiled research. With additional and sustained capacity (e.g., human and financial resources), original data could be collected to fill these gaps. Relying on publicly accessible census data that is only collected every five years creates barriers to what we can know and share. Another limitation to using government data is that in 2010, the Conservative majority government cancelled the mandatory long-form census, leaving a major gap in publicly available data in Canada (the census was reinstated in 2015 when the Liberal government was elected).

Despite the limitations of available data, *Food Counts* provides an opportunity to critically reflect on the broader questions of how and whether to use indicators to measure food systems. In other words, report cards can be valuable tools but must be used with caution since it is impossible to capture the complexity of food systems dynamics with a series of static indicators. Despite the broader message of taking an interrelated systems approach, there is a risk of readers focusing on particular indicators to draw erroneous conclusions. For example, in a published opinion piece responding to *Food Counts*, a prominent Canadian editor wrote,

> . . . the document [*Food Counts*] is actually dedicated to making food more expensive and keeping farm industry profits low. . . . This upside-down report card repeatedly hands out low scores to any evidence showing farms are getting larger, more productive and more profitable. The preferred objective appears to be a nostalgic vision of a country filled with small, inefficient family farms—a moo, moo here and a cluck, cluck there. . . . Even more disconcerting is the pseudo-religious tone to what's supposed to be a piece of serious academic advice for Ottawa. 'Food cannot be commodified,' Blay-Palmer writes. 'Food is sacred.' This is obvious and dangerous nonsense (Taylor, 2017).

This response displays not only a hasty reaction to an assessment of particular indicators, but also an extremely narrow perspective of food as serving only as sustenance and having economic value. In his article, Taylor ignores the long-term economic, ecological and social implications of a corporate-controlled, industrial farming sector (Patel, 2007). He also fails to recognize the ways that food was/is used as a tool of colonialism and Indigenous genocide (Daschuk, 2013). Instead, we suggest that a critical reflection of *Food Counts* might offer an opportunity for educating about the complexity of food systems and for food to become a response to a range of challenges.

The reliance on quantifiable data risks over-simplifying certain realities and ignoring the interactions and interdependencies of food systems at the heart of human and ecological relationships. Indicators tend to privilege scientific expertise (e.g., numbers) over traditional and/or experiential knowledge. This reinforces the reductionist nature of using data to quantify food systems and misses the richness of community-level experiences. Thus, while not dismissing them completely, we must put report cards, like *Food Counts*, in context and reflect on the broader value of using indicators to measure food systems and ask what they may obscure in the process. The response to this critical reflection can identify the way other forms of research and methodologies (e.g., case studies) might provide insights into experiences and initiatives that can contribute to transformational change.

Most report cards make implicit assumptions about the meaning and value of certain indicators. While we attempted to identify the status of the various indicators in *Food Counts* based on what the data says, we recognize that it is extremely difficult to make assessments on a set of numbers without knowing and understanding the deeper context of each response. All data points are complicated, questionable, political and ripe with assumptions. For example, obesity is a contested concept and research has shown that body size is not necessarily related to issues of health (Beausoleil & Ward, 2009). In another example, the fruit and vegetable consumption by Indigenous people is complicated. Through the nutrition transition (Martin & Amos, 2016), Indigenous diets (especially in the north) have been radically shifted by colonialism. The goal of increasing non-traditional foods is problematic and must be reassessed in the context of the broader project of Indigenous rights and reconciliation. Many have argued that Indigenous food sovereignty means returning land, nation-to-nation relationships, and reviving traditional food practices (Morrison, 2011). In many cases, more vegetable consumption would mean a shift away from traditional food systems towards a colonial diet. When report cards measure these kinds of instances, they often predetermine intended outcomes that may be antithetical to transformative change. *Food Counts*, along with this critical reflection on indicators, helps to move beyond a narrow quantitative valuation (i.e., "bean counting") touted by neoliberalism and attempts to value community contributions to food systems.

Conclusion

Beyond its explicit value, the *Food Counts* report card is an opportunity to reflect on the limitations of data and the ways it can, and is, being used to shape our lives. We share this description of *Food Counts* as a tool that identifies a valuable set of data. In addition, we present this critical reflection as a mirror to reflect the counterproductive nature of quantifying complex food systems.

These reflections are particularly important considering the Canadian government's development of a national food policy. Once established, this initiative will require a monitoring and reporting system that includes baseline measurements as well as ongoing information

collection to inform its progress and impact. Our analysis of food systems indicators and *Food Counts* raises important questions about how we have framed food system considerations to date and what needs to change. For example, it is clear from existing government programs that there is a heavy emphasis on producing commodity crops and developing export markets for food in Canada (Wiebe, 2016). This has come at the expense of producing healthy food for the Canadian population and considerations of long-term soil health and ecosystem sustainability. Also, Canada's Food Guide, which contains recommendations for healthy eating, has failed to recognize the negative impacts of highly processed food on individual, social, and environmental health, and have been heavily influenced by corporate lobbying (de Villa, 2017).

Given ongoing efforts into developing a national food policy for Canada, *Food Counts* offers important considerations that need to be part of the policy development discussions. Food sovereignty provides a framing that considers food as part of an interrelated system along with ways to conceptualize available indicators. It also highlights information gaps and areas where additional data could be prioritized and collected. For example, better consideration is needed around the role of food in many cultures (and specifically in Indigenous communities), the implications of poverty on food insecurity, and the social, ecological, and economic value of alternatives to industrial, profit-driven agriculture and fishing. Our analysis also provides important cautions around institutionalizing indicators for a national food policy. While providing valuable information, it is essential to establish platforms for ongoing critical reflection among the range of food systems actors to enable collaboration across sectors and scales and to provide citizen oversight for government process.

Even beyond the report card itself, using food sovereignty as a framework to assess the Canadian food system is a way for food movements to speak across sectors, scales and places. For researchers and practitioners across the globe, it also presents a conundrum regarding the commonalities and divergences between sustainability and food sovereignty as an opening for increased understanding, dialogue and action across food movements: Are sustainability and food sovereignty complementary or is there some dissonance between the two? Over the coming years, we will continue to develop the *Food Counts* report card and critically asses its value. As the report card is shared more broadly and feedback is submitted from the online form, we will continue to assess how to move it forward.

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Appendix 1: Summary of the *Food Counts* Indicators

Focuses on Food for People

This principle speaks to putting people's need for food at the centre of policies and insists that food is more than just a commodity.

Theme	Indicator	Status
Food access	1. Fruit & vegetable consumption	Getting worse
	2. Fruit & vegetable consumption by Aboriginal identity	One point in time data
	3. Food availability	Mixed
	4. Food expenditures	Mixed
	5. Consumer price index	Getting worse
	6. Food waste	One point in time data
	7. Food safety	Not improving
Poverty/ income	8. People living below the low income measure	Getting better
	9. Median annual family income	Mixed
	10. Unemployment rate	Getting better
	11. Food insecurity by household composition	Getting worse
	12. Food insecurity by Aboriginal identity	Getting worse
	13. Food bank use	Getting worse

Values Food Providers

This principle speaks to respecting the work of all food providers and supporting sustainable livelihoods.

Theme	Indicator	Status
Farm characteristics	14. Number of farms	Getting worse
	15. Farm size	Getting worse
	16. Farm operating management	Getting worse
	17. Farm land tenure	Getting worse
	18. Type of farm	One point in time data
	19. Farms by commodities	Mixed
	20. Farm area use of land	Mixed
	21. Production of livestock	Mixed
	22. Production of poultry	Mixed
	23. Production of eggs	Getting worse
	24. Number of people employed in agriculture	Mixed
Farm profitability	25. Gross farm receipts	Mixed
	26. Net farm income	Mixed
	27. Farm debt	Getting worse
	28. Farm capital	Getting better
	29. Average hourly and weekly wages in agriculture	Getting better
	30. Household income class for farm population	One point in time data
Characteristics	31. Number of farm operators	Getting worse
	32. Age of farm operators	Getting worse
	33. Sex of farm operators	Mixed
	34. Country of birth of farm operators	One point in time data
	35. Farm operators with paid non-farm work	Mixed
	36. Farm operator activity in labour force	One point in time data
	37. Number of hours worked per week for farm operators	One point in time data
	38. Distribution of farm population by location	One point in time data
	39. Number of people in SAWP program	Getting worse
Food worker characteristics	40. Number of employees in food service, wholesale and manufacturing	Mixed
Farm safety	41. Agricultural fatalities	Getting better

Works with Nature

This principle speaks to optimizing the contributions of ecosystems and improving ecosystem resilience.

Theme	Indicator	Status
Agriculture-related	42. Land management inputs on farms	Getting worse
	43. Farm water conservation practices	Getting better
	44. Water use, by industry	Getting better
	45. Freshwater quality, by land use	One point in time data
	46. Agricultural emissions	Getting worse
	47. Farms reporting organic products for sale	Getting better
	48. Households participating in composting kitchen waste	Getting better
	49. Hectares of forest deforested from agriculture	Getting better
	50. Preservation land practices	One point in time data
Ecosystem protection	51. Protected land area	Getting better
	52. Protected marine area	Getting better
	53. Major sh stocks status	Stable
Compound indices	54. Biodiversity index	Getting better
	55. Soil quality index	Getting better
	56. Water quality index	Getting worse
	57. Air quality index	Getting better

Localizes Food Systems and Puts Control Locally

The localizes food systems principle speaks to reducing the distance between food providers and consumers, resisting dependency on remote and unaccountable corporations, and rejecting dumping and inappropriate food aid. The puts control locally principle speaks to placing control in the hands of local food providers, recognizing the need to inhabit and to share territories and rejects the privatization of natural resources.

Theme	Indicator	Status
Networks and policy initiatives	58. Number of municipal food policy initiatives	One point in time data
	59. Number of food system networks	One point in time data
Breastfeeding	60. Breastfeeding initiation and maintenance	Mixed

Builds Knowledge and Skills

This principle speaks to building on traditional knowledge, using research to support and pass on this knowledge to future generations and the rejection of technologies that undermine or contaminate local food systems.

Theme	Indicator	Status
Funded projects	61. Number of food system related awarded grants through federal government granting agencies	Mixed

Food is Sacred

This principle speaks to recognizing that food is a gift of life, and should not be squandered. It asserts that food cannot be commodified.

We did not find any indicators which we felt could represent this principle.

Appendix 2: Wish List

Summary of Wish List Indicators

Theme	Indicator
Food access	Cost of public transportation
	Monthly cost of a nutritious food basket per person
	Number of school meal programs
Poverty/income	Social assistance rates
	Social housing availability/waitlists
Agriculture- related	Farm animal welfare certification
	Proportion of energy used for growing, storing, processing food that is renewable
	Proportion of various crops that are genetically modified
	Area dedicated to urban agriculture
Local food processing	Various measures of local food processing (e.g., number of abattoirs, number of businesses milling flour)
	Number of food hubs
Local food purchasing	Direct farm-to-consumer sales
	Percentage of consumers buying local food
	Institutional local food procurement
	Redundant trade
Participatory initiatives	Number of community supported agriculture partnerships (CSAs)
	Number of farmer markets
	Number of farm to school programs
	Number of school gardens and community gardens
	Number of student nutrition programs
	Number of community kitchens
	Number of seed banks and seed libraries
	Number of urban food harvesting projects
	Number of food and farming co-operatives
Networks and policy initiatives	Number of food systems organizations/associations
Access to primary food production resources	Land for small-scale producers and industries related to agriculture
	Access/control of seeds
	Incidence of land grabbing
Food literacy	Food skills and food literacy programs
Farmer education	Funding for farmer-led research
	Federal training and support programs for new farmers
	Participatory plant research and breeding
Elementary/ secondary education	Number of food system education programs, courses, curriculum

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Original Research Article

Food for thought: How trade agreements impact the prospects for a national food policy

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Abstract

This article examines the prospect for a national food policy through the lens of trade agreements and the concept of policy space. It traces the shrinking of domestic policy space in recent decades as a result of trade agreements. Advocates such as Food Secure Canada seek a "coherent" food policy that supports a sustainable, more domestically-focused, food system. This article argues that the prospects for such a policy are constrained, based on Canada's past history, under both Liberal and Conservative governments, as well as recent bilateral and regional agreements. It examines the Canada-European Union Comprehensive Economic and Trade Agreement (CETA), the Transpacific Partnership Agreement (TPP) which included the United States, and the subsequent Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) negotiated by the remaining eleven partners after the US departure. Focussing on market access, standards, regulatory harmonization and procurement, I argue that provisions in these agreements, along with what we might expect in future trade negotiations, pose challenges for the development of a national food policy.

Keywords: Food policy, trade agreements, Canada

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Introduction

In 2015, the newly elected Liberal government made good on a campaign promise to develop a national food policy. In his mandate letter to the minister of agriculture, the prime minister instructed him to "develop a food policy that promotes healthy living and safe food by putting more healthy, high-quality food, produced by Canadian ranchers and farmers, on the tables of families across the country" (Food Secure Canada , 2017a, p. 3). This initiative was met by many food movements with cautious optimism. Not long after being given this policy mandate Agriculture Canada initiated a series of national consultations and meetings with stakeholders. While the mandate for a new national food policy implies a focus on production for domestic demand little has been said about its relation to trade and investment policies.

This article examines the prospects for this policy development through the lens of Canada's negotiation of international trade and investment agreements since the 1980s. It examines the extent to which these agreements and negotiations have, in some areas, had the effect of limiting policy space for national and sub-national governments. I argue that based on Canada's past history and recent bilateral and regional agreements, in particular CETA and the TTP/CPTPP, the prospects for the development of a national food policy are constrained. The goal of "policy coherence", in Food Secure Canada's words, may be difficult to achieve given these agreements and future trade negotiations. Food Secure Canada has called for the recognition of the right to food and food sovereignty and ensuring healthy and sustainable food. To achieve these goals it identifies potential policy instruments, such as preferential procurement, which would:

> Set targets for local, sustainable food and beverage procurement by public institutions such as hospitals, long-term care facilities and schools to ensure the food they serve is fresh, sustainable, locally grown/sourced and promotes healthy eating (Food Secure Canada, 2017b, p. 12).

Other proposals for a national food policy raised by various groups have focused on food and public health, environmental sustainability, food waste, and animal welfare[1]. Each of these concerns could involve a range of national, sub-national, and international regulations, standards, or other policy instruments involving public procurement, food labelling, or regulating food content and methods of food production.

Recent international trade agreements have, in some instances, limited the prospects for achieving these visions of a national food policy that is locally oriented, sustainable, and promotes human or animal health. Trade agreements have increasingly created pressures for governments to harmonize regulations and policies that are seen to impede market access for

[1] For example see the Ontario Public Health Association submission, September 2017, Animal Justice Canada, July 2017 Diabetes Canada, September 30, 2017, Food Secure Canada, 2017b

imported food. Such harmonization efforts could impinge on a range of measures that are designed to privilege locally-produced food or food produced in a certain way. Regulatory harmonization, limits on governments' preferential procurement from domestic suppliers and pressures to enhance access to the Canadian market for foreign food exporters, all threaten to limit the scope of a national food policy.

While equally worthy of attention, investment measures in trade agreements, and specifically the mechanism of Investor State Dispute Settlement (ISDS), are not addressed in this article. A 2015 report on North America Free Trade Agreement (NAFTA) notes that affiliates of US firms operating in Canada and Mexico have sales that outstrip processed food exports to either Canada or Mexico from the US (Zahniser, Angadjiv, Hertz, Kuberka & Santos, 2015, p.20). The goal to expand investment opportunities in the three countries (article 102 of the NAFTA agreement) was achieved especially in the food sector. When it comes to the investor state dispute settlement (ISDS) provision, Canada has advocated for it both in bilateral investment treaties and at the World Trade Organization WTO (Smythe, 2015). This issue also delayed the CETA negotiations and has come up in the context of the re-negotiation of NAFTA. Supporters of ISDS argue that it has fostered the rule of law and encouraged investment while critics claim that it has imposed a regulatory chill on many states (Brower & Schill, 2009, Tienhaara, 2011). While investment has played an important role in re-shaping the food sector in North America, the focus here is on the concept of national policy space and the extent to which it has been shrinking as a result of multilateral, regional, and bilateral trade agreements.

Policy space for what?

While Canada does not yet have a national food policy it certainly has an agricultural one. Its most recent iteration is the federal-provincial Agricultural Partnership which came into effect April 1, 2018. As the website outlines two of the six priorities are:

- Markets and trade: to open new markets and help farmers and food processors improve their competitiveness through skills development, improved export capacity, underpinned by a strong and efficient regulatory system.

- Public trust: to build a firm foundation for public trust through solid regulations, improving assurance systems and traceability. (Agriculture and Agri-Food Canada, 2017a)

Because of its export orientation, Agriculture Canada has been active on export market access issues and efforts to harmonize regulations with other states in order to remove barriers and ensure future market access. At the same time, like many other states, Canada has also sought to preserve space for national policies and regulations in trade negotiations. As Mayer

(2009) points out, there is a tension between pursuing international economic integration *via* trade agreements and the desire of states to maximize autonomy, both to pursue economic growth and to respond to domestic demands or needs. In 1968, Richard Cooper described the challenge of "how to keep the manifold benefits of extensive international economic intercourse free of crippling restrictions while at the same time preserving a maximum degree of freedom for each nation to pursue its legitimate economic objectives"(Mayer, 2009, p. 373).

The internationalization of markets and the development of trade rules, particularly in the General Agreement on Tariffs and Trade (GATT) Uruguay Round negotiations, have weakened both the effectiveness of domestic policy instruments to achieve national goals and reduced the number of policy instruments available to states in some areas. Ostry notes that despite opposition from a number of developing countries, they eventually accepted the inclusion of "new issues"—trade in services, intellectual property and investment, central to the American negotiating agenda at the Uruguay Round"—in return for improved market access (Ostry, 2002, p.288). The structure of the negotiations as a packaged, single undertaking and the leverage of the United States in the negotiations, enabled such a "lopsided bargain" to take place and made it difficult for a number of developing countries to fully recognize the implications of the agreement. The result was a move away from "border barriers to domestic policy" within trade negotiations (Ostry, 2002, p.288).

The recognition that national policies could now become subject to new restrictions under international trade agreements led to concerns over shrinking policy space. In response to what Ostry called a "bum deal" a number of developing countries, supported by the United Nations Conference on Trade and Development (UNCTAD), began to argue for the need to preserve "policy space for development" and the need for differential treatment for developing countries under trade rules (Hannah & Scott, 2017). The Uruguay Round agreement and its various elements including the agreement on Trade Related Intellectual Property (TRIPs) raised a number of additional concerns. Most controversial was the impact of TRIPs on access to essential medicines in developing countries. More recently, however, there has been an increasing recognition in policy fields, such as public health, that agreements may restrict the policy space to regulate for health in developed countries as well. (Friel et al*.,* 2016; Koivusalo, 2014).

The WTO and subsequent regional and bilateral trade agreements have also impacted policy space by re-framing national regulatory differences. While the focus of initial post WWII trade agreements was on market access for goods as tariff barriers came down, there was recognition that non-tariff barriers imposed by states, such as export quotas, also needed to be addressed. As De Ville and Silles-Brugge (2015) point out:

> In the 1970s non-tariff barriers were still understood in a rather limited way as barriers to trade that were not tariffs but had similar, explicit intention to restrict trade, such as countervailing or anti-dumping duties, voluntary export restraints or direct subsidies to enterprises. Increasingly the term non-tariff barrier has come to

> cover regulations whose objective is not to restrict trade but which serve other potentially legitimate policy goals such as, for example, health, consumer or environmental protection (p.51).

As a result, regulatory differences became redefined as potential trade barriers and states came under pressure from a range of actors to harmonize regulations and standards in the name of trade. This is very much the case with food. Most trade negotiations were also structured in the direction of a unilineal path to further trade liberalization. Going all the way back to the creation of the GATT in 1947 and subsequent rounds of trade negotiations the ethos of the GATT and the WTO was economic liberalization. The GATT was successful in limiting tariff barriers to trade, beginning with a series of bilateral agreements lowering tariffs on goods and later formulas and processes designed to ratchet tariffs downward.

By the 1980s the changing nature of trade and investment led to a focus on non-tariff barriers, and an expanding negotiation agenda. In the case of services and investment, the targets of liberalization were national policies and regulations limiting market access for service exporters and foreign investors (primarily the developed countries and major corporations). Given disappointing results on investment rules in the Uruguay Round, the United States focused on the Organization for Economic Cooperation and Development (OECD) as a venue to create rules to limit regulation on foreign investors (Smythe, 2000). The negotiation process stressed broad top-down commitments to liberalize. These obligations would automatically open all sectors to investment unless a state specifically exempted a sector. This was called a "negative list" approach. In addition, existing policies or regulations would be subject to standstill, that is, a commitment to not increase restrictions in the future. Finally, remaining measures would be targeted for roll back (i.e. removal).

This approach was attempted in the OECD negotiations on investment rules (OECD, 1996). It ultimately failed, however, partly because of civil society opposition in a number of countries, as well as the narrow range of participants (developed countries) and the limited scope for tradeoffs. In contrast, in the case of negotiations of the General Agreement on Services, there was no overarching commitment to liberalize across services and states were free to identify only those particular services they wished to open to foreign providers. For many service corporations and service exporting countries the results were seen as a disappointment (Thornberg & Edwards, 2011).

Agriculture has proven to be one of the thorniest issues within trade liberalization at the GATT and the WTO. The signing of the Agreement on Agriculture (AoA) in 1995 separated agriculture from the GATT. The WTO agreement included three "pillars" of commitments: 1) increased market access for imports; 2) elimination of national export subsidies; and 3) an end to trade distorting domestic subsidies, used by large actors including United States and the European Union and, to a much lesser extent in per capita terms, India and China. Continued negotiations in the WTO Doha Round have shown that changes to the rules, especially in relation to subsidies, have proven difficult to achieve. However, agriculture and food exports have been

affected by various regulations and standards that are increasingly seen to limit market access and thus identified as non-tariff barriers by exporters. For example, the US and Canada characterized EU regulations banning the use of hormones in meat production as trade barriers, as they limited their beef exports to the EU.

Recognizing that domestic measures may still pose legitimate import barriers, WTO agreements recognized that states had obligations to ensure the safety of food products and limit the spread of diseases and pests. Two WTO agreements address these measures. The first, the Agreement on Sanitary and Phytosanitary (SPS) Measures, deals with food safety, and the second, the Technical Barriers to Trade (TBT) Agreement, addresses regulatory measures adopted to deal with consumer safety, health or environmental protection, including product labelling (WTO, 2011).

Negotiating policy space: The trade imperative, regulatory transparency and harmonization

The WTO SPS and TBT agreements, both of which link directly to food standards and regulations, have become subjects of very protracted trade disputes. The WTO Agreement on SPS Measures, along with article 20 of the GATT, allows a state to regulate beyond safety and human health "to protect human, animal or plant life or health", (WTO, 2011, A2.1) but "measures must be 'based on scientific principles and not maintained without sufficient scientific evidence" (A 2.2). In the interests of harmonization states "shall base measures on international standards, guidelines or recommendations, where they exist" (A.3.1). States may go beyond international standards, but only if the justification is scientifically based risk assessment. The SPS Agreement does not reference any broader societal or environmental concerns, or recognize any justification not rooted in scientifically-based risk assessment. However, article 11 does recognize the right of states to access dispute settlement mechanisms of the WTO and article 11.3 indicates that

> …nothing in this Agreement shall impair the rights of Members under other international agreements, including the right to resort to the good offices or dispute settlement mechanisms of other international organizations or established under any international agreement.

This raises the broader question of the relationship between other agreements particularly multilateral environmental agreements and the WTO.

Other agreements such as the Convention on Biological Diversity have different considerations that may justify regulations which could restrict trade. For example, article 26 of the Cartagena Biosafety Protocol notes that in reaching a decision on imports, states can take into account, "consistent with their international obligations, socio-economic considerations arising

from the impact of living modified organisms on the conservation and sustainable use of biological diversity, especially with regard to the value of biological diversity to indigenous and local communities." However, it is not clear how this would relate to the criteria set out under the WTO's SPS Agreement. As one legal analyst points out:

> Generally speaking, trade agreements have specific rules that draw the boundary beyond which socioeconomic considerations may be seen as becoming a means to unduly restrict trade in living modified organisms (Benvenides, 2017, p.23).

While article 11.3 of the SPS and its reference to other agreements might potentially open policy space, the extent to which efforts to claim these exceptions would be considered at all, or accepted, would be determined in a WTO Dispute Settlement Process.

In addition, states can claim general exceptions, as outlined in article 20 of the GATT, for measures designed, for example, to protect public morals. Again the extent to which this option is available may rest on the resolution of trade disputes, if such exceptions are challenged. Howse and Langille (2012) show how the EU was able to use article 20 in its ban on the import of seal products based on public morals and "the community's ethical beliefs about the nature of cruelty" (p. 368) in the harvesting of seals and "the unacceptability of consumption behavior that is complicit with that cruelty". They argue that there is policy space at the WTO to address the treatment of animals. The fact that the EU was ultimately successful in 2015 in the WTO case appears to support their claim. However, others are more skeptical about the use of article 20. In an analysis of its use by WTO members in trade disputes up to 2013, Public Citizen found the WTO dispute resolution process ruled the article to be relevant in 32 of 40 cases where it was claimed. However, under various threshold tests the Dispute Resolution Body upheld only one of the 32 cases. (Public Citizen, 2013)

The TBT Agreement also covers non- safety aspects of food, including labelling, and seeks to harmonize national requirements to avoid "unnecessary obstacles to international trade'. It also affirms states" right to take 'measures necessary to ensure the quality of their exports, for the protection of human, animal or plant life or health, of the environment, or for the prevention of deceptive practices' (WTO Agreement on Technical Barriers to Trade, 2011). While protection of the environment is referenced, in contrast to the SPS, measures 'shall not be more trade- restrictive than necessary to fulfil a legitimate objective' (article 2.2). What constitutes a legitimate objective is limited to national security requirements, the prevention of deceptive practices, and protection of human health or safety, animal or plant life or health, or the environment (article 2.2). Thus, legitimate objectives would not include providing consumers with information about the provenance of their food. According to TBT obligations, all such state regulations should be transparent, based on international standards, the least trade restrictive as possible, and follow WTO "most favoured nation" (MFN) and nondiscrimination provisions. In the case of food, the international standards referenced in WTO agreements are those of the Codex Alimentarius.

A joint body of the Food and Agricultural Organization and the World Health Organization, Codex was founded in 1962 with a mandate to develop food standards 'protecting the health of consumers' and to harmonize them to ensure 'fair practices in the food trade' (Codex, 2017). As a result of being referenced in WTO agreements, Codex has become the key international food standard setting body. The Codex has always reflected very political struggles over food standards, which typically involved large food-producing states, the EU, powerful representatives of agribusiness and biotechnology firms, and non-governmental organizations. It has frequently been criticized for being dominated by a few large food-exporting states and their corporate allies (Avery, 1995; Lang, 1999). Because it is referenced in WTO agreements, the outcome of Codex power struggles can limit or enhance regulatory policy space at the national or sub-national level (Buckingham, 2000). Codex standards serve as a benchmark and justification to the WTO as to whether national food regulations constitute unjustifiable barriers to trade. National rules that deviate from (i.e. exceed) Codex standards, in response to consumer or other civil society demands, could become the subject of trade disputes and targets for WTO authorized trade retaliation. On the other hand, if a state's regulatory practice becomes the Codex standard, it is insulated from challenges to that regulation as an unjustified trade barrier. Codex standard setting processes have become even more politicized, reflected in its growing state membership (188) and the increased involvement of trade officials, as well as non- state actors, both corporations and non- governmental organizations (NGOs), in shaping standards (Veggeland & Borgen, 2005).

Disagreements at Codex have often centered on labelling and on the use of techniques to enhance meat and milk production using growth promoters in animal husbandry. The battle over a standard for labelling food derived from genetically modified organisms (GMOs) began in 1991 and lasted for 20 years. It pitted the United States, Canada and allied GMO food-exporting countries against the EU and a number of other countries. The result, a weak but permissive standard on labelling, meant that EU regulations on mandatory labelling would largely go unchallenged at the WTO (Smythe, 2014). In the case of country of origin labelling the Codex abandoned any effort to develop a standard in 2003. This has allowed for country of origin labelling; however, it has not prevented trade disputes. A prolonged dispute with Canada and other countries over meat labelling ultimately resulted in the US rescinding its meat labelling regulations to conform to a finding against it at the WTO in December 2015 (Eng, 2016).

In the case of growth promotors in animal husbandry, the EU restrictions have been a barrier to meat exports into the EU market for both the US and Canada. The conflict has been reflected in attempts by the US and allied food producers, including Canada, to develop safe drug residue standards in the production of meat at the Codex, which would then serve as the basis for a WTO challenge to the EU regulations. While the EU has long banned the importation of meats produced using growth promoters (under EU Council's directive 96/22/EC), three types of growth promoters have been widely used in North American meat production. The existence of the first two types of promoters, hormones and antibiotics, goes back well over 50 years. Their use, however, has changed over time, reflecting the intensification of meat production. For

example, the non-therapeutic use of antibiotics to promote growth has soared. According to the Union of Concerned Scientists, overall use in animals to promote growth rose by 50 percent between1985 and 2001 (Mellon, Benbrook, Benbrook, & Union of Concerned Scientists, 2001, p.62**).** The third type of promoter, beta agonist drugs, have a shorter history and were only approved for use in the US in 2003 (Smythe, 2013).

Beta agonists have been in use for about a decade in Canada, initially in pigs and later in cattle and turkeys (Smythe, 2013). The first product, ractopamine hydrochloride, is produced by Elanco Animal a division of the Eli Lilly drug company. Added to animal feed under various names such as Paylean, Optaflexx, and Topmax Ractopamine, its effect is to speed up the heart rate of the animal and produce heavier, leaner, more muscled animals which are more profitable to producers and have a lower fat content. However, to be effective it must be fed to animals until shortly before slaughter. The result is that a small amount of drug residue remains in the meat. A second beta agonist, zilpaterol hydrochloride, was approved for use in cattle by the US Food and Drug Administration (FDA) in 2006. Produced by Merck, it has been aggressively marketed in competition to ractopamine since its approval in both the US and Canada under the brand names Zilmax and Intervet (Peterson, 2012).

While Codex work on standards of drug residues for these growth promoters began in 2004, disagreement over the adequacy of scientific risk assessments prevented a standard from being developed, and the process was abandoned at the July 2012 Codex Commission meeting in Rome (Codex Alimentarius Commission, 2012). After fierce lobbying, both for and against the standard, the US, Canada, and other countries that permitted the use of the drug, such as Brazil, won a narrow victory against the delegates from the EU, Russia and China, who opposed adopting the standard (personal observation at the Codex meeting). However, that did not mean countries were willing to alter domestic regulation in line with the decision. Similar to the issue of hormones in beef production, a Codex standard does not guarantee market access. When the EU lost at the WTO on the hormone beef issue it did not open its market,[2] nor did it do so after the Codex 2012 meeting (European Union, 2012, p.24). Subsequently, both the US and Canada were left with the option of developing programs and a Memorandum of Understanding (MOU) for beef and pork producers certifying that their products were growth promoter free in order to be able to export a small amount to the EU (Canadian Food Inspection Agency, 2018).

The use of rBST[3] to increase milk production and differing standards also became an issue at the Codex Alimentarius when the US pushed for adoption of a standard. Despite being

[2] The original 1997 WTO case brought against the EU by the US and Canada challenged the ban on the import of beef produced using hormones. The WTO panel ruled that the EU had violated the SPS agreement in not basing its regulation on risk assessment. The EU subsequently completed an assessment and concluded there was potential harm to human health. The US disputed the adequacy of the assessment and introduced a series of trade sanctions. Ultimately the US and Canada each signed an MOU with the EU in 2009 which allowed for beef exports to the EU if it was certified as hormone free. See Johnson (2015).

[3] rBST refers to recombinant bovine somatotropin. This is a synthetic version of the growth hormone somatotropin. It has been approved for use in the US to increase milk production in dairy cattle. However, it is not approved for sale in Canada as I discuss below. See Government of Canada, Questions and Answers on Growth Promoters

considered by the relevant Codex committee in 1998, consensus on developing a safe level has eluded delegates for almost two decades. The US and other allies have continued to push the approval of a standard without success, even while many US grocery retailers only stock milk that is labelled rBST-free. The point of this discussion is that what the Codex was addressing was a regulatory difference, which, if a Codex standard is adopted, can then be deemed a trade barrier on the part of the state that deviates from the standard. As a consequence, the outlier from the Codex standard becomes vulnerable to trade retaliation under the WTO SPS agreement.

Regional and bilateral agreements: Market access and harmonized regulations

Recent bilateral and regional trade agreements reflect the continued efforts of a number of food-exporting countries and agribusiness to attain further market access for their products by either limiting the discretion of states to privilege locally-produced food or to push for regulatory harmonization which may further restrict policy space. After uncertainties about ratification and issues regarding the investor-state dispute mechanism, the Comprehensive Economic and Trade Agreement (CETA) between the EU and Canada has come into effect. In the case of the TPP, which both Conservative and Liberal governments supported, the election of Donald Trump and the United States' withdrawal has rendered its future uncertain.

However, it is worth examining the agreement that was reached before the US withdrawal for several reasons. First, many of its provisions were the result of US and other food exporters' demands, along with those of many agribusiness corporations and food industry associations. The shift in the US Administration's approach from regional to bilateral negotiations means that many of these measures may well reappear in new bilateral or re-negotiated agreements with Canada. Second, despite the US withdrawal the remaining TPP eleven countries did move forward with an agreement (Government of Canada, 2017b). They also suspended a number of provisions pending a possible US return to the agreement.

CETA

What follows is a brief analysis of the aspects of the 2017 CETA agreement between Canada and the EU that relate to market access. This issue is closely tied to differences in standards and regulations, in the case of meat, and Canada's supply management system in relation to dairy and cheese. Both have implications for local food and the goal of a national food policy of putting more Canadian produced food on "the tables of families across the country" (Food Secure Canada 2017a, p. 3).

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https://www.canada.ca/en/health-canada/services/drugs-health-products/veterinary-drugs/factsheets-faq/hormonal-growth-promoters.html

Global Affairs Canada's website describes CETA almost exclusively in export and market access terms, pointing to increased access for beef and pork into the EU market. However, this enhanced access is for meat that is certified as produced without growth promotors. Canada already had a quota to export 23,200 tonnes of hormone-free beef but exported only 9,000 tonnes in 2011 (National Farmers Union, 2014). Canada did not export any pork to the EU in 2011 and exported only 5,000 tonnes in 2010 (National Farmers Union, 2011). Again, while there is a significant expansion in access for ractopamine-free pork under the provisions of CETA, it is not at all clear that Canadian producers, slaughter houses, and processors can ramp up the production of pork and beef to take advantage of this. Seafood products also obtained enhanced access to the EU market, however, Canada's dairy industry paid the price, as the agreement enhanced access to Canada for EU producers of fine cheese. According to the Dairy Farmers of Canada:

> The additional access is equivalent to a 2.25 percent cut in farm quota, bringing a potential farm income loss of nearly $150 million/year. To put that into perspective on the level of the significance to the Canadian dairy sector, the projected loss from the additional access given to EU is the equivalent of the total milk production in Nova Scotia or other small provinces. In total, the estimated impact to dairy farmers and cheese makers is a loss of domestic market valued at $300 million annually (Dairy Farmers of Canada, 2015).

Pressures on the dairy sector continued with Canada's signing of the TPP and later the CPTPP (discussed below). As outlined above, many regulations relating to food are often framed by food exporting countries and agribusiness as barriers to market access. CETA addresses both TBT and SPS standards and regulations in Chapters 4 and 5 which incorporate WTO agreements and reaffirm the signatories' obligations under the TBT and the SPS. Further commitments are made about regulatory cooperation in Chapter 21 of the agreement:

> Without limiting the ability of each Party to carry out its' regulatory, legislative and policy activities, the Parties are committed to further develop regulatory cooperation in light of their mutual interest in order to
> (a) prevent and eliminate unnecessary barriers to trade and investment;
> (b) enhance the climate for competitiveness and innovation, including by pursuing regulatory compatibility, recognition of equivalence, and convergence; and
> (c) promote transparent, efficient and effective regulatory processes that support public policy objectives and fulfil the mandates of regulatory bodies, including through the promotion

> of information exchange and enhanced use of best practices (Government of Canada, 2016, 21.1.4)

In addition, 21.6 creates a regulatory cooperation forum involving European Commission and deputy minister level Canadian officials. The text commits the parties to develop a work plan, hold regular meetings, and report to the CETA joint committee. In contrast in the TPP we see aggressive language on limiting or challenging SPS and TBT measures as trade barriers. Despite these vague commitments to harmonization of standards, opponents of CETA see potential for agribusiness to lobby for lowering EU standards toward what have traditionally been more permissive Canadian and US standards, for example, in the use of growth promoters in meat production (Council of Canadians, 2017, Corporate Europe Observatory, 2017).

While market access appears to be a mixed picture for various sectors of food production in Canada, the CETA chapter on government procurement could potentially create a barrier for efforts to build and support local food systems. Canada is already a party to the WTO Government Procurement Agreement, which tries to ensure open, fair, and transparent processes of bidding on government contracts and the elimination of discriminatory measures against foreign suppliers (WTO, 2014). Through negotiation between its 41 WTO member signatories, states open sectors to these commitments through a process of listing them in schedules. These types of agreements, depending on their sector coverage and contract value thresholds, can have implications for the ability of governments to support local food producers. MacRae (2014) has argued that existing trade agreements such as the WTO and NAFTA, as well as the agreement on internal trade barriers within Canada, have not posed significant obstacles to municipal or provincial authorities seeking to use procurement policies in the health and education sectors to support local food producers and sustainable food systems.

On the surface, however, CETA appears to pose significant barriers. The coverage in Chapter 19 includes municipalities which will be subject to the non-discrimination obligation (Government of Canada, 2016b). The Global Affairs summary does not highlight the low threshold value for contracts. As Wood notes, the threshold for provinces and territories is "200,000 SDR ($315,000) for government entities including municipalities, academia, school boards, and hospitals (MASH)" (Wood, 2016, p. 32). While this threshold is not out of line with other procurement agreements that Canada has signed, it is the breadth of coverage that is of concern.

Despite a campaign by the NGO, the Council of Canadians, and concerns expressed by 50 municipalities who requested exemptions, the exceptions listed in the agreement are very few. It is the combination of dollar thresholds for various sectors, the breadth of coverage of local authorities and agencies, and negotiated exemptions that determine the extent to which these measures limit preferential procurement. While there may be some scope to use public procurement contracts if carefully crafted[4] to support local sustainable food systems and

[4] See Bell-Pascht (2013) for some strategies regarding procurement contracts for local food.

producers, the devil is in the details and the extent to which Canadian trade negotiators trade off one sector over another.

The Trans-Pacific Partnership

The roots of the TPP lay in a small group of states at an Asia Pacific Economic Cooperation Forum meeting seeking to further trade ties. Brunei, Chile, Singapore, and New Zealand signed a Trans-Pacific Strategic Economic Partnership Agreement (TPSEP or P4) in 2006. New Zealand, with a very food export dependent economy, has been zealous in pursuing trade agreements and its close trade ties to Australia made it likely that Australia would join. However, once the United States signalled its intent to become involved in a broader set of negotiations, it was almost inevitable that Mexico and Canada, as NAFTA partners, would join (Government of Canada, 2017a).

Concluding in February 2016, the Trans-Pacific Partnership provides a number of contrasts to CETA. It had even more potential, given the array of countries that are signatories and their differing standards and regulations, to provide both challenges and opportunities for Canadian food producers. For those seeking to expand policy space to build a Canadian food policy that supports Canadian producers and sustainable food systems, a number of provisions may spell trouble. While, in the case of CETA, the two sides in the negotiations were similar in terms of living standards and per capita incomes, among the TPP members there is broad diversity in terms of economic size and per capita incomes.

The presence and size of the US economy meant that their key objectives in the areas of investment, intellectual property and regulations would be reflected in the negotiations. With food exporters like the US, Canada, Australia, and New Zealand it is no surprise that a range of issues related to market access for food products and standards that might inhibit agricultural trade would form an important part of the negotiations. Evidence indicates that the corporate food industries in these countries were keenly interested in negotiations and provided extensive input to negotiators pushing for greater market access, new trade rules limiting state discretion to carve out sectors, more regulatory harmonization and investment protection (Friel et al., 2016).

Unlike the EU, the TPP countries are significant markets for Canadian and US meat exports. While a range of food products would benefit from tariff reductions, meat producers in particular had much to gain. About half of Canadian beef and almost two thirds of pork are exported and 80 percent of exports go to the TPP countries. As the largest importer of beef, Japanese tariff reductions would have increased US exports, as would tariff reductions in Vietnam. Similar tariff reductions in Japan (the most important market) Malaysia and Vietnam offered opportunities for Canadian export growth. Unlike the EU, regulations on the use of growth promotors did not pose barriers for access.

The situation for the Canadian dairy sector was quite different however. From the outset, these products were likely to be a target given that Australia, New Zealand, and the US were part

of the negotiations. Indeed, access on dairy was one of the major and final sticking points in negotiations. The Canadian government claimed it had largely resisted the pressure:

> Canada offered only limited new access for supply managed products. This access which will be granted through quotas phased in over five years amounts to a small fraction of Canada's current annual production: 3.25 for dairy (with a significant majority of the additional milk and butter being directed to value-added processing), 2.3 percent for eggs, 2.1 percent for chicken, 2 percent for turkey and 1.5 percent for broiler hatching eggs. (Foreign Affairs, Trade and Development Canada, 2015)

Once again, the supply managed sectors, especially dairy, were in their view, sacrificed to get an agreement that mostly benefited food exporters. In her appearance before the House of Commons Standing Committee on Agriculture and Agri-food, Executive Director of the Dairy Farmers of Canada (DFC) Caroline Emond noted that the combined impact of the CETA and TPP on milk production in 2016 would represent a loss of $282–357 million in revenue to farmers. Export opportunities to offset this remain limited since any export sales at below domestic prices could be seen as export subsidies. Dairy farmers, in her view, were bearing the cost of these agreements and seeing after twenty years a "world dairy market that was essentially a dumping ground" (Emond, 2016).

Additional milk imports from the US also raised the issue of an anomaly in the TPP which goes back to differing standards and regulations in relation to the production of milk. The use of the growth hormone rBST is banned in Canada but not the United States. As I indicated above, although the United States approved Monsanto's rBST synthetic hormone to increase milk production in the early 1990s, Canada did not, despite enormous pressure from Monsanto. This was partly because of concerns about increased production of milk in Canada in a supply managed system, but also due to concerns about animal welfare (Mills, 2002). While there was little dispute that the milk produced using the hormone was safe for human consumption, the impact on animal welfare was raised by civil society in both Canada and the EU, which also had a ban. Such regulatory divergence, as we have argued above, can be a source of trade disputes and be framed by those seeking market access as a trade barrier and thus subject to pressure for harmonization in trade agreements.

In addition to market access, the TPP can also be examined in terms of government procurement and regulatory standards under the SPS and TBT provisions. Government procurement provisions would have less of an impact since they did not go as far as the CETA provisions, and were driven by a failure of Canadian negotiators to get much more access to the US and limit its Buy American provisions. Given the refusal of the US to provide more access to its market in terms of procurement there was no incentive for Canada to offer up increased coverage of procurement obligations beyond provincial authorities. This left municipalities, school boards, and hospitals outside of the procurement obligations (Sinclair, Mertins-Kirkwood,

& Trew, 2016). The case of regulations was different, however, as the TPP reflects an agenda that more aggressively targets regulatory barriers to the major food exporters and their industry supporters.

The United States Trade Representative's office highlighted this gain in the TPP in comparison to the WTO, labeled "SPS plus" by supporters. It is hard to view this section of the agreement as well as the provisions on biotechnology in the second chapter on national treatment and market access, as anything but a prelude to the US negotiations with the EU known as TTIP, which were then ongoing. TPP article 2.27, *Trade of Products of Modern Biotechnology*, deals with the approval of new products and the export of food products containing inadvertently low levels of GMOs. It calls for extensive evidence of risk and food safety assessments, speedy review of applications for new products and mechanisms to resolve regulatory differences (United States Trade Representative, 2016).

Both the US and Canada have been heavily invested in GM crops and because of regulatory differences been shut out of the EU market. In some cases, shipments of products were turned back because of inadvertent contamination and the EU requirement for mandatory labelling of foods produced with GMOs. Section 2.27 reiterates that "nothing in this article shall require a Party to adopt or modify its laws, regulations and policies for the control of products of modern biotechnology within its territory. (2.27.3)" Despite that assurance, the intent of the articles is to target regulations that might limit the access of GMO products and insist on risk and food safety assessments based on "sound science". National differences in regulatory standards regarding GMO crops or foods containing them, such as labelling requirements, are reframed in the agreement as a market access problem.

The TPP chapter on SPS makes no reference to 2.27 or foods containing GMOs. What it does do, however, is develop mechanisms by which exporters can challenge state regulations that would impact market access and force tighter timelines on regulators to justify such measures. New elements are described by the USTR as a major gain going beyond the WTO (USTR, 2016). While promoting science-based and transparent regulation, the agreement also obligates members to publish SPS regulations for public comment, and notify importers and exporters in a timely way of any shipments being detained for SPS concerns. TPP commitments also permit importing countries to conduct an audit of an exporting country's food safety regulatory system.

The SPS chapter article 7.11 regarding import checks and the right, if an importation is restricted, for the importer to challenge it has been called a "Rapid Response Mechanism" which was a demand of the Food and Agriculture Task Force of the U.S. Business Coalition for the TPP. Critics like the US Consumers Union and Food and Water Watch see it as a "as a private right for an importer/exporter to dispute at the treaty level an official action by a government to enforce its food labeling and safety laws." (Center for Science and the Public Interest, 2013). It had been widely supported by the major food and food processing corporations in the US and their advocates such as the Grocery Manufacturers Association.

As a Common Cause report (2015) indicates, large food and beverage corporations were among the major groups lobbying for the TPP. The Grocery Manufacturers of America spent

over 4.5 million (US$) on lobbying in 2014. A *Guardian* article characterized it as a corporate payment to the US Senate to fast track the TPP (Gibson, 2015). Troubling for TPP supporters, however, was the fact that several analyses of the agreement by the US International Trade Commission, the World Bank and economists at Duke University showed that there was very little net economic benefit to the major high-income countries in the long-term. Major food corporations, however, are another matter.

The leaked texts from the US –EU trade negotiations in 2016 also make it clear that there has been a strong push from the US for harmonization of regulations in a way that could further limit food standards and regulations that are seen as limiting market access for exports including GMOs crops and limits on the use of growth promoters in meat production. Dissatisfied with access to the EU market and poor export volumes resulting from the MOU on meat produced without growth promoters, the Obama Administration signaled in late 2016 that it would again consider retaliatory measures over the EU ban on meat produced with hormones. This may indicate what is to come in future bilateral negotiations. The Institute on Agricultural and Trade Policy's study of the TTIP negotiations with the EU in 2016 concluded that they represented nothing less than a "corporate meat" takeover of the agreement (Institute for Agriculture and Trade Policy, 2016), referring to the enormous influence of large corporate industrial meat companies like JBS and WH Group.

The US post-election decision to pull out of the TPP left the remaining eleven partners to determine its future. At the urging of Japan, they decided to move forward with many parts of the agreement. About twenty provisions of the agreement, most linked to key US demands in the area of intellectual property and environmental protection have been suspended. They were seen as the price that had to be paid for access to the lucrative US market. They could be reinstated, if all members agree, in the event of the US re-entering the agreement. Many provisions that may have an impact on food production and market access, including the provisions affecting dairy are still in place. The market access concessions (3.25 percent of the Canadian market) rather than being reduced based on the US exit, will go to the remaining partners. (Haney, 2018)

Conclusion: A national food policy and trade agreements

The above analysis suggests that efforts to support a more local and sustainable food system in a new national food policy may be challenging in the face of recent and future trade agreements. The four goals for a food policy[5] outlined by the Minister of Agriculture are broad and undefined. Each could involve an array of policy instruments and regulations that might be constrained by trade agreement obligations. While Global Affairs is one of many departments and agencies involved in the policy development, it is unclear to what extent trade priorities will

[5] They include: increasing access to affordable food, improving health and food safety, conserving our soil water and air, and growing more high quality food (Agriculture and Agri-Food Canada (2017b).

drive or constrain food policy or whether future trade agreements and trade deals will be evaluated through the lens of a new national food policy. We can only look at what Canadian governments have done in the past as a guide.

It is worth remembering that both Liberal and Conservative governments have been very consistent in promoting trade agreements and focussing on export opportunities and market access. Past governments and their negotiators were able to preserve the supply management system despite great pressure both in the NAFTA negotiations and at the WTO. However, the CETA and TPP agreements revealed a new willingness to trade off domestically-oriented sectors and policies for enhanced foreign market access for export-oriented food and other products. European cheese was accorded more access to the Canadian market in CETA while increased market access for dairy imports was included in the TPP though amounts are small.

On the issue of procurement, it is clear that the CETA agreement, unlike the WTO procurement agreement, could have an impact on the ability to use procurement policies to support local food producers, depending on the size and nature of the contract. While aggressive US Buy American policies make any reciprocal trade deals on procurement with the US less likely, given the concessions in CETA, future bilateral trade deals with other large food exporters could be a different matter.

Finally, one area that has received less attention by those looking at trade and the potential for sustainable and more local food systems, is the issue of food standards and the extent to which differences in standards and regulations have been reframed as trade barriers and thus the basis for trade disputes and strong pressures for harmonization. Canada has generally been onside with the United States in international bodies such as the Codex and the WTO in pushing an agenda that limits domestic food regulations to a scientifically based, public safety rationale. While this has been seen as ensuring market access for products like Canadian beef and pork abroad it has not, as indicated above, even been fully successful in ensuring that. Moreover, if policy differences widen rather than narrow, as states like Canada address food policy through environmentally sustainable food production or public health policies, this could come home to roost for Canada. Policies and regulations that differ substantially from those of trading partners like the United States and are not based on a public safety rationale could be subject to pressure to harmonize or face trade disputes or retaliation.

The history of trade and investment agreements and their rules has been one of using those rules to shrink the space for national public policy and regulation in many areas. A national food policy will only be as good as the policy space available unless there is a real effort to link up and develop coherent, whole of government, food policy that includes the impact of trade and investment agreements.

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Original Research Article

Forever young? The crisis of generational renewal on Canada's farms

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Abstract

There are fewer and fewer young people actively farming in Canada. Farmers under the age of 35 are leaving farming at twice the rate of the general farm population. As a result, Canada faces a crisis of generational renewal on its farms. This article explores the factors that mitigate against young people taking up farming. Using an analytical framework in part derived from the work of Henry Bernstein and applied to Statistics Canada data, the article demonstrates that there is an ongoing income crisis, a growing problem of farmland accessibility and costs associated with farm machinery, unrestrained increases in the power and profit-share of agribusiness transnationals, and a retreat of governments from public-interest regulation. In doing so, the article provides an evidence-based analysis of the structural factors and forces driving Canada's crisis of generational renewal on its farms.

Keywords: Agriculture in Canada; farm policy; young farmers

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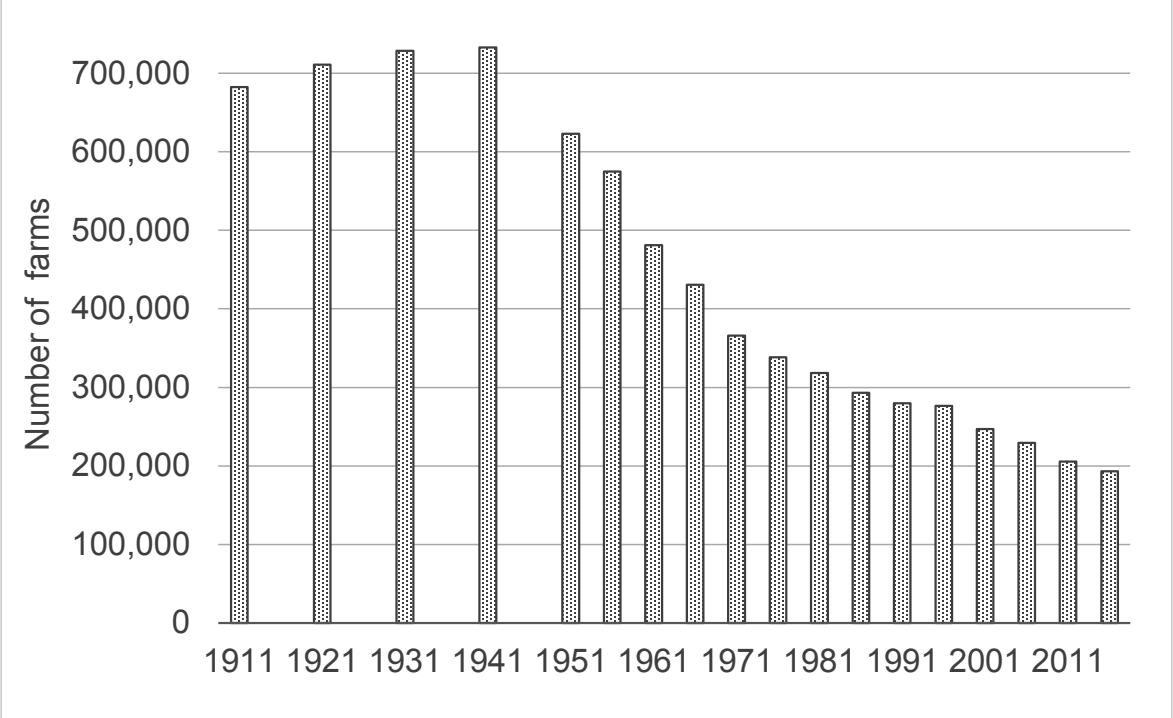
Introduction[1]

In terms of the number of farms, Canadian agriculture is a shrinking sector. This is illustrated in Figure 1, which shows a one-third reduction in the number of Canadian farms between 1986 and 2016 and a loss of two-thirds of Canadian farms since the 1950s. The trend line is relentlessly downwards. Nearly all of the loss of farms is due to farm consolidation. Only a small part of the loss may be due to shrinkage in Canada's farmland base.

With declining farm numbers comes declining numbers of farm operators. In Canada, since the mid-1980s, there has been a loss of one-third of Canadian farm families. There is, however, an aspect to this decline in farm operators that is not widely recognized and which is crucial to the future of Canada's ability to feed itself. This aspect of the decline is shown in Figure 2, which illustrates the reduction in the number of farm operators under the age of 35.

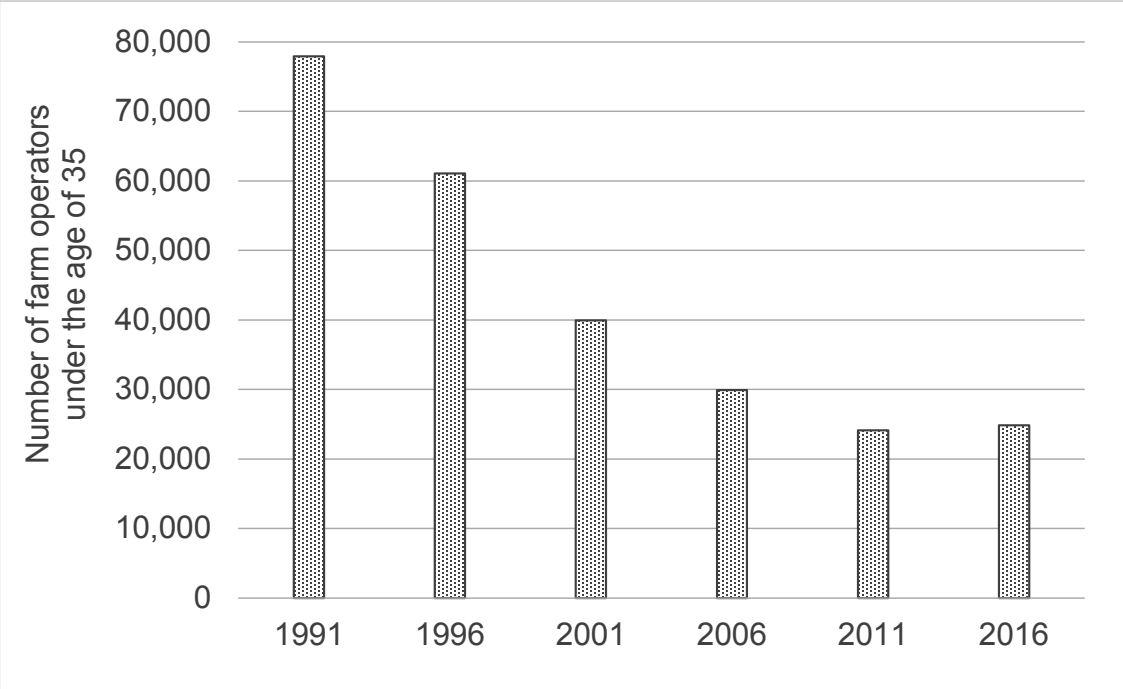
Figure 1: Number of farms ("farm operations"), Canada, 1911 to 2016, Census years



Source: Statistics Canada (2018a)

1 This article is part of the research "Becoming a young farmer: young people's pathways into farming" funded by the Social Sciences and Humanities Research Council (SSHRC), Canada.

Figure 2: Number of farm operators under 35, Canada, 1991 to 2016, Census years



Source: Statistics Canada (2018b); and Beaulieu (2014)

Figure 2 shows that there has been a nearly 70 percent decline in the number of farmers aged 15 to 34, inclusive, over the past 25 years. This means that Canada is losing young farmers at *twice* the rate that it is losing farmers overall. Clearly, Canada faces a looming problem of generational renewal on its farms. Unless new policies and programs are introduced to ensure that young people can enter farming and that they can remain on the land, Canadian agriculture risks plunging off a demographic cliff.

This then is the purpose of our article: to better understand the factors that mitigate against young people taking up farming or remaining in the profession. More specifically, we argue that there are a number of key underlying structural factors and forces in Canadian agriculture that have an important effect in shaping the individual behavioural choices of young people, which results in a disinclination to consider farming as a livelihood. The article identifies four key structural factors: low net incomes, an imbalance in market power between farmers and agribusiness corporations, increasingly unaffordable farmland, and corporate- rather than farmer-focused state regulatory regimes. The effect of these structural factors on the next generation of farmers warrants serious attention, given the generational crisis in Canada's agriculture. We argue that the evidence points to the need for a radical shift in agricultural and food policy to deal with the pathologies that are reducing farm numbers overall, and to encourage the entry of young people into farming, if an intensification of a farm crisis is to be averted. We believe that a democratic, bottom-up process is the most effective and legitimate way to craft those new food and agricultural policies.

Analytical framework

To analyze why the number of farmers, young and old, is declining, we use the analytical perspective of agrarian political economy that centres on: "the social relations and dynamics of production and reproduction, property and power in agrarian formations and their processes of change, both historical and contemporary" (Bernstein, 2010, 1). In particular, the article focuses on what Bernstein (2010, 22) calls the four key questions of agrarian political economy: Who owns what? Who does what? Who gets what? What do they do with it? Bernstein argues that these four questions allow a broad understanding of the structural factors that shape farm production and agriculture in a range of societies. However, in this article we will not investigate "what do they do with it", because, as will be seen, this would require an analysis of corporate reinvestment strategies that, although critically important, is beyond the scope of this paper. Additionally, rather than following Bernstein's three questions seriatim, we begin with an examination of farm incomes followed by a focus on farm land and other capital, and come back to the question of work. We proceed in this order because the issue of farm income—who gets what?—is foundational to other considerations, including land prices and ownership, debt, and barriers to young people entering or remaining in agriculture. We have also added our own fourth question to the enquiry: what is the role of the state in facilitating the structural processes that are in evidence?

Who gets what?

The income problem

We begin this section by first explaining the three key terms used when discussing net farm income. (1). Net farm income is the amount of money farmers have left after they pay their production costs. It is not the same as profit, as it is, in most cases, calculated before allowances are made for farm family labour and management. Out of net income, many farm families must pay themselves, pay off debt principle, and pay off the capital cost of land purchases. (2). Of the various measures of net farm income, realized net farm income best reflects farmers' situation, taking into account depreciation on machinery and other capital assets and income-in-kind (the value of food produced and consumed on the farm). (3). Realized net farm income from the markets (or "realized net farm income, net of state payments") is realized net farm income with taxpayer-funded farm-support program payments subtracted out. This is done to remove the masking effect such payments can create. Admittedly, this understates the amount of money that farm families have to live on—because it subtracts support payments—but by doing so it reveals the economic realities of the agricultural markets upon which many farm families must depend.

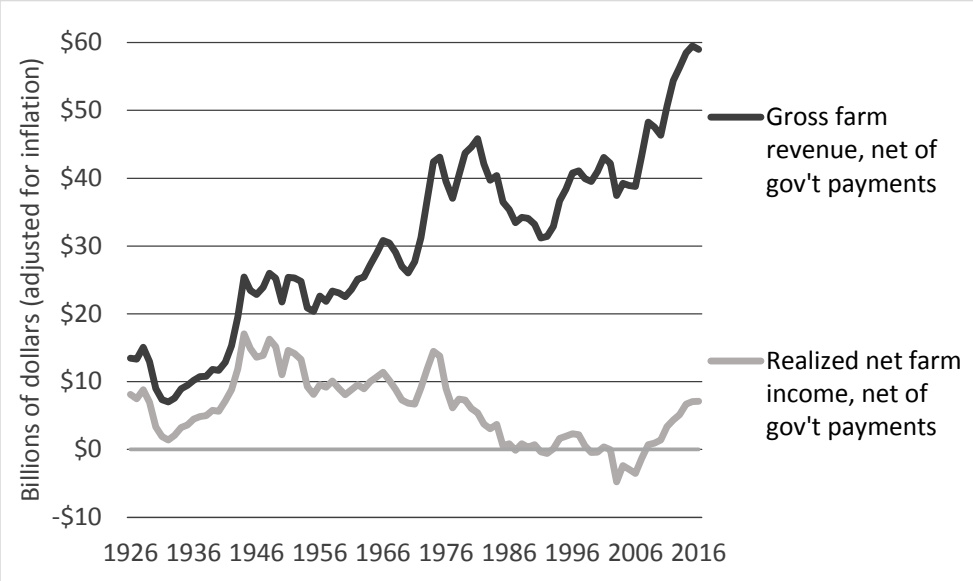
The analysis that follows will make the case that insufficient net farm income is the most significant factor impeding the entry of young farmers, forcing the exit of young farmers, and

creating strains for many young farmers who struggle to remain in the sector. Low net farm income is the main reason that Canada has lost one-third of its farms since 1986 and two-thirds of its young farmers since 1991.

If we add up Canadian realized net farm income from the markets in the 22-year period from 1986 to 2007, the sum is zero; positive returns in some years were wholly offset by losses in others. During that period, for most farm families, most or all of their household incomes came from off-farm employment, pensions, taxpayer-funded farm-support programs, asset sales, depreciation, and borrowed money (see Figures 3, 13, and 14). During that time, farmers produced and sold agricultural products with a gross value of $820 billion, but expenses (mostly payments to input manufacturing corporations) consumed that entire amount (Statistics Canada, 2018c; 2018d; 2018e).

Looking over a longer period—the 31 years encompassing 1986 to 2016, inclusive—the picture is only slightly better. During that time, farmers were able to retain only two percent of their gross revenues from the markets (i.e., with state subsidies subtracted out); inputs makers and other corporations captured the other 98 percent. Figure 3 shows Canadian farmers' gross revenues and net income over the past 90 years. Note the growing gap between the top line (the revenues farmers generated by producing and selling products) and the bottom line (the net income farmers got to keep). That widening gap graphically depicts the growing share of farm-generated wealth captured by machinery, fertilizer, chemical, seed, and energy companies; banks and financial institutions; and by accountants, veterinarians, agrologists, and other service providers.

Figure 3: Canadian gross farm revenues from the market and realized net farm income from the market, adjusted for inflation, 1926 to 2016



Sources: Statistics Canada (2018c; 2018d; 2018e; 2018f)

The problem of low net farm income is connected to (or a result of) several other factors:

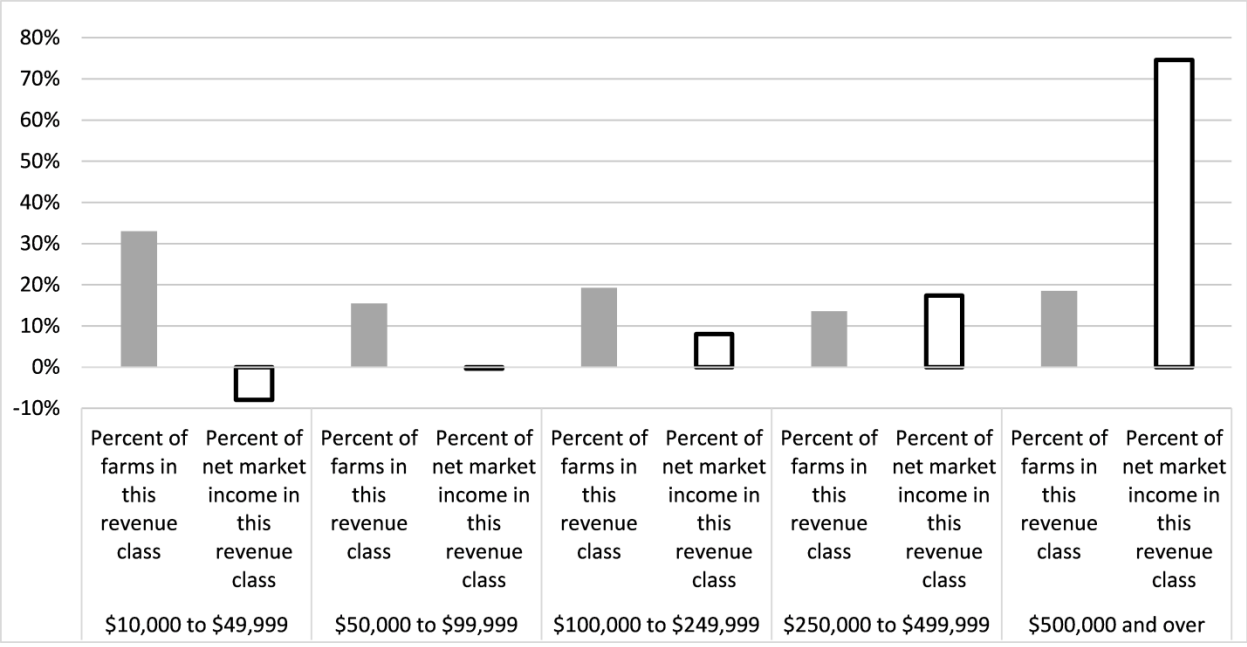
- the imbalance in market power between farmers and agribusiness transnationals;
- state policies too focused on maximizing production and exports and, hence, too supportive of maximizing farmers' use of purchased inputs and technologies;
- commodity prices that, adjusted for inflation, have trended sharply downward for decades;
- farm debt that has now risen to record levels, and continues to climb;
- the chronic need to transfer taxpayer dollars to our family farms; and
- the declining capacity of the sector to financially support a reasonable number of farm families from net farm income.

We examine each of these points below, by providing details and examples.

Net farm income inequality

Not only is net farm income low, it is distributed inequitably. Twenty percent of Canadian farms (those with revenues near or above $500,000 annually) capture approximately 80 percent of net income.

Figure 4: Canadian net farm income shares, by revenue class, 2014. Note that net income is net of government subsidies and capital cost allowance (CCA)



Source: Statistics Canada (2018g)

Figure 4 divides Canadian farms by revenue categories: $10,000 to $49,999 in annual revenues, $50,000 to $99,999, and so on. The data is for the year 2014, but almost all recent years would appear similar. The grey bars show the percentage of Canadian farms that fall within each revenue category. The white bars show the percentage of net market income, adjusted for capital cost allowance, earned by farms in each revenue category. (This measure is approximately equal to "realized net income from the markets.")

For example, looking at the bars in the middle, those representing farms with revenues between $100,000 and $249,999, the gray bar shows that farms in this revenue category make up just under 20 percent of Canadian farms. (see the centre-most gray bar). The white bar shows that farms in this revenue category collected just under 10 percent of all farm revenues (see centre-most white bar).

Note the two bars on the right, those for farms with annual revenues above $500,000. This category includes some very large farms, indeed, with revenues reaching into the tens-of-millions of dollars per year. In 2014, farms in this category made up only 19 percent of Canada's total, but captured 75 percent of net market income (a similar imbalance is present in all other recent years). At the other end of the income spectrum, adding up the net market income for the three categories on the left—those with revenues stretching from $10,000 to $249,000 annually—we get zero; the small amount of positive revenue in the third category is cancelled out by equivalent losses in the first. But these three categories together account for 68 percent of Canadian farms. The problem of overall low net farm income is compounded by the fact that the little net income that exists is captured by the largest farms. The markets provide almost no net income to small and medium-sized farms. Though data is not available on young farmers' incomes segmented by income category, Figure 4 makes clear that there exists a huge obstacle to anyone, young or old, wishing to establish their own independent farm operation, as most of those operations start out small or medium-sized.

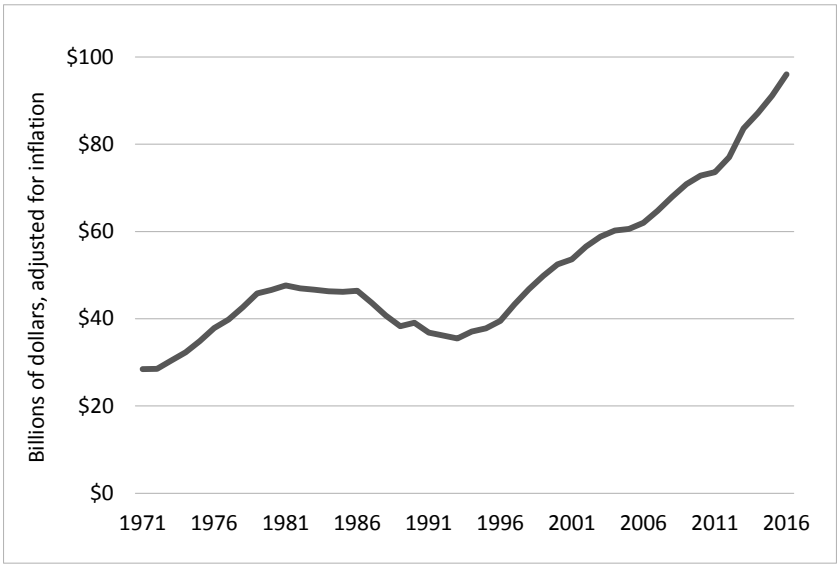
Rising debt

Canadian farm debt is at a record high, and rising. Adjusted for inflation, debt has nearly tripled since the early 1990s, as shown in Figure 5. Perhaps most troubling, levels continued to rise after 2007, even though the period since then has been, by some assessments, one of "better times" for farmers.

Rising debt reflects both the paucity of net farm income and the very high capital requirements for many types of farm operations (more on this latter factor below). Both of these factors—low margins and high costs—make it hard for young farmers to enter the sector or, once in, to continue. Indeed, mounting farm debt may create an existential threat to Canadian agriculture as a whole. Realized net farm income from the markets—the money that farmers have left from their crop and livestock sales after they pay their expenses—has averaged just $3.5 billion annually over the past 10 years, and just $1.2 billion annually over the past 20. With net income from the markets at these levels, farmers' capacity to service nearly $100 billion in

debt is limited, and their capacity to *repay* that debt from net income appears to be very small. Indeed, the trend line suggests that debt will continue to increase. A farm income crisis may be setting the stage for a farm debt crisis – a key precipitating factor of the generational crisis.

Figure 5: Canadian farm debt, adjusted for inflation, 1971-2016



Sources: Statistics Canada (2018h)

In relation to rising farm debt, it is often pointed out that the values of farmers' assets, especially farmland, are rising as well (FCC, 2017). Thus, some would argue that farm debt, relative to assets, is less of a problem than debt numbers alone might indicate. This view, however, ignores the fact that debt must be repaid from net income, not from asset values (except in the case of farm bankruptcy or the farm family exiting the sector). As we show above and below, net farm income is increasingly inadequate to support farm families and repay farm debt.

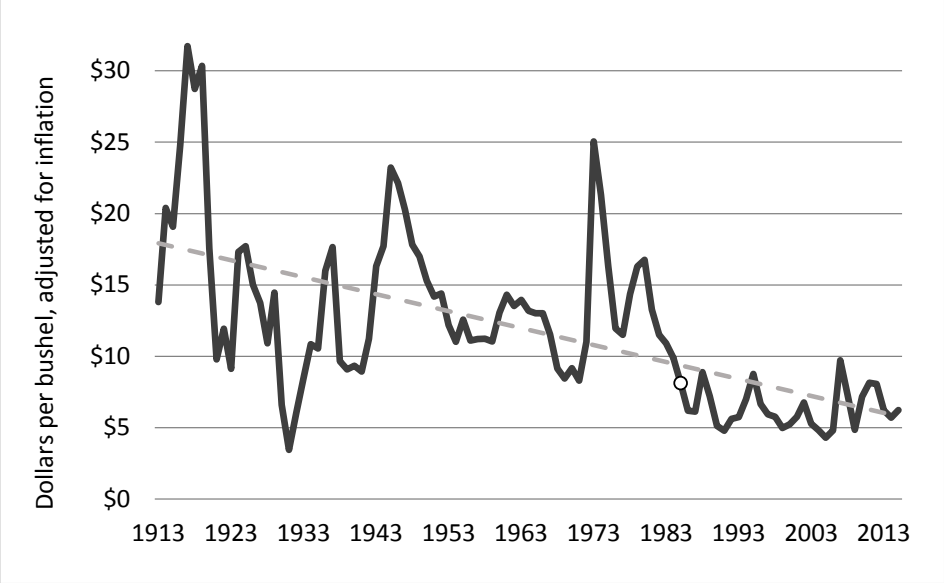
Most troubling perhaps, farmers are now paying about $3 billion per year in interest charges (Statistics Canada, 2018d). The amount that farmers paid in interest during the farm income crisis period (circa 1986 to present) totals $93 billion dollars (all figures adjusted for inflation). Over that same 31-year period, Canadian taxpayers transferred to farmers, via farm-support programs, $102 billion dollars. The amount that Canadian taxpayers have paid to farmers approximately equals the amount that farmers have paid to banks and other lenders.

Declining prices

Adjusted for inflation, the prices farmers receive for their crops and livestock are, in recent decades, a fraction of the prices one or two generations ago. Figure 6 shows the situation for farmers who grow wheat and it includes a trend line. The year 1985—roughly the beginning of the farm income crisis—is marked by a white dot. From the end of the Depression until the mid-

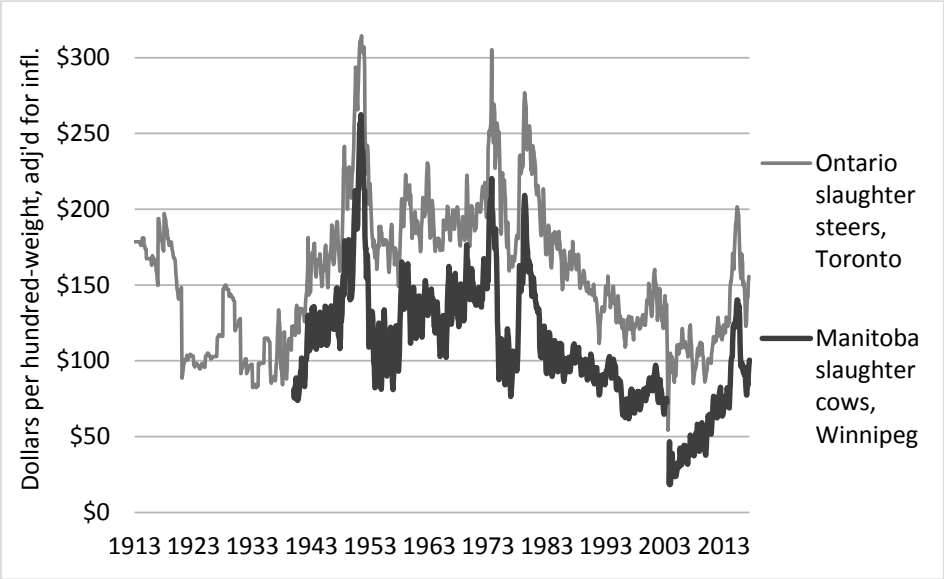
1980s, the inflation-adjusted price of wheat seldom dropped below $10 per bushel, and it occasionally spiked above $20. Since the mid-80s, however, the price has remained below $10, often falling below $5. Figure 7 shows a similar situation for cattle producers: long-term price declines.

Figure 6: Wheat prices, representative western Canadian prices at country elevators, 1913 to 2016



Sources: Leacy, Urquhart, and Buckley (1983); Saskatchewan Agriculture and Food (2006); Statistics Canada (2018i)

Figure 7: Manitoba slaughter cow and Ontario slaughter steer prices, 1913 to 2016



Sources: Long-term time-series assembled from various printed and online sources including Statistics Canada (2018i; 2018j), Statistics Canada (1984), and Manitoba Agriculture (2008; 2018). More detailed source notes available upon request.

Who owns what?

Land: rising prices and shifting ownership patterns

In addition to low net farm income, challenges in accessing farmland create barriers to the entry or retention of young farmers. Indeed, there are two related problems with farmland: rising prices, on the one hand, and, on the other, changing patterns of ownership, including increasing land concentration among fewer farmers, demand for farmland for non-farm uses, and increasing ownership by investors.

Farmland purchases by non-farmer investors has been well documented (Desmarais, Qualman, Magnan, & Wiebe, 2015, 2016; National Farmers Union, 2015). Increasingly, farmers are having to bid against investors to purchase farmland. With Canadian farmland allocated according to ability to pay, and with prices increasingly untethered from the productive capacity of the land, it is new and young farmers who are most excluded from ownership. Investor purchases are both a cause and an effect of rising land prices.

The rise in farmland prices and the effect that this is having on young farmers is evident to all. In a May 2017 report, Statistics Canada noted that "In 2016 the average value of land and buildings was $2,696 per acre, which is an increase of 38.8 percent from 2011 (in 2016 constant dollars). This cost is ever increasing, and can be a barrier to starting or expanding an agricultural operation". The report notes that "Young farmers [are] more likely to rent land than to own it." The report continues:

> Of agricultural operations where all operators were under the age of 35, 50.6% rented land from others, compared with 35.1% of all agricultural operations. On agricultural operations that used only rented land, the average operator age was 46.0 years, 9 years younger than the national average. (Statistics Canada, 2017)

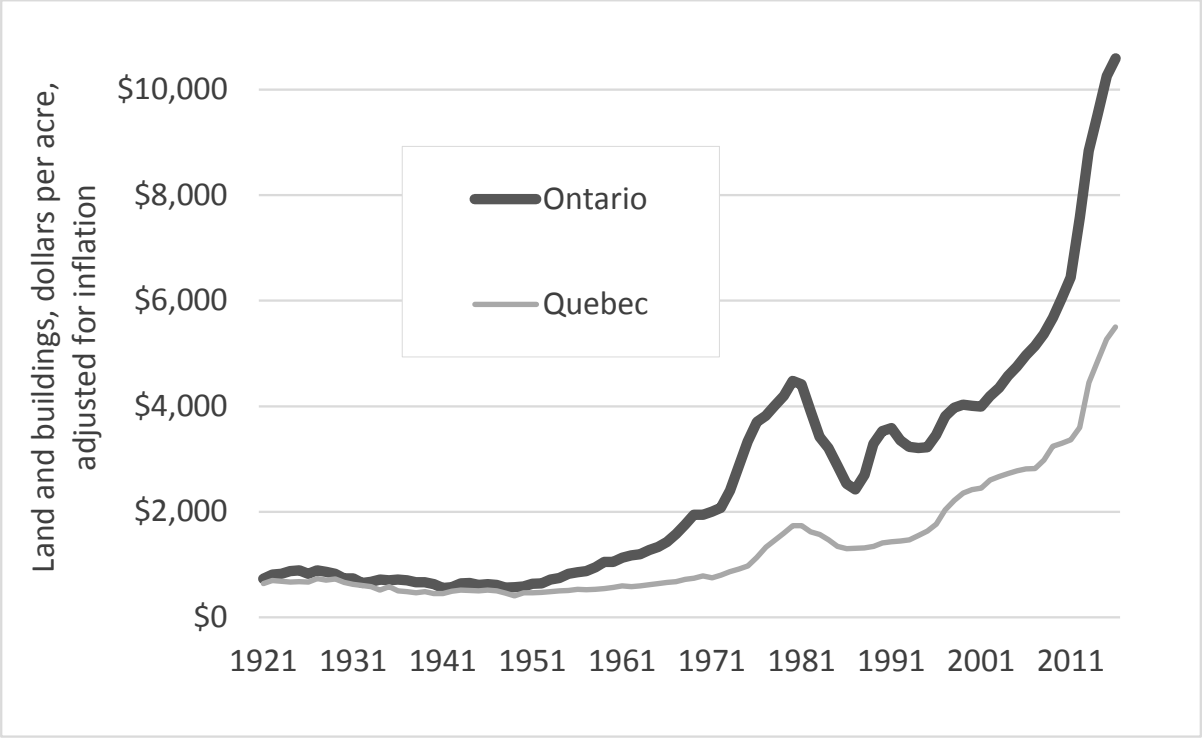
Evidence suggests that Canada may be actually in the midst of a farmland-price bubble: a period of rapidly rising asset prices, unsupported by economic fundamentals, which risks ending in a price contraction. Over the past decade-and-a-half, prices have risen more, and faster, than at any time in Canadian history. Figures 8 and 9 show the past 90 years of data on the value of farmland and buildings in Alberta, Saskatchewan, Manitoba, Ontario, and Quebec. Although the data captures the value of both land and the farm buildings on it, the value of the land far outweighs the value of buildings when aggregated across provinces. Thus, this data can be used as a proxy for land prices, and certainly for changes in prices.

Taking Ontario as an example, Figure 8 shows that the average value of farmland in that province remained below $4,000 per acre for most of the eight-decade period before 2001 (all figures adjusted for inflation). The average value in 2016 was $10,600. Figure 9 shows similar data for Alberta, Saskatchewan, and Manitoba. (Note that the two figures use different Y-axis

scales, a reflection of the different price regimes in the two regions.) Figure 9 shows similarly large land price increases in the Prairie Provinces. In Manitoba, for example, farmland prices in the 30 years from 1977 to 2006 averaged $720 per acre. In 2016, the average price was two-and-a-half times as high, and rising on a steep trend line. This rapid land-price escalation, combined with record-high farm debt, an aging farm population, chronically low net farm income, and the perennial need for billions in farm-support payments, should raise concerns. If we add in climate change impacts and the need to retool the planet's energy and food systems in order to slash emissions by mid-century, perhaps alarm bells should be ringing.

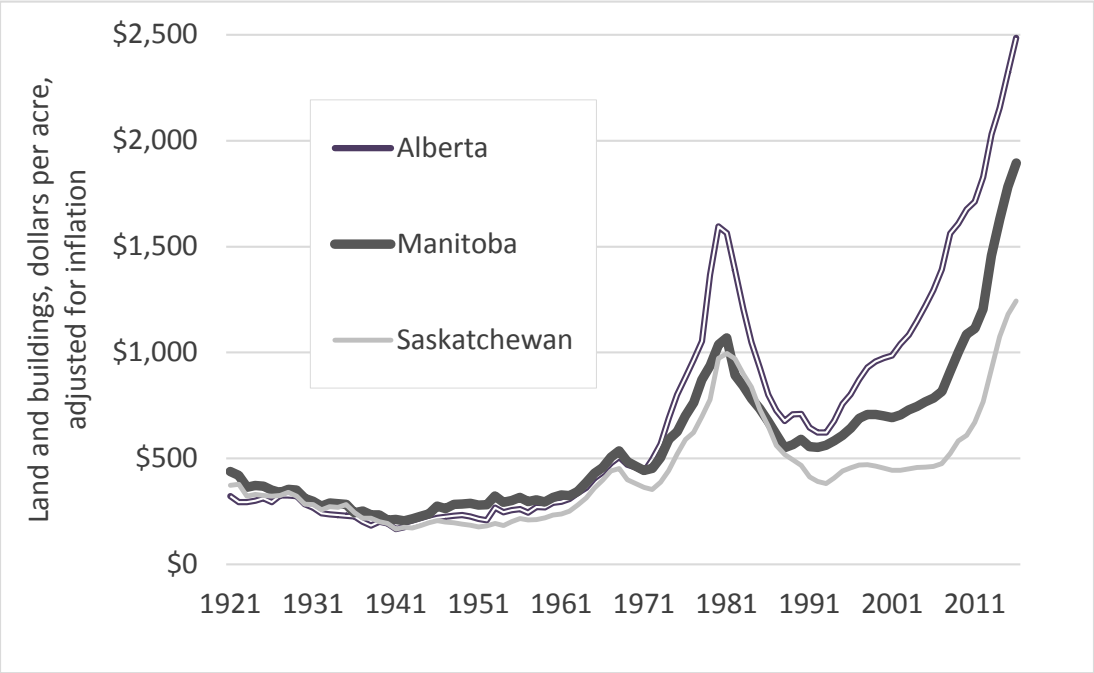
High farmland prices pose an especially difficult problem for new farmers and young farmers. The cost of an acre of land is rising, but the net farm income generated by that acre—the money that could be used to pay for that land—is not. This means that it gets harder and harder to pay for land by farming that land. Increasingly, new land must be paid for from the proceeds from the existing (i.e., paid for) land base. This means that while large farms can pay top dollar for land, it is impossible for small or new farmers to make farmland purchases "pay."

Figure 8: Value of land and buildings, Ontario and Quebec, 1921 to 2016



Sources: Statistics Canada (2018k)

Figure 9: Value of land and buildings, Manitoba, Alberta, and Saskatchewan, 1921 to 2016. Note differing axis scales



Sources: Statistics Canada (2018k)

Table 1: Realized net farm income and farmland prices, decade-averages, adjusted for inflation, per acre, Ontario and Manitoba, 1920s to 2010s. Note that realized net farm income here includes farm support payments. All figures adjusted for inflation.

	Ontario			**Manitoba**		
Decade	*Realized net farm income, subsidies included (Per acre)*	*Price of land (and buildings) (per acre)*	*Cents of net income per dollar of farmland cost*	*Realized net farm income, subsidies included (Per acre)*	*Price of land (and buildings) (per acre)*	*Cents of net income per dollar of farmland cost*
1920s	$80	$840	9.5	$36	$373	9.6
1930s	$51	$698	7.3	$16	$271	5.9
1940s	$128	$606	21.2	$74	$241	30.8
1950s	$121	$790	15.3	$53	$298	17.8
1960s	$120	$1,388	8.7	$49	$411	12.0
1970s	$143	$3,036	4.7	$56	$636	8.7
1980s	$96	$3,325	2.9	$29	$776	3.8
1990s	$33	$3,541	0.9	$14	$620	2.3
2000s	$23	$4,824	0.5	$21	$813	2.6
2010s (until 2016)	$83	$8,468	1.0	$31	$1,453	2.1

Sources: Statistics Canada (2018e; 2018k)

Farmland affordability can be evaluated as a measure of the price of that land relative to the net returns it can generate—a ratio of the per-acre cost of the land and its per-acre net returns. Seen this way, farmland today is very unaffordable.

Table 1 lists realized net farm income per acre and the cost of farmland (and associated buildings) per acre in two representative provinces: Manitoba and Ontario. The figures are adjusted for inflation and listed as averages for each decade. For example, in the 1950s in Ontario farmland prices averaged $790 per acre and realized net farm income (with state subsidies included in this case) averaged $121 per acre. The third column for each province calculates the ratio of net farm income to farmland prices and lists the number of cents of net farm income generated from a dollar's-worth of purchased land. For example, in the 1950s, for every dollar an Ontario farmer spent on farmland, on average, that land would generate an additional net return of 15 cents with which he or she could hope to pay off that land.

What Table 1 reveals regarding the relative affordability of farmland is astonishing. Looking first at Ontario: In the 1970s, for example, for every dollar a farmer spent on farmland, he or she could hope to generate 4.7 cents in net returns. Over the past two-and-a-half decades, that number has fallen to about 1 cent in Ontario (0.9 cents in the 1990s, 0.5 cents in the 2000s, and one cent in the 2010s).

The relative affordability of farmland has similarly declined in Manitoba. In the 1970s, for example, if a farmer spent a dollar on farmland, that same land would, on average, generate 8.7 cents in net farm income with which a farmer could pay off that land. Over the past two-and-a-half decades, however, net incomes have fallen and land prices have risen such that farmers now generate just two to three cents in net income for every dollar they spend on land.
Table 1 clearly demonstrates that a young farmer with a small land base has little chance of paying for farmland. If, for example, he or she bought $500,000 worth of farmland in Ontario—about 60 acres at current prices—that young farmer could expect to generate only $5,000 in net farm income from those acres. Unless a farmer has a large land base already paid for, he or she has little hope of servicing debt on farmland bought at current prices.

Costs of machinery and capital

In addition to land costs, young and new farmers face another barrier: high costs for machinery and other capital equipment. At the extreme, machinery costs have risen to astronomical levels. For example, for grain and oilseed producers, the largest pieces of seeding equipment can, generously optioned, cost more than $1 million (e.g., the Bourgault 3420-100 air drill and 71300 seed cart). These large seeders must be pulled by tractors that themselves cost hundreds-of-thousands of dollars, the combine to harvest the crop can cost another million dollars, a large sprayer half-a-million, and a line of trucks and supporting equipment another half-million, or more.

Admittedly, these prices are for the largest new equipment—machines that few farmers buy and perhaps no young farmer could afford, or would want to purchase. But more modest

equipment is also costly. Each year the Manitoba government publishes its "Guidelines for Estimating Crop Production Costs" (Manitoba Agriculture, 2017). The 2017 edition models the costs for a 2,000-acre grain farm. Total machinery cost for that farm is listed at $993,125. This assumes a limited and practical line of farm equipment (e.g., one large and two small tractors with a total value of $270,000). Even assuming this sort of smaller, used equipment, the machinery requirement is nearly $500 per acre. At that cost, a small or medium-sized farm might require hundreds-of-thousands of dollars' worth of machinery (in addition to perhaps one or two million dollars' worth of land). While machinery costs will be lower for livestock producers, these costs will still be high, relative to net returns. These rising capital requirements are partly a result of the production-maximization focus examined below, and increasingly financed by the rising debt levels discussed above. They have important implications for the pattern of work in agriculture.

Who does what?

The scale of farm machinery: The technological expulsion of farmers?

In this article, we argue that reduced profitability leading to low net farm income is the primary reason that Canada has lost one-third of its farmers and two-thirds of its young farmers in just a single generation. There is, however, another explanation proffered by many in government, industry, and academia: advancing technology and ever larger, more productive farm machinery means that we simply need fewer farmers on the land. An agriculture based on 100-horsepower tractors and 30-foot implements needs a certain number of operators; one based on 500-hp tractors and 70-foot implements needs far fewer. Similarly, on the livestock side, more productive haying and feeding machinery means that the same number of animals can be raised by fewer farmers. The story that large equipment and advancing technology allows farmers to produce more food with fewer people seems initially compelling and certainly contains some truth. But it also turns out to be misleading in many ways. For example, it implies that Canada, the US, and similar nations are producing food using fewer and fewer people.

This initial assessment, however, does not adequately take into account growth in employment in seed, chemical, machinery, farm-retail and wholesale, and technology companies. Seed-genetics-chemical-technology companies such as Bayer-Monsanto[2] are very complex entities employing office towers and research parks full of chemists, patent attorneys, human resources managers, process engineers, public relations experts, lobbyists, janitors,

[2] On June 7, 2018, Bayer finalized its acquisition of Monsanto. Bayer has since dropped the name Monsanto in announcing that "the company will be referred to as Bayer after the integration begins, the Monsanto legal entity structure will remain in place until a legal entity consolidation process can be completed" (Bayer, 2018).

geneticists, and a host of other specialized workers. Many of these workers are products of universities or technical schools—entities that are themselves highly complex with large staffs. These Bayer and former Monsanto employees use computers that are products of complex, globe-encircling supply, production, and marketing chains. These genetics-seed-chemical-technology companies are owned by millions of shareholders, and company shares and bonds are traded within global financial systems, which themselves absorb huge amounts of labour. To these employees of large agribusiness transnationals, we can add a growing cadre of other farmer-support employees: accountants, agronomists, and market analysts, to name a few.

It is beyond the scope of this paper to provide a complete analysis on overall employment in all farm input, production and support sectors in North America, but such an analysis is not entirely necessary. As a starting point, it is enough to know that low net farm incomes, increasing land concentration, and very high capital requirements have reconfigured employment within Canadian agriculture. Even as we employ fewer and fewer farmers (and often call this "efficiency") employment in agricultural input corporations and support services is increasing (though this is seldom labelled as "inefficiency"). One can come at this same idea from another way: Canadian farmers now produce nearly $60 billion per year in farm products. Farmers keep less than $3 billion of this and seed, chemical, fertilizer, and machinery companies and other input and service suppliers take the other $57 billion. And that huge amount of money is used to pay wages, salaries, bonuses, rent, interest, incentives, dividends, patent royalties, and capital appreciation to tens- or hundreds-of-thousands more people.

While the conventional story is that larger and more sophisticated machinery and a broader range of high-tech inputs allow us to farm with fewer people, the real story is that these agribusiness products serve to *shift* employment off of our farms and onto the payrolls of the dominant corporations, just as these same machines, technologies, and products have served to shift profits. Indeed, a young man or woman from a farm background can obtain stable, long-term employment with an agribusiness company—as an agrologist, machinery technician, seed breeder, or fertilizer-plant worker—more easily and securely than he or she can enter farming.

Corporate power in the agri-food chain

There are many ways to analyze and measure the growing market power of agribusiness transnationals. One can focus on mergers between companies and even between sectors—for example, the seed and chemical sectors, formerly separate, have been merged. One can document growing concentration—fewer firms controlling a sector—and the attendant erosion of competitive disciplines on prices and profits. Or, one could also look at the sheer size and growth-rates of these firms. Monsanto, for example, was three times larger in 2017 than it was fifteen years earlier, and the merged Bayer-Monsanto entity is several times larger still.

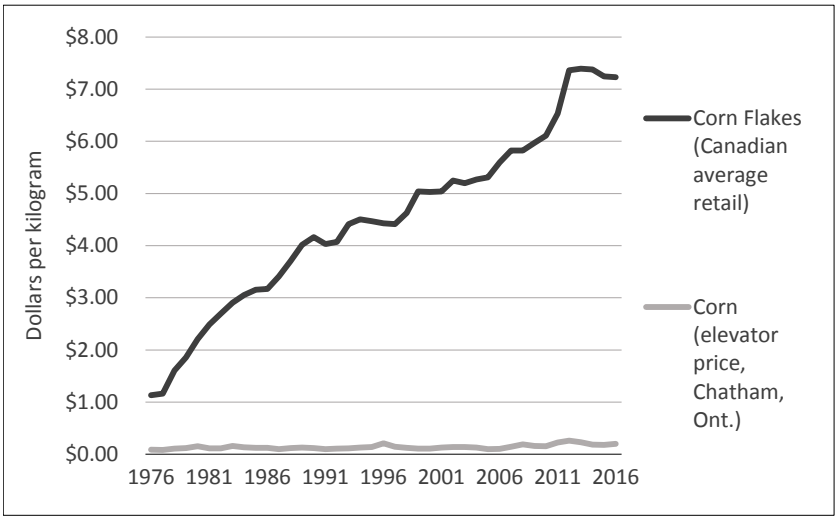
But perhaps the best way to highlight the immense and growing market power of these corporations is to document their success in taking an ever-larger share of food-system dollars for themselves—charging farmers more for inputs, paying farmers less for crops and livestock,

charging consumers more in grocery stores, and pocketing more for themselves (NFU, 2005; Winson, 1993, 2013). This reveals their effective power. Profit is the ultimate purpose, measure, and proof of market power.

As detailed above, net farm income from the markets is near zero in many years because farmers have low market power relative to input makers, and this empowers those companies to capture almost all of Canadian farm revenues. But there is another arena in which market power battles are played out—downstream from farmers, where citizens' grocery-store dollars are divvied up. Farmers' dwindling share of those dollars reflects the growing market power of meat packers, food processors, retailers, and restaurant chains.

As an example, Figure 10 shows the continuously growing gap between what consumers pay for corn flakes and what farmers receive for the corn that goes into the processing plant and into the box. The gap between farm and retail prices equals the amount that grain companies, processors, and retailers take for themselves. And that amount is doubling and redoubling—a reflection of the rising market power of the non-farm links in the agri-food chain. To paraphrase papers by Canada's National Farmers Union (2007): young farmers are making too little because others in the agri-food chain are taking too much. Similar to Figure 10, Figure 11 shows a growing gap between what Canadians pay for bread and what farmers in western provinces such as Saskatchewan receive for wheat. That rapidly widening gap is a direct reflection of rapidly growing corporate power.

Figure 10: Ontario corn, delivered to elevator, and corn flakes, Canada average retail price, 1976 to 2016

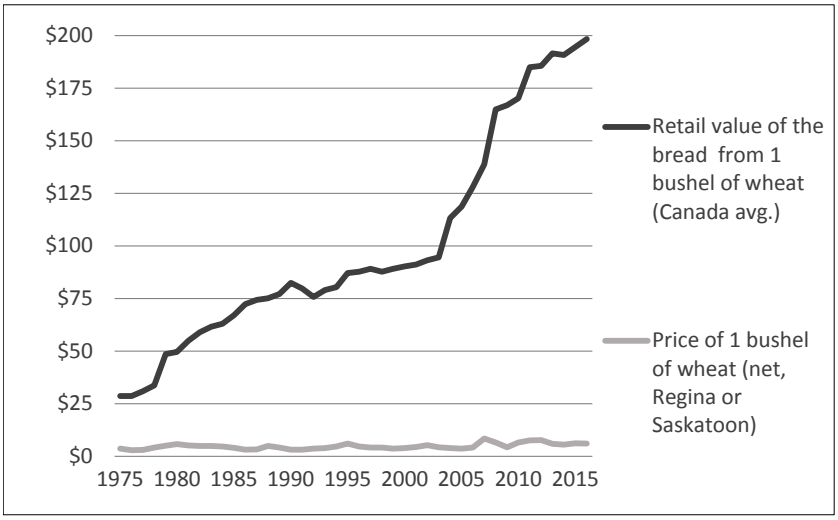


Sources: Statistics Canada (2018l), Canada Grains Council (1996; 2006), Ontario Ministry of Agriculture, Food and Rural Affairs (2017a; 2017b)

It is possible to produce a large number of similar graphs in which retail prices rise but farm-gate prices remain stagnant. Graphs for steers and steaks, hogs and pork chops, barley and beer, and nearly all other farm/retail pairings look nearly identical to the "wedge" graphs depicted above. Farmers, young and old, are caught in a pincer: on one side, increasingly powerful processors

and retailers use their power to take an ever-larger share of grocery-store dollars for themselves, passing a diminishing share back to farmers; and, on the other side, increasingly powerful input makers use their market power to take from farmers an ever larger share of the money that does make it back to the farm. This asymmetry in market power is an important factor affecting the incomes of farmers, young and old.

Figure 11: Western Canadian wheat price, elevator net, and bread price, Canada average retail, 1976 to 2016



Sources: Statistics Canada (1998; 2018i; 2018l), Saskatchewan Agriculture and Food, (2006)

What is the role of the state?

A focus on production for export

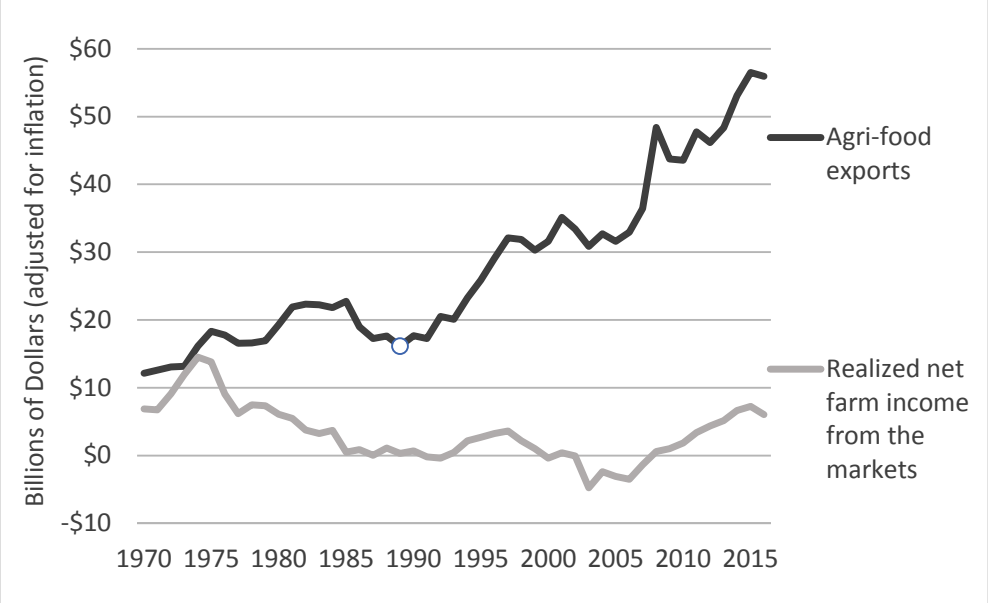
Young farmers are few because net incomes are low. Net incomes are low because the market power of farmers is weak. Corporate power in the agri-food chain has restructured employment away from production and toward input and support sectors. To this analysis, we can add another key factor. Globalization of agricultural markets and state policies focused on maximizing trade and exports further erode farmers' power and incomes. This occurs for at least five reasons:

1. Policies designed to maximize exports have the secondary effect of encouraging maximum production. Such an approach encourages farmers to maximize input use, and overdependence on purchased inputs erodes farmers' net incomes because the prices of purchased inputs are rising more rapidly than the prices of farm products. In sum, export maximization pushes farmers toward productivism, and this makes them vulnerable to agribusiness extractivism.
2. Globalizing agricultural markets puts Canadian farmers into competition with all the farmers of the world. Increasing production in global commodity markets results in what economists

call the "fallacy of composition": as you produce more in globally competitive markets, the price drops. At the same time, at the other links in the agri-food chain, agribusiness corporations are merging, to lower the competition they face. As competition levels increase for farmers and decrease for agribusiness corporations it is easy to predict shifts in relative profitability. The relative shifts in profitability are due to agribusiness not only enhancing monopolistic tendencies in markets, but also rent-seeking in concentrated markets—the manipulation of markets to enhance corporate profits, not to create new wealth.

3. Grain companies, commodity traders, and processors can take advantage of globalized markets and trade agreements to move commodities from one nation to another, thereby disciplining prices in any region where they might rise. The mere threat of such imports can cause prices to fall. This is what Philip McMichael (2009) refers to as world market prices acting as a discipline.
4. As exports rise, so do imports, often in lock-step. Canadian agri-food exports are rising, but so too are imports. The difference between the two—net exports—is today about the same as it was in the early- and mid-1980s: about $11 billion (all figures adjusted for inflation). Thus, looking only at the expansion of agri-food exports overstates the benefits to Canadian farmers. More research is needed to quantify the extent to which Canadian farmers are gaining markets, and the extent to which they are merely *exchanging* markets—swapping dependable, easy-to-access, low-transport-cost Canadian markets for inferior ones overseas.
5. Policies to maximize Canadian exports are in lock-step with long-standing efforts to make Canada a resource superpower. Food is one of those resources.

Figure 12: Canadian agri-food exports and net farm income, 1970 to 2016



Sources: Statistics Canada (2018e; 2018f), Agriculture and Agri-Food Canada (1996; 2016)

While Canadian agriculture has always been export focused, since the early 1990s there has been a renewed push by the federal government toward export maximization. The story-line advanced by federal and provincial governments is that Canada must be a top-tier food exporter; we must feed the world; and if we succeed in increasing exports, everyone will benefit. As Figure 12 demonstrates, however, Canada's success in doubling and redoubling agri-food exports has not helped farmers or their net incomes. Again, this is predictable. As Canadian farmers and the commodities they produce are forced to face increased competition, prices in Canada and elsewhere will fall. Figure 12 shows Canadian agri-food exports and net farm income covering the period from 1970 to 2016. The units are billions of dollars, adjusted for inflation. A round circle on the upper line highlights 1989, which marked the beginning of the modern "free trade" period. In 1989, Canada implemented the Canada-US Free Trade Agreement. Not long after, we implemented the North American Free Trade Agreement and the World Trade Organization Agreement on Agriculture.

In addition to signing trade agreements, Canada's governments have set, and met, ambitious export-expansion targets. In April 2017, Canada's federal government announced a target for higher agri-food exports: $75 billion by 2025 (Gov't of Canada, 2017). This is just the most recent such target. In 1993, federal and provincial governments committed to double agri-food exports to $20 billion by 2000 (Dakers & Forge, 2000). Next, they pledged to double exports again, to $40 billion by 2005 (Parliament of Canada, 1998). (This latter goal was actually suggested to the state by the Canadian Agri-Food Marketing Council, an industry group that represented Cargill, Maple Leaf, McCain, and other corporations.) Canada's trade-maximization policy agenda is, to a significant degree, a child of the dominant agri-food companies, and reflects corporate power in Canada's food system.

The post-1989 period has belied the idea that rising food exports will benefit all. Over that period, as exports tripled, farmer's net incomes stagnated, the number of Canadian farmers fell by a third, the number of young farmers was reduced by two-thirds, farm debt quadrupled, many Canadian-owned processing companies disappeared, and our agricultural and food systems became increasingly controlled by foreign corporations. It is likely that realigning Canadian agricultural policies toward a focus on serving local and regional markets would have far better outcomes for younger, smaller, and newer farmers—indeed for virtually all Canadian farmers. As evidence, we need only compare the relative prosperity of farmers who serve the Canadian domestic market (dairy, egg, and poultry producers) to farmers in the most export-focused sectors (hogs, cattle, and grains and oilseeds).

Deregulation: turning Canada's farmers over to "markets forces"

If we compare Canadian agricultural policies today to those of a generation ago, deregulation, privatization, and state realignment are all plainly visible. Beginning in the 1990s, Canada's federal government made it clear that it wanted Canadian farmers increasingly exposed to market forces and global competition. As an example of this consequential shift in state policy

orientation, Table 2 provides a summary of the changes within Canada's grain handling and transportation system over the past generation.

Table 2: Canada's grain handling and transportation system—policy, regulatory, and marketing landscape, 1987 vs 2017

	1987	2017
Railway ownership	Canadian National (CN) Railway was a publically owned Crown corporation.	CN was privatized in 1995.
Grain transportation railway network	Effective, public-interest controls on railway branchline abandonment existed.	Largescale branchline abandonment and elevator closure began in the 1990s.
Railway freight rates and grain transportation costs	Grain freight rates were regulated and farmers' costs were subsidized via the Crow Benefit.	The Crow Benefit ended in 1995 and disciplines on freight rates continue to be relaxed.
Grain handling	Co-operatives (Saskatchewan Wheat Pool, Alberta Wheat Pool, and Manitoba Pool Elevators) were the primary grain handlers in western Canada.	All co-op grain handlers were privatized in the latter 1990s and 2000s.
Grain handling and elevation fees	Country elevator handling fees were regulated by the Canadian Grain Commission (CGC).	The regulation of fees ended in 1995.
Grain marketing	Ontario Wheat Producers Marketing Board (OWPMB) marketed all Ontario wheat, and the Canadian Wheat Board (CWB) marketed all western Canadian wheat, oats, and barley (for human consumption). Profits were returned to farmers.	The OWPMB was terminated in 2003, and the CWB in 2012.
Grain prices	The Two-Price Wheat program paid farmers significantly more for wheat used by Canadian millers.	The program was cancelled in 1988 in the lead-up to the Canada-US Free Trade Agreement (CUSTA)
Grain quality assurance	A strong Canadian Grain Commission (CGC) regulated the Canadian grain quality system "in the interest of producers."	The CGC has been weakened and turned from a regulator into an industry service provider.

Source: *Western Producer*, various dates

In addition to the changes listed in Table 2, the Canadian state has aggressively pursued new policies, deregulation, spending cuts, and privatization initiatives that have affected all aspects of Canadian agriculture, including farmers' rights to save and reuse seeds, the penetration by genetically modified seeds and foods, dairy marketing and processing co-operatives, investor ownership of farmland, and many other areas.

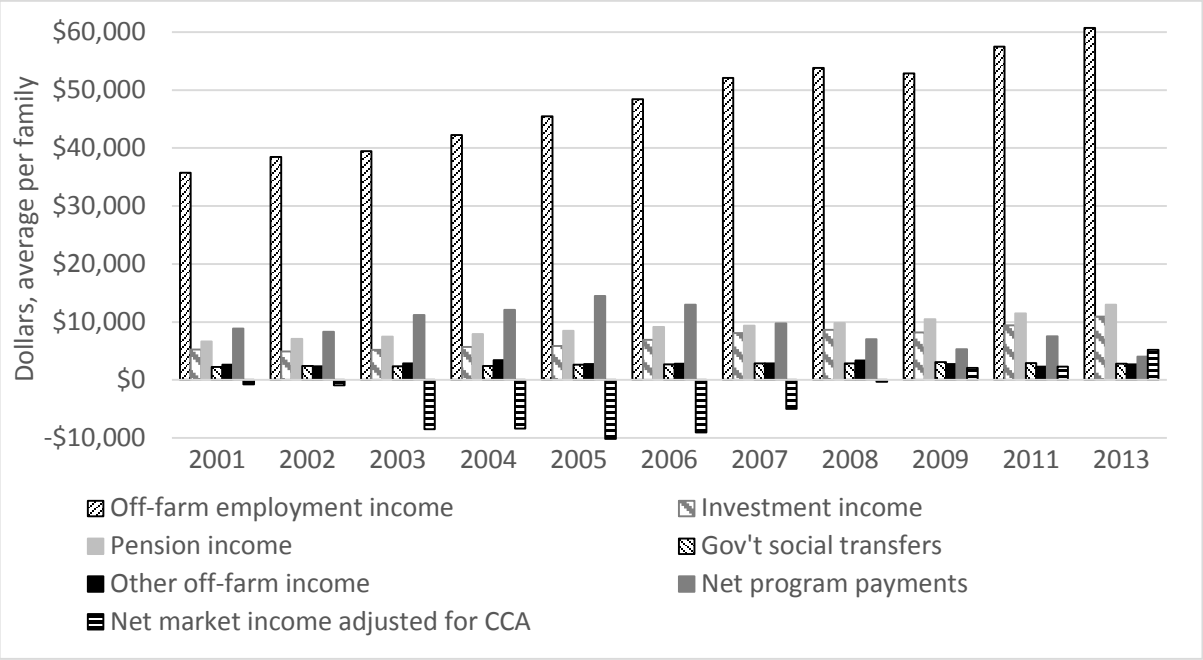
What do (most) farmers do, and what do they get?

Off-farm employment and the household incomes of farm families

Over the past 10 years (2007 to 2016, inclusive) realized net farm income from the markets has averaged $3.5 billion per year (figures adjusted for inflation). According to the Census of

Agriculture, Canada has about 200,000 farms and farm families. But if we do the math—divide net market income by the number of families—we get just $17,500 each. Clearly, most of the money needed to sustain those 200,000 families must be coming from sources other than net farm income, especially given the fact that 20 per cent of farms capture 75 per cent of net farm income. The most recent data on farm family household income covers the period from 2001 to 2013, with the years 2010 and 2012 missing from Statistics Canada data. Figure 13 provides our first look at the makeup of total farm family income. Note that this data is for unincorporated farms only.

Figure 13: Overall income of farm families, average per farm/family, by source, unincorporated sector only, 2001 to 2013 (with some years omitted)



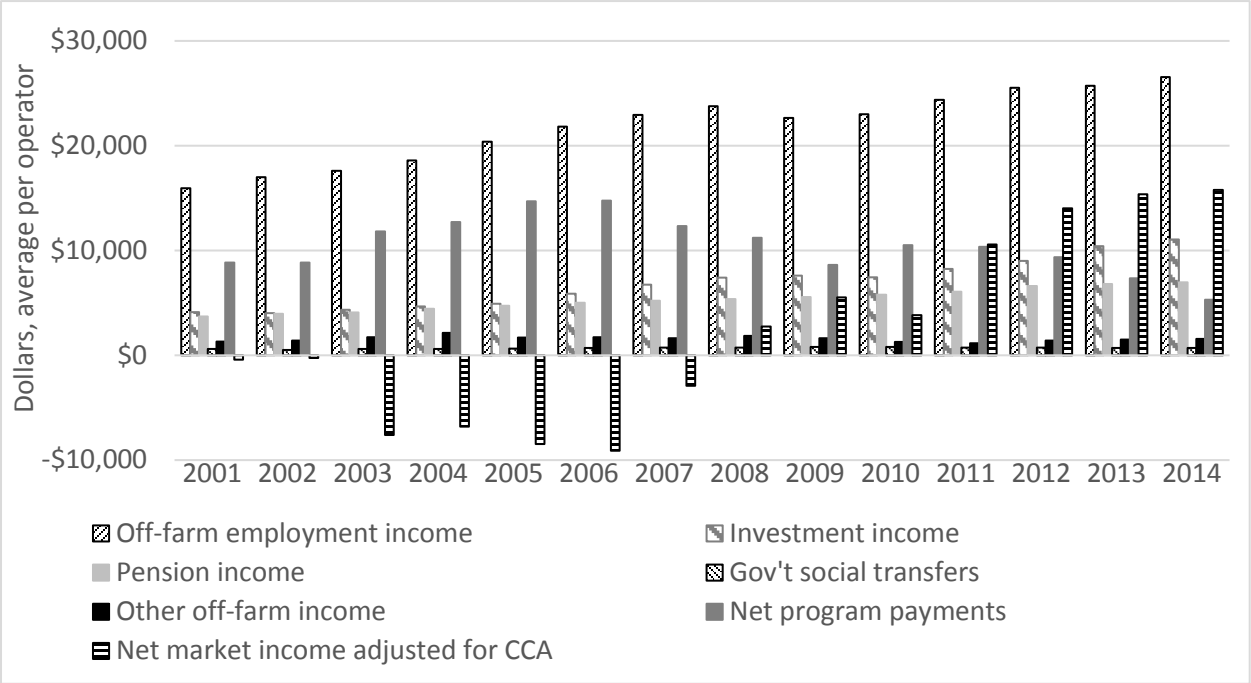
Sources: Statistics Canada (2018m)

Figure 13 reflects the ongoing farm income crisis. The post-2008 period is often characterized as "better times" for farmers. This is undoubtedly true for some as a number of farm families have prospered in recent years. On the whole, however, net farm income remains far below what might be needed to sustain even a fraction of Canada's 200,000 farms. The graph shows that even after 2008 off-farm employment income made up the bulk of farm family income: 52 percent. The next largest contribution to farm family household income was pension income, contributing 10 percent—a reflection of the advanced age of many Canadian farmers. Farm-support program payments contributed 6 percent. But net farm income (adjusted for capital cost allowance, i.e., to account for the value of depreciating assets such as machinery, and with farm-support payments subtracted out) contributed just two percent of farm family household income.

Stated another way, despite a large reduction in the number of farms in Canada—from approximately 300,000 a generation ago to 200,000 today—agriculture is not even supporting that reduced number. Realized net farm income from the markets over the most recent decade averaged $3.5 billion. Let us say that it takes $75,000 in total annual income to support a family. At $75,000 per family, $3.5 billion could support only 47,000 farm families, not 200,000. This fact reveals an existential threat to the majority of Canadian farm families: They operate in a sector that cannot financially support them.

Figure 14 shows the components of incomes for farm operators rather than farm families. Recall that there can be more than one operator per farm or farm family and many farms identify two or three operators on Census forms, often including spouses and older children. It is partly for this reason (multiple operators per farm) that the income values in this graph (of operators) are lower than those in the previous graph (for farms). Another reason for any variance is that this latter graph includes operators on all farms—incorporated and unincorporated—while the former includes only unincorporated farms. Figure 14 shows, again, that farmers generate most of their incomes from off-farm employment, program payments, and pensions. In the most recent 10 years included in the data (2005 to 2014, inclusive) net market income (adjusted for capital cost allowance) made up just six percent of overall farm operator income. Most of Canada's farmers can no longer rely on farming as the principal source of their livelihood.

Figure 14: Overall income of farm operators, average per operator, by source, unincorporated and incorporated sectors, 2001 to 2014



Sources: Statistics Canada (2018n)

Conclusion

In a single generation, Canada has lost one-third of its farmers, and two-thirds of its young farmers. This article uses Bernstein's questions to frame an analysis of the making of a generational farm crisis. In doing so, we have revealed deep pathologies in the structure of Canadian agriculture. In terms of who gets what, we have shown that net farm income is inadequate, and distributed inequitably among farmers, with large and very large farms capturing almost all net income, while smaller farms, including those that many young and new farmers operate, earning low or negative net incomes. Low net farm incomes, rising land concentration, and very high capital requirements have led to a significant change in who does what in Canada's agriculture: fewer people are employed in farming, and more people are employed in input and support services. This reflects the capacity of agribusiness corporations to use their market power to take an ever larger share of food system wealth. And we have shown that this has led to a situation wherein most farmers, for their family income, must rely on off-farm work, pensions, and state subsidy payments. In terms of who owns what, we have shown that, relative to net income, farmland is increasingly unaffordable and so too are the machines and technologies needed to farm the land. Adding to Bernstein's questions, we have inquired into the role of the state in facilitating the structural changes in evidence and we have shown that state policies, too focused on export maximization and deregulation, have left farmers vulnerable and without adequate incomes, even as these policies have advanced the interests of agribusiness in Canada's agri-food chain.

Canadian agriculture is a paradox. By a great many measures our farms are extremely successful and productive. Farmers have managed to nearly double the value of their production since the early 1990s. Over the same period, the value of agri-food exports has more than tripled. Many measures of efficiency and productivity are up markedly, including output per acre and per farmer (all figures adjusted for inflation). Land markets are booming. And Canadian farmers are world-leaders in adopting cutting-edge production technologies. Thus, Canadian agriculture is not a failing sector. But it is failing many of the people in agriculture. Even as the system doubled its output and tripled its exports, it expelled two-thirds of young farmers. The full effects of the loss of so many energetic food producers have yet to be realised. But it is likely that as this reduced cohort moves through the coming decades, the total number of farms and farm families in Canada will fall dramatically, from its current level around 200,000 to perhaps fewer than 100,000 in the 2040s.

Moreover, this loss of stewards from the land has occurred with absolutely no offsetting benefits. The time is long past when factories were desperate for workers and the large number of people on the land had to be reduced for the economy to modernize and industrialize. With such a small percentage of Canadians still on farms the potential benefit of moving half (or more) of the remainder off the land is small. Additionally, policies aimed at reducing the number of farmers and making the sector "more efficient" have not delivered the benefit of lower food prices. In fact, the opposite has occurred. Even though farm prices have remained largely

unchanged for decades, the prices Canadians pay for bread, cereals, meats, and other foods have increased significantly (Figures 10 and 11). Reducing the number of farmers has not made the sector more environmentally sustainable. In Canada and many other nations, ever-larger quantities of fossil-fuel-intensive inputs are being pushed into our food systems with the aim of pushing more food out the other end (Statistics Canada, 2018o).

It is hard to escape the conclusion that the renovation, retooling, and depopulation of Canada's farm sector has largely been directed and driven by the dominant agri-business companies, for the sake of their revenues and profits. And it has been facilitated (and often cheered or accelerated) by complicit or ill-informed politicians who rewrote the rules surrounding agriculture to please these corporations, all the while echoing platitudes about efficiency, exports, growth, globalization, market forces, and competitiveness. Seen this way, changes in agriculture over the past two generations are part tragedy and part swindle. As contradictory as it may seem, unfortunately, it is this destabilized, ill-regulated, and uncertain agricultural sector that some young Canadians are now seeking to enter or continue within.

Clearly, Canada needs a food system transformation. It is well worth carefully considering how this nation can restructure its food systems to welcome and support many more young farmers, keep existing farmers on the land, restore adequate incomes to all farm families, sustain rural communities, and move forward with the transformations of our farm and food systems that climate change is now forcing upon us.

Canada needs a new national food and agricultural policy framework built upon social, economic, and environmental sustainability. In working to develop such policies and frameworks, farmers, policy-makers, academics, experts, and citizens will have to explore a wide range of reforms and alternatives, including a greater emphasis on sustainable and low-input agriculture, local food, organic production, agro-ecology, and food sovereignty. The best and most legitimate way to build those new food and agricultural policies is through a democratic, inclusive, bottom-up process. The on-going work of Food Secure Canada (2017) to engage Canadians in developing a national food policy is one example of such a process, another is the People's Food Commission of the 1970s (Levkoe, 2014; People's Food Commission, 1980). The loss of two-thirds of young Canadian farmers in a generation highlights the failure of current government-corporate policies. While governments must continue to play a strong supporting role, the development of new food and agricultural policies for Canada must be organized and led by citizens, farmers, and their organizations.

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Original Research Article

New farmers and food policies in Canada

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Abstract

As the demographics of farmers are shifting, the ways agricultural and food policies affect and influence the decision-making and behaviours of new farmers is also changing. At the same time, there is growing interest in contesting and rebuilding Canadian food systems to address environmental and social injustices. Many new farmers are interested in agro-ecological approaches to agriculture, including both ecological practices and community-based economies. This paper examined the findings of a national survey of 1,326 new, aspiring, exited, and experienced farmers, to explore challenges and opportunities in the Canadian food and farming system, as well as the municipal, provincial, and federal policies that they recommended. We also examined which programs are serving new farmers best, and how these successes could be translated elsewhere. We found that an increasing number of new farmers are coming from non-farming backgrounds and are women, potentially challenging the status quo. The most significant barriers concerned affordable land and financing their early farm businesses. In addition, respondents reported facing difficulties in accessing agricultural knowledge and that available institutional resources may not be appropriate to new types of ecological farming practices. Nevertheless, these new farmers are finding diverse ways to develop their livelihoods, potentially transforming Canadian agriculture. A national food policy that works with local and regional partners and that recognizes the changing realities of new farmers is a necessary first step in helping build a sustainable, healthy, just, and resilient food system in Canada.

Keywords: New farmers, food systems, agriculture, food policies, Canada

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Introduction: Trends in Canadian agriculture

Farmers do more than grow and raise the food Canadians eat every day; they contribute to the Canadian economy through local and international markets, they build rural and urban communities, and they can be environmental stewards. Yet there are signs that farmers and the Canadian food system as a whole may be on the brink of several major transformations. The number of farms in Canada has been declining at an increasing rate for the past 70 years (Qualman, 2011). Simultaneously, the average age of farmers in Canada in 2016 was 55 compared to 47.5 in 1991, while the number of farmers in Canada under the age of 35 fell from 77,910 to 24,850 over that same time period (Statistics Canada, 2017a). At the same time, the recent 2016 Agriculture Census found that only 8 percent of farms have a written succession plan, which could indicate a potential gap in farm renewal (Statistics Canada, 2017b). Despite these realities, farming is still considered by policy-makers to be an intergenerational activity with continuing farmers born into farm families with opportunities both to learn about farming as children and to access land through in-family farm transfer (Diaz, 2003; Dumas, Dupuis, Richer, & Louise, 1995). For many new farmers, the neoliberalization and corporatization of Canadian farms has challenged their ability to enter agriculture.

Trends towards neoliberalization[1] have resulted in government withdrawal from rural communities and the agricultural infrastructures they upheld (Eaton, 2008; Kneen, 2011; Pechlaner & Otero, 2008; Qualman, 2011). The resulting increase in deregulation and privatization has put farmer livelihoods at risk through the erosion of supply management and marketing boards (Desmarais & Wittman, 2014; Magnan, 2015). Similarly, the dismantling of federal programs such as the Prairie Farm Rehabilitation Administration and the Rural Secretariat has raised concerns about the loss of services that range from preventing soil erosion to providing internet services to rural citizens (Amichev et al., 2015; Arbuthnott & Schmutz, 2013; Wilson, 2013). The neoliberalization of agricultural policies at the provincial level has differed regionally with some provinces, like Ontario seeing massive declines in funding for agriculture which has contributed to declines in farming populations, consolidation of farmland, and the erosion of support for ecological practices (Eaton, 2008; Friedmann, 2011). While in Québec, the language of food sovereignty has been adopted to justify the promotion of local food and farming within the province (Desmarais & Wittman, 2014). Despite this, the impacts of industrialization and corporatization have encouraged farmers to grow the size of farms which has further exacerbated the decrease in the number of farms (Magnan, 2015; Qualman, 2011).

In many ways, corporations are squeezing out the profits made by farmers through vertical integration, as facilitated by government policy changes (Girouard, 2014; Rotz, Fraser, & Martin, 2017; Sommerville & Magnan, 2015). In particular, the commodification and subsequent financialization of food crops resulted in a spike in agricultural land prices as investors from around the world rushed to capitalize on the food crisis of 2008 (Clapp,

[1] The neoliberalization of agriculture refers to a shift towards more industrial, mechanized, and biotechnology-based agriculture which started in the 1980s. These changes include a reduction in state regulations and emphasis on free markets (Skogstad, 2008).

Desmarais, & Margulis, 2015; Magnan, 2015). This made it difficult for new farmers to afford land (Rotz et al., 2017; Ruhf, 2013; Serkoukou, 2014). Even for established farmers, the increase in input and equipment costs and the concentration of farmland ownership have resulted in stagnating farm income, an increase in farm debt, and limited abilities to evolve their own operations (Cushon, 2003; Qualman, 2011; Sommerville & Magnan, 2015). Agriculture that is premised on increasing mechanization and globalized markets presents technical solutions to wide ranging problems without considering the specifics needs of the land, farmers, or eaters (Argue, Stirling, & Diaz, 2003; Diaz & Stirling, 2003; Qualman, 2011). Resistance to the influences of globalization, neoliberalization, and industrialization in food and farming systems comes in various forms, but is often framed as part of an emerging and increasingly influential food sovereignty and agroecology movements (Andrée, Ayres, Bosia, & Massicotte, 2014).

Agroecology is the praxis of the food sovereignty movement, but is also the practice and science of ecological farming (Wezel et al., 2009). As defined by *La Via Campesina* (2015), *agroecology* is more than a set of production technologies—it requires the restructuring and localization of markets and the resources required for food production. Agroecology plays a critical role in reimagining and rebuilding a food system as a method to improve the availability, accessibility, adequacy, and sustainability of food as well as increase participation from all sectors of the food system (Schutter, 2010). These agroecology and food sovereignty movements are gaining momentum around the world and new farmers are a key part of bringing these movements to Canada, as they are more able to engage with new practices that their more established farming peers (Monllor, 2012). In addition, new farmers are often interested in developing community-based food economies and using agroecological principles (Fernandez, Goodall, Olson, & Mendez, 2013). As such, the development of a national food policy in Canada should draw from reports calling for the promotion of agroecology, such as reports from the United Nations (2010) and the International Panel of Experts on Sustainable Food Systems (IPES-Food, 2016), and support opportunities to build on the transformative potential of agroecology.

This research brings forward the experiences of new farmers in Canada and draws on survey responses from a 2015 survey of 1,326 new, aspiring, experienced, and recently exited farmers to provide four recommendations for a national food policy. Our recommendations contribute a vision of how a national food policy framework in Canada could support ecological and community-based alternatives by integrating respondents' reflections about obstacles, successes, and recommendations as well as suggestions from the literature and key opportunities to build on existing momentum. The four recommendation areas reflect the need for a democratic food system, improving land access, broadening financial supports, expanding training, and improving community-based infrastructure and scale-appropriate regulations. Our objective is to examine the needs of new farmers and explore how a national food policy that acknowledges these needs while working with local and regional partners can contribute to a just and resilient food system in Canada. We begin by exploring existing literature on the state of new farmers in Canada and their policy needs before presenting the findings of national survey.

Background: New farmers and policies in Canada

Very little is known about new farmers in Canada, since there has not been, to our knowledge, a comprehensive national study. The 2016 Agriculture Census reported 24,850 farm operators under the age of 35 or 9.1 percent of all farmers (Statistics Canada, 2017a), but did not determine how many years of experience they had or if they had a farming background. While the census also showed an increase in certified and transitional organic operations in 2016, to 2.2 percent (Statistics Canada, 2017d), there is no information on those using other ecological practices. The census also does not determine how many of these operators were under the age of 35, their gender, or the barriers they face.

Statistics Canada also admits that small farmers, defined as those making less than $10,000 annually, are under-reported (Statistics Canada, 2017c). Many new farmers would be included in this category. This may occur because aspiring farmers, including interns, are not included in the census. Moreover, new farmers may not yet be reporting farm income, may have exited farming before participating in the census, or may even have felt that the survey questions were not relevant to their small-scale farm. Meanwhile, Canadian and American researchers found examples of poor survey design by governments, for example, ignoring the realities of women or people of colour by identifying them as “farm wives” or “migrant workers” and discounting their ongoing contributions to communities (Desmarais, Roppel, & Martz, 2011; Sachs, Barbercheck, Brasier, Kiernan, & Terman, 2016). This is despite the fact that a number of studies have pointed to women leading the way in alternative and sustainable farming systems (Hassanein, 1999; Sachs et al., 2016; Trauger, 2004).

Existing Canadian research consists of regional studies from Nova Scotia (Mills, 2013), Québec (Serkoukou, 2014), Ontario (Knibb, Learmonth, & Gatt, 2012), and British Columbia (Dennis, 2015); these have relied on small sample sizes or the use of secondary data. Consensus among these studies indicates that the main challenges facing new farmers include rising farmland prices (Serkoukou, 2014), increased costs and difficulties accessing financing (Monllor, 2012; Pouliot, 2011; Wilson & Martorell, 2017), low profitability (Baldwin, 2013), and a need for more education and research especially for agroecological alternatives (Knibb et al., 2012; McLachlan, 2012). Research in the United States and Europe have made similar conclusions (Calo, Teigen, & Master, 2016; Katchova & Ahearn, 2015; Rissing, 2016; Shute et al., 2011).

The recent increase in North American and European farmers from non-rural backgrounds is contributing to a reimagining of food and farming systems (Mailfert, 2007; Ngo & Brklacich, 2014). New farmers are contributing towards the normalization of an alternative food system. They may engage in community-based economies through community shared agriculture (CSAs) and other forms of direct marketing, as well as ecological farming practices such as organic, permaculture, biodynamic, or pasture-raised animals (Monllor, 2012). However, new farmers are a minority and require supportive policies and infrastructures to help them succeed.

New farmers need cooperation between all levels of government as well as non-governmental organizations and associations to build a supportive food system. As the level of governance closest to the community and as a service provider, local governments have

the power to support new farmers through community education and local food initiatives. They can also enact policies and implement programs that address barriers such as land access and knowledge transfer (Ayres & Bosia, 2014). For example, in Québec an incubator program owned by the municipality of l'Ange-Gardien provides training and land access to new farmers (Serkoukou, 2014). At the same time, regional governments are incorporating food systems principles in policies and plans, and can propose actions of municipal or regional scope to address barriers for new entrants. A 2017 policy scan found that Canadian provinces differ significantly in their support and resources for new farmers, particular new ecological farmers (Wilson & Martorell, 2017). New farmers would benefit from a more comprehensive, equitable, and systematic approach that goes beyond the limits of agricultural policies such as the Canadian Agricultural Partnership (formerly the Growing Forward policy framework). We argue that a national food policy could provide support to expand the successes at the local and regional level by working in partnership with community organizations and governments at all levels to protect food and farmland, support new farmers, and increase local food production.

Methods: Listening to new farmers

In 2015, the authors collaborated on the design and dissemination of a national online survey through a partnership between the University of Manitoba and the National New Farmer Coalition. The National New Farmer Coalition (NNFC) is a project of National Farmers Union Youth in partnership with Young Agrarians and Food Secure Canada (National Farmers Union, 2014). We designed the survey using other national and regional questionnaires conducted in Canada and in the US (Dennis, 2015; Knibb, Learmonth, & Gatt, 2012; Shute et al., 2011). The questionnaires were created and made available online in both English and in French through Survey Monkey.[2]

Recruitment was done only using online tools including email and social media. Despite the limitations of online surveys (Fan and Yan 2010), particularly in calculating a response rate, it was determined that this tool was the best one for this project due to the low administration cost, speed of distribution, and high level of online engagement of Canadians (CIRA, 2013). In order to collect as much information from new farmers as possible we encouraged participants to recruit each other by sharing the survey on social media, which is a variation on snowball recruiting that has been found to be helpful in reaching populations that are difficult to identify or recruit (Baltar & Brunet, 2012). This approach to recruitment and the distribution of online surveys has been used successfully elsewhere (Admon et al., 2016; Khatri et al., 2015).

Most respondents to the survey arrived to the website from social media including Facebook (65 percent of all views) and Twitter (3 percent) or from newsletters from farm organizations such as the National Farmers Union (NFU) (4 percent), Union Paysanne (1 percent), and Young Agrarians (1 percent), as well as a popular blog published by one of the

[2] www.surveymonkey.com

survey co-authors and a farmer at Broadfork Farm (18 percent). Emails were also sent out to 289 national and regional organizations, producer associations, and universities and colleges to request that they share the invitation with their email lists in order to recruit participants from a variety of farming backgrounds and production types. To ensure a large and well-distributed sample, a brief analysis was done midway through the sampling window to identify low-response regions and production types, and reminders were sent to producer groups to address those gaps. Cash, gift cards, and other prizes were offered to encourage participation; the total approximate value of which was over $1500.[3] The survey was circulated in February and March in 2015, when farmers are less busy. Respondents that had completed less than half of the survey questions were excluded from our analysis; thus, of the 1,621 responses (1,432 in English and 189 in French) 1,326 (82 percent) were completed.

In order to collect a diversity of responses on new farmer experiences the survey consisted of four streams of questions for respondents, depending on whether participants self-identified as "aspiring", "new", "exited", or "experienced." Respondents self-identified in one of these four categories and each stream contained 40-43 closed and open-ended questions, depending on which of the four farmer types participants selected. Questions were designed to discern new farmer experiences around the themes of land access, capital, and knowledge and community. Including aspiring and exited farmers allowed for the inclusion of experiences of those who have been unable to overcome various barriers and provided more comprehensive understanding of new farmer experiences, while experienced farmers were asked to respond based on their mentoring of new farmers. Of the 1,326 respondents, 54 percent identified as new farm operators, while 22 percent were aspiring farmers, another 20 percent were experienced farmers, and finally 4 percent were exited farmers.

When asking about production types and production practices, the survey question was designed so that respondents could identify more than one production type and more than one production practice, and thus reflect nuanced detail about their operations. Many respondents commented that this level of detail, flexibility, and understanding of the diversity of their operations was something they most appreciated about participating in the survey. Unless stated, the responses presented here represent all survey respondents, not just those who identified as new farmers.

Responses were entered and analysed using Microsoft Excel, SPSS (Statistical Package for the Social Sciences: Version 20), and the qualitative research online software Dedoose.[4] Demographic information on mean responses, standard errors, and distribution were calculated in Excel and compared in SPSS. Coding in Dedoose included examining specific barriers and challenges, such as government policies (or lack thereof), financial burdens, or different learning types, including formal and informal learning.

As the first survey to explore new farmer issues across Canada, this research addresses a key gap in the literature. As a result, the decision to use convenience sampling, through an online survey, was appropriate since it facilitated participation of these new

[3] Funding for gift cards and other prizes came from various in-kind donations and cash prizes came from the Manitoba Alternative Food Research Alliance. Three cash prizes of $500, $200, and $100 were drawn at random from survey respondents.
[4] www.dedoose.com

farmer voices from the peripheries. Some of the demographics of survey participants differ from those in the Canadian Agriculture Census. This, in part, likely reflects some self-selection bias in our survey recruitment resulting in an over-representation of women (58 percent), as compared to results from the 2016 Agriculture Censuses (29 percent women). We heard mainly from farmers under age 35 with 54 percent respondents in that category, while the 2016 Agriculture Census had only 9 percent of respondents in this age category. Finally, the other major difference was a higher number of farmers in Atlantic Canada (22 percent) compared to 4 percent from the 2016 Agriculture Census, and fewer farmers from the Prairies (17 percent) compared to 45 percent from the 2016 Agriculture Census, which we believe may reflect land prices and access for new farmers.

Findings: The changing face of Canadian agriculture

Respondents came from across Canada with most from British Columbia (23 percent), Ontario (23 percent), and Atlantic Canada (22 percent) which accounted for more than half of survey participants. Figure 1 shows the distribution of respondents by postal code area.

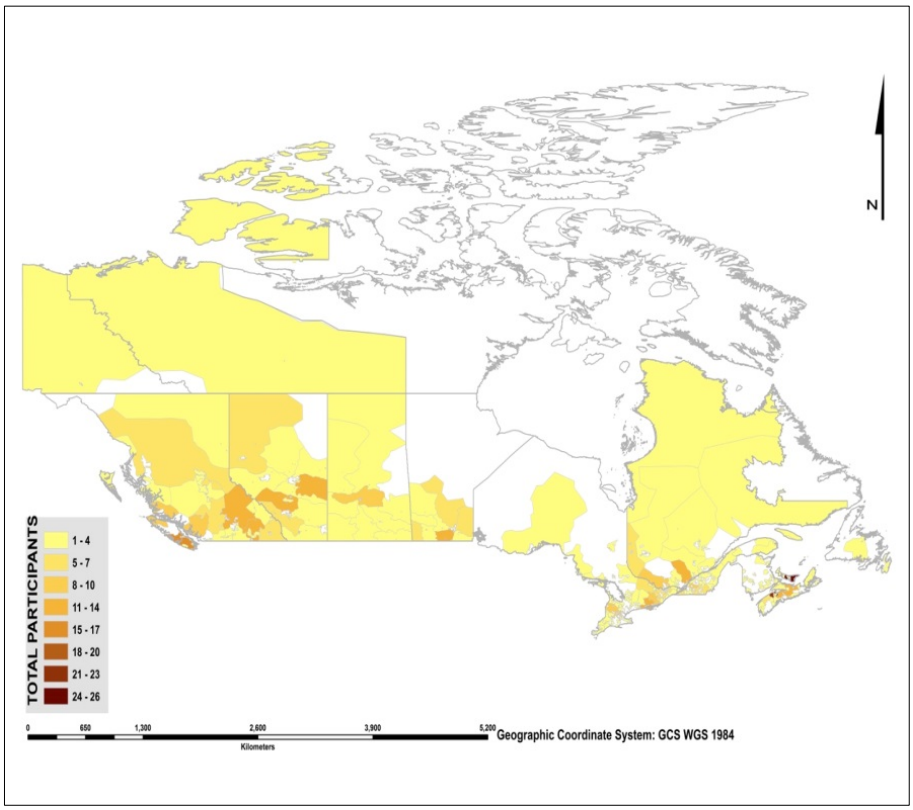

Figure 1: Distribution of respondents by postal code area

Source: Created by authors using ArcGIS

Demographics and farm practices

Our findings found the potential beginning of a transition in new farmer demographics, particularly that more urban youth are entering farming and that many of these are women. In

total, 68 percent of survey respondents did not grow up on a farm. Importantly, 82 percent of those with less than 10 years of farming experience did not grow up on a farm, whereas only 29 percent of those with 11 years or more of experience did not grow up on a farm. These numbers could suggest a potential trend rather than resulting from non-random sampling. Meanwhile, men were more likely to continue farming on a family farm (59 percent) while women were most likely to not have a farming background (60 percent). Regionally, British Columbia had the highest number of farmers from non-farming backgrounds (29 percent) with those on the Prairies being the most likely to continue on the family farm (42 percent).

We also compared the production and marketing practices of respondents who grew up on a family farm to those who did not. Those who did not grow up on a farm were much more likely to engage in direct marketing (49 percent), ecological production practices (89 percent), and production of vegetables (21 percent) and niche products such as berries (8 percent), mushrooms (4 percent), and sheep/goat dairy (4 percent). They also tended to farm small parcels of land with a mode of 10 acres owned and 5 acres leased. Those who grew up on a farm, especially those who are still operating their family farm, were more likely to engage in conventional agricultural practices (32 percent), production of beef (12 percent), grains/oilseeds (12 percent) and dairy (4 percent), and were more likely to sell into export markets (11 percent), supply managed markets (7 percent), or "other" markets such as through contracts, brokers, elevators or auctions (23 percent). They were more likely to be farming larger parcels of land with a mode of 640 acres owned and 160 acres leased.

Those from non-farm backgrounds may be more likely to use ecological practices and direct marketing practices because it is prohibitively expensive to start a farm that requires a large land base and substantial financial investments in equipment and infrastructure. Comparatively, niche production, such as organic horticulture at farmers' markets, is more financially viable on a small parcel of land. Our findings suggest both that men are more likely to inherit a conventional family farm, whereas women are more likely to engage in ecological practices and come from non-farming backgrounds.

Gender also differed significantly from what we expected compared to the 2016 Agriculture Census with 58 percent of survey respondents identifying as female, 41 percent as male, and 1 percent identifying as non-binary or "other". Indeed, until respondents reached the age of approximately 56, women represented the majority of respondents and were nearly double the number of men in the 26-30 and 31-35 age categories. Women in British Columbia were most likely (14 percent) to be involved in the dairy industry, whereas men on the Prairies were least likely (3 percent). Meanwhile, those most likely to produce field vegetables were men in BC (80 percent) and women in Québec (79 percent). These trends are likely the result of provincial marketing boards, existing infrastructure, and soil and climate that make it easier to engage in some kinds of agriculture than others in different regions.

These findings in production practices, production types, and marketing all indicate a potential shift towards local, ecological food especially among women in Ontario, Québec, and British Columbia. However, farmers from across Canada reported challenges in engaging in alternative practices and marketing, as expressed by a 35-year-old female in Alberta producing certified organic field vegetables, poultry, and eggs:

> Wanting to be environmentally-friendly, organic is already seen as different. Being female and raised in a city is the next big reason I am discounted. Getting land to start on and keeping start-up costs down is exceptionally challenging!

Next, we present the obstacles, supportive programs, and the policy recommendations of new farmers from the survey.

Table 1: Ranked importance of obstacles. (N= 1,326, 5 point Likert scale question)

Ranked Obstacles	**Mean**	**Rank**
Affordability of land ownership (L)	4.00	1
Lack of access to capital/credit/other sources of financing (I/C)	3.68	2
Low profitability of the agricultural sector (I/C)	3.45	3
Lack of agricultural infrastructures (abattoir, storage facilities, etc.) (I/C)	3.33	4
Lack of security of demand, markets, or distribution channels (I/C)	3.07	5
Affordability of land leasing (L)	3.01	6
Food safety regulations (I/C).	2.99	7
Affordability of business related training (marketing, accounting, etc.) (K/C)	2.92	8
Lack of appropriate farmland in your region (size, quality, location, infrastructure, etc.) (L)	2. 89	9
Lack of access to extension services (K/C)	2.88	10
Land use and zoning regulations (L)	2.88	11
Difficulty negotiating adequate tenure agreement with landowners (L)	2.88	12
Marketing board regulations (I/C).	2.86	13
Affordability of production related training (K/C)	2.85	14
Affordability of extension services (K/C)	2.76	15
Lack of access to farm production related training (K/C)	2.70	16
Lack of access to farm business related training (marketing, accounting, etc.) (K/C)	2.70	17
Lack of community or social support in your area (K/C)	2.53	18

Land (L) (dark grey); Income and Capital (I/C) (light grey); Knowledge and Community (K/C) (white)

Table 2: Ranking of existing programs (N= 1,326, 5 point Likert scale question)

Ranked existing programs	Mean	Rank
Informal farm workshops, field days, farm tours (K/C)	3.65	1
On-farm training (paid/unpaid apprenticeships and internship) (K/C)	3.64	2
Farmer-to-farmer mentorship programs (K/C)	3.62	3
Workshops and/or Conferences from NGOs (K/C)	3.58	4
Online educational resources (webinars, blogs, etc.) (K/C)	3.48	5
New farmer networking forums (online and in-person) (K/C)	3.37	6
Incubator farms or farmer schools (K/C)	3.20	7
College and/or University agricultural programs or courses (K/C)	3.03	8
Shared initiative (equipment sharing, collaborative marketing or distribution, shared sourcing, etc.) (I/C).	2.99	9
Farm transfer/succession planning programs (L)	2.95	10
Workshops and/or Conferences from governments (K/C)	2.87	11
Farmland protection programs (land reserves, banks, trusts) (L)	2.82	12
Government extension services (K/C)	2.80	13
Land-linking programs (connecting landowners to farmers seeking land) (L)	2.75	14
Government loan and grant programs (I/C).	2.75	15
Development support for co-operatives (I/C).	2.71	16
Alternative financing (crowdfunding, microloans, community economic development investment, etc.) (I/C).	2.70	17
Land access resources (land access guides, lease templates, etc.) (L)	2.70	18
Supply management (I/C).	2.28	19

Land (L) (dark grey); Income and Capital (I/C) (light grey); Knowledge and Community (K/C) (white)

Obstacles

We asked survey respondents to reflect on the barriers they have faced or are facing. The survey questions were categorized under three themes: land, income and capital, and knowledge and community. Table 1 demonstrates the overall ranking of these obstacles. The most significant obstacles participants encountered for each theme were:

- Land: Affordability of land ownership (1st overall)
- Income and Capital: Lack of access to capital/credit/ financing (2nd overall)
- Knowledge and Community: Affordability of business related training (8th overall)

Access to land, capital, and financing represent the most significant challenges facing new farmers (Table 1). For example, this participant highlighted a common challenge for new farmers: “My options for expansion in my immediate area are limited because of a few large farms that are in expansion mode and buying up all the farmland that comes on the market”

(22-year-old male in Nova Scotia producing conventional field vegetables and nursery plants). In addition, this farmer (29-year-old male from Ontario producing pastured eggs and sheep/goats and non-certified field and greenhouse vegetables) explained the impact of financial barriers:

> Financing has also been an issue. We were flatly refused by Farm Credit Canada, and as we wanted to grow well not fast, banks wouldn't look at us, despite having a down payment and one professional income.

Opportunities

Respondents were asked to rate the value and significance of existing programs and opportunities as they relate to the themes of land, knowledge and community, and income and capital (Table 2). The most significant existing programs by category were:

- Land: Farm transfer/succession planning (10th overall)
- Income and Capital: Shared initiatives (9th overall)
- Knowledge and Community: Informal workshops, field days, and farm tours (1st)

The top eight initiatives in Table 2 relate to the theme of knowledge and community, whereas the eight lowest ranked initiatives relate to land and income and capital. This could be due to organizations being capable of supporting knowledge and community needs by addressing the gap left by governments and other institutions. For example, "informal farm workshops, field days and farm tours ranked highest for all respondents, and had the lowest level of provincial disparity, which means that these initiatives are generally considered to be working well for new farmers across the country. This farmer (43-year-old female from Prince Edward Island producing biodynamic field and greenhouse vegetables, fruits, mushrooms, and seeds) praised the informal learning:

> We've created an informal network of farmers who get together in the winter. This is critical for helping us talk about specific challenges on our farms and get advice/suggestions from other farmers. Invaluable!

Organizations such as ACORN (Atlantic Canada Organic Regional Network), the EFAO (Ecological Farmers of Ontario), and Young Agrarians in BC, that support these types of events are likely aware of and better equipped to respond to new farmer needs in the regions where they operate. For example, a 28-year old female farmer from British Columbia who produced non-certified eggs, greenhouse and field vegetables, and fruit explained how Young Agrarians helped them find land:

> We have met numerous farmers through the work of Young Agrarians, which has allowed us to potentially start a lease on a farmer's land who is hoping to succession plan with us.

Programs such as government extension (at 13th, Table 2) ranked lowest in the knowledge and community category indicating that these programs are not doing enough to support new farmers.

Existing initiatives to address the challenges of land and income and capital are less likely be successful as demonstrated by the respondents relatively low ranking of these programs. For example, many respondents were unfamiliar with existing programs supporting succession planning even when these programs existed in their region, such as this farmer, a 36-year-old male from Manitoba producing organic beef and grains/oilseeds:

> I think land linking programs are important, I have never used them and don't know how good they are. We would benefit the most from succession planning, but we haven't done one yet.

Similarly, "shared initiative" including equipment sharing, collaborative marketing or distribution, shared sourcing, etc. ranked highest in the category of income and capital, but was 9th overall (Table 2). Both of these programs are often coordinated by farmers themselves and could be an indication of a lack of adequate and appropriate support from governments.

Due to differences in provincial programs and funding, there were significant interprovincial differences in terms of which programs benefited new farmers. College and university agricultural programs (ranked 8th nationally) were ranked as high as 2nd in Québec but as low as 14th in British Columbia. This is likely due to the numerous agricultural college and university programs offered in Québec, some of which offer the possibility of specializing in organic agriculture, such as the CÉGEP de Victoriaville. This program may also be the reason why respondents from Québec ranked government loan and grant programs 7th (this category was ranked 15th nationally), since graduate of formal training programs like this one have more access to additional provincial grants than other new farmers (FADQ, 2016). Finally, with respect to "farmland protection programs" (ranked 12th nationally), British Columbia ranked this option highest at 9th. This province's Agricultural Land Reserve may provide an important model for other provinces. These differences may point to the value of developing similar programs in other provinces and regions based on the successes in some areas.

Recommendations

Respondents identified what policies and programs they believed would have the greatest impact on their success and should be developed (Table 3). New farmers identified the following key programs by theme category:

- Land: Incentives for landowners to sell or rent land to new farmers (2nd overall)
- Income and Capital: Agricultural infrastructures (4th overall)
- Knowledge and Community: Farmer to farmer mentorship (1st overall)

Table 3: Ranked recommendations (N=1,326, 5 point Likert scale question)

Program recommendations	**Mean**	**Rank**
Farmer-to-farmer mentorship programs (K/C)	4.23	1
Incentives for landowners to sell or rent land to new farmers (L)	4.15	2
Curriculum in primary and secondary schools to promote farming as a career (K/C)	4.10	3
Agricultural infrastructures (abattoirs, machinery coops, other) (I/C).	4.09	4
Direct marketing support and promotion (CSA networks, farmers markets associations, networking with chefs/wholesale purchasers, etc.) (I/C).	4.08	5
Government loan and grant programs (I/C).	4.01	6
On-farm training (paid/unpaid apprenticeships and internships) (K/C)	4.01	7
Informal farm workshops, field days, farm tours (K/C)	4.00	8
Scale appropriate food safety regulations (I/C).	3.99	9
Local food procurement legislation (I/C)	3.98	10
Farm transfer/succession planning programs (L)	3.97	11
Farmland protection programs (land reserves, banks, trusts) (L)	3.96	12
New farmer networking forums (online and in-person) (K/C)	3.93	13
Shared initiatives (equipment sharing, collaborative marketing or distribution, shared sourcing, etc.) (I/C)	3.92	14
Micro-loans and micro-grant government programs (I/C)	3.91	15
Land-linking programs (connecting landowners to farmers seeking land) (L)	3.89	16
Alternative financing (crowdfunding, microloans, community economic development investment, etc.) (I/C)	3.84	17
Workshops and/or Conferences from NGOs (K/C)	3.83	18
Development support for co-operatives (I/C)	3.82	19
More flexible land use/zoning regulations (L)	3.80	20
Incubator farms or farmer schools (K/C)	3.78	21
Income stabilization for farmers in start-up phase (I/C)	3.73	22*
Online educational resources (webinars, blogs, etc.) (K/C)	3.73	23*
Government extension services (K/C)	3.72	24
Land access resources (land access guides, lease templates, etc.) (L)	3.68	25
Insurance programs for various scales and models (I/C)	3.64	26
Workshops and/or Conferences from governments (K/C)	3.44	27
College and/or University agricultural programs or courses (K/C)	3.38	28

Land (L) (dark grey); Income and Capital (I/C) (light grey); Knowledge and Community (K/C) (white).

Interestingly, despite indicating that knowledge was not a significant barrier (Table 1) and listing "farmer-to-farmer mentorship" as the third most successful program in Table 2, the option of "farmer-to-farmer mentorship" ranked as the most important program that should be developed or expanded (Table 3). This may suggest that the demand for farmer-to-farmer mentorship is greater than the availability. Unlike many other professions, the task of coordinating mentorship relationships and the costs associated with establishing these relationships are often the burden of the individual farmers, whether they be mentor or mentee, and respondents may be looking for more support in developing these critical partnerships.

The second overall priority for "incentives for land owners to sell or rent land to new farmers" is consistent with the affordability of land ownership ranked as the top obstacle (Table 1), and land related initiatives ranking low as a successful existing program, (Table 2). The third overall priority to provide "curriculum for primary and secondary schools on farming as a career" is somewhat surprising. This response likely indicates that participants are cognizant that farming is typically neglected as a career path, and that getting young people interested in farming may require exposing them to the sector at an early age by leveraging existing educational institutions. It should be noted that even the lowest ranked options obtained relatively high scores, which are indicative of a need to develop a multitude of initiatives.

We also compared how farmers with 10 years of experience or less and farmers with 11 years or more of experience prioritized their recommendations. Farmers with less experience ranked the importance of support for direct marketing and scale appropriate food safety regulations relatively higher than farmers with more experience. This is consistent with farmers with less experience being much more likely to engage in the direct marketing of animals or value-added products and thus have likely had more experience running up against infrastructure problems relating to access to abattoirs or commercial kitchens. As this respondent indicates (a 44-year-old male from Alberta producing conventional beef, bees, grains/oilseeds using Holistic Management),[5] food safety regulations are challenging for processors and farmers alike:

> Access to processing is the single biggest obstacle to the direct market side of my business and food safety regulations are what is hindering the processing sector.

Many of the food safety regulations differ by province and depend where that farmer intends to sell. However, navigating food safety programs designed for large and industrial scale farmers poses challenges regardless of how experienced a farmer is or in which province they are farming.

[5] Holistic Management originated as a planning tool for rotational grazing on pastureland, but has expanded recently as a farm management practice and decision-making tool to help all farmers make "socially, ecologically and financially sound decisions" (Holistic Management Canada, 2016).

Discussion: Building a national food policy for new farmers

Our survey represents an important first step in discussing what is and is not working for new farmers and highlights the often-overlooked perspectives of new farmers in Canada. Overall, we found that land access, income stability, low profitability (including the lack of appropriate infrastructure and food safety regulations), and high investment requirements emerged as primary obstacles. In contrast, knowledge sharing and community support emerged as areas where existing programs are relatively more effective, but where respondents still saw room for improvement. As such, we draw on our survey results and existing literature from other research in Canada to present a vision of a national food policy that supports new farmers. Our four recommendations come from the intersection of opportunities to build on existing programs and the most impactful changes needed to help all new farmers.

As its overall goal, we suggest that a national food policy should prioritize policies that build a just and sustainable food system by integrating agroecological principles in its mandate in order to build on the momentum of new farmers who demonstrated interest in both ecological farming methods and community-based markets, as demonstrated in our survey results. A national food policy would work in conjunction with existing programs while building on federal, provincial, and territorial partnerships, thus we have prioritized the development of opportunities at multiple levels of government (De Schutter, 2012). We also examine how our recommendations address the four themes presented by the Government of Canada during their consultation process and suggest opportunities to review existing agricultural and food policies and programs. As the overall strategic policy of the Government of Canada, we suggest that the national food policy would set the agenda for various federal and provincial departments and therefore has the potential to change the national context in order to facilitate the entry of new farmers.

Protect agricultural land and ensure accessibility for new farmers

Accessing affordable and quality land was the most significant issue raised by respondents in the survey. New farmers need a national food policy that ensures farmland is protected against non-farm uses and farmland speculation, while being accessible to the new generation of producers. This would meet the Government of Canada's (2017) suggestion that a national food policy should support growing of more high-quality food while also increasing access to affordable food by increasing the number of farmers feeding local communities. We suggest that this will also require de-emphasizing export agriculture and supporting local agriculture which has the potential to be more stable pricing for eaters as it not vulnerable to currency variability (Elton, 2016). While some communities are working to develop farmland trusts (Community Farms Program 2010), Canada needs federal leadership to develop a national farmland succession strategy. Establishing agricultural land trusts could include eliminating non-agricultural development of all classes of farmland, a cap on the price agricultural land

can sell at above agricultural value, and limiting land acquisitions by private investment funds (Desmarais, Qualman, Magnan, & Wiebe, 2017).

Similarly, Québec's Banque de terres offers land-linking services to connect land owners with aspiring farmers and develop rental agreements (Wilson & Martorell, 2017). Initially developed by a local municipality, in 2017 the provincial government announced it was taking over the project so these services would be offered to all regional county municipalities in Québec. These regional and non-profit programs could be supported nationally and expanded to all of the provinces so that new farmers in all provinces have access to locally relevant services and resources.

Incentives and programs that facilitate and encourage the use and transfer of agricultural land from landowners to new farmers would help protect farmland. This may include providing federal incentives for landowners that sell or rent land to new farmers. The Ontario Farmland Trust has an Agricultural Gifts Program that creates incentives for the donation of agriculturally significant lands and which may be worth expanding to other provinces (Community Farms Program, 2010). Exempting capital gains tax on farm property in farm transfers to new farmers, regardless of whether the buyer is a child of the landowner, could encourage farmers to engage in succession planning. Since many older farmers develop a retirement plan around the sale of their farm, developing a national retirement savings program for farmers would help ensure that retiring farmers are not forced to rely solely on land assets for retirement and would allow them to engage in succession planning more freely.

Ensure training and education are available and accessible

Despite growing interest, we found that education and training programs in agroecological practices are unevenly distributed in Canada. The federal government's suggestion that the national food policy include an emphasis on conserving soil, water, and air and improve health and food safety (Standing Committee on Agriculture and Agri-Food, 2017) could be addressed by supporting new agroecological farmers who are committed to ecological practices, human health, and supporting community economies. In particular, we suggest that Canada's new agricultural framework, the *Canadian Agricultural Partnership*, should include a new farmer and farm renewal pillar and associated funding. This could ensure that information on the realities of new farmers are meaningfully researched and barriers addressed.

Supporting training for new farmers could also include extending existing federal trade-related job training programs and funding such as the Canada Job Grant program to farmers, supporting existing training and mentoring programs that recognize the importance of farmer-to-farmer knowledge transfer and that deliver locally adapted services to new farmers by making these more affordable and accessible. Accredited farmer mentors could receive federal funding to conduct internships and be supported by the development of standardized training, educational curriculum and accreditation system(s), and thus support farmer-to-farmer mentorship.

Additionally, existing mentorship programs such as ACORN's Grow a Farmer Mentorship Program and Young Agrarians Mentorship Network could benefit from additional funding to expand their programs. Incubator farms and farm schools are highly rated by those who have access to these programs; however, they are very limited in Canada, therefore more support and funding for the development and sustainment of incubator farms across Canada would benefit new farmers, particularly in regions where these programs do not exist. Finally, not all new farmers are growing in rural communities and more and more farming is happening in cities and peri-urban areas. A national food policy could support the development of urban farming demonstration and training projects to recruit and attract first generation farmers from urban areas.

New farmers are not the only ones who need educational support and resources. Experienced farmers often have production questions that would benefit from access to agricultural consulting and extension services, professional development opportunities, and support for farmer-driven on-farm research. A national food policy could build upon Canada's strong history of regional public research farms by reopening and refunding experimentation farms across the country. At the same time, public research conducted by universities and government research stations would need to be widely disseminated and relevant to the needs of new farmers. This could be complemented by funding for on-farm research programs run by farmers themselves. Additionally, while organic farming is growing, the research funding is not keeping up with demand; thus, an increase in research capacity and technical support pertaining to organic agriculture is needed. In its list of 37 research activities, the Organic Science Cluster II (2013 – 2018) includes only seven partnerships with universities across Canada, indicating a need to develop more participatory agricultural science research in agroecological farming in Canada (OACC, n.d.).

Ensure financial resources are accessible to diverse farmers

Starting a farm is expensive due to the high costs of land, infrastructure, and equipment, but new farmers have difficulties accessing capital to finance the necessary investments. As a federal crown corporation, Farm Credit Canada (FCC) provides financing to farmers, but its mandate needs to be realigned to support food sovereignty and make financing available to a wider diversity of new farmers engaging in different types, scales, and stages of farming operations. In particular, FCC could develop a national micro-lending program and a national grants program that support new farmer investments at the start-up or expansion phase. This would support the Government of Canada's goal to grow more high-quality food (2017) by increasing the number of farmers in Canada.

New farmers face additional financial hardships that make it difficult to establish farms, including growing levels of student debt, low profitability in the agricultural sector, and increasing costs of living. Programs such as a national student loan debt forgiveness program for new farmers, as well as self-employment supports and benefits, would support new farmers in the early years of establishing a business. Three potential strategies exemplify support for new farmers by reducing the financial burdens they currently face: a guaranteed

basic income; implementation of a low cost, nation-wide, universal day care program (especially in rural areas); and improved parental benefits for self-employed individuals. Such programs would require cooperation between all levels of government, but would benefit farmers by decreasing economic uncertainty and providing stability.

New farmers with viable businesses are needed to meet the public demand for a sustainable, healthy, and affordable Canadian food system. By engaging in short, localized distribution chains, good food can be made accessible to eaters without externalizing the environmental, social and health costs of production. In this way, wealth is retained by farm operators, workers, and local input suppliers—not captured by corporate suppliers, processors, and distributors. A national food policy that supports farmer livelihoods should promote direct marketing while re-evaluating regulatory regimes to reduce obstacles to direct marketing. It should also protect supply management systems and farmer-controlled marketing boards by reforming new entrant programs, quota distribution systems, off-quota exemptions and other regulations to promote greater production diversity and to maximize the number of farmers involved (Girouard, 2014; Holtslander, 2016).

Support shared infrastructure and scale-appropriate regulation

The uneven distribution of agricultural infrastructures and scale-appropriate regulations both restrict farm development and make it difficult for new agroecological farmers to produce healthy food (Laforge, Anderson, & McLachlan, 2017; McMahon, 2009). Many of the new farmers in this study make a living by direct marketing, and they often inadvertently push the boundaries of existing regulations. These federal and provincial food safety regulations are usually designed for industrial sized farms and abattoirs. However, the food contamination risks for large operations are different from those of small farms and processors, and adherence to these regulations can present a financial barrier for small-scale farmers (Miewald, Hodgson, & Ostry, 2015). As food safety regulations become more onerous and expensive to adhere to, more and more small-scale processing facilities have been forced to shut down, resulting in increased travel time for farmers, higher costs, and greater stress to animals in transport (Miewald et al., 2015). Additionally, the lack of infrastructure can also be a barrier for vegetable producers who may be forced to invest in private facilities, since public resources are rare.

While provinces and municipalities are more directly engaged with infrastructure and regulations as they apply to new farmers, these policies respond to or are framed by federal priorities and guidelines. Since the provinces must already follow Canadian Food Inspection Agency guidelines, there is the potential for a national food policy to re-evaluate regulatory regimes to ensure that they are not unnecessarily onerous to small-scale producers. For example, these guidelines could recognize the importance of the trust-based relationship between consumers and direct marketers that makes traceability more transparent than in the conventional food system. This could include eliminating labelling and other traceability costs that are required in the current guidelines for direct marketers. A national food policy should also create a provincially-administered funding stream to support the development of

community-owned abattoirs, food hubs, cooperatives, and other enterprises that provide processing and amalgamation services to producers. This could help address the differences in infrastructure and regulations between provinces and create a more even playing field for all Canadian farmers.

Conclusion: Building food systems for all Canadians

Farming identities and behaviours are (re)produced through the power and knowledge dynamics of the Canadian food system and neoliberal, productivist, and industrial influences have resulted in a trend towards fewer farmers and larger farms. However, the rise in female farmers is challenging these conventional farming narratives, as they are more likely to engage in agroecology while their very presence as women already disputes dominant farmer narratives (Monllor, 2012; Sachs et al., 2016; Trauger, 2004). New farmers in this study are interested in building a lifestyle that meets their aspirations for a holistic approach to environment, social, and economic justice. However new farmers must still contend with systemic barriers including difficulties accessing land, applying for financing, and making a livelihood. Their engagement in farmer-to-farmer and other informal knowledge sharing, as well as their interest in direct marketing, provide an opportunity to build networks of both eaters and other producers that contribute to a larger food movement.

In his 2012 report on the mission to Canada, the UN Special Rapporteur on the Right to Food called for a comprehensive national food policy that integrated federal, provincial/territorial, and municipal levels (De Schutter, 2012). We agree that integrating all levels of government, as well as non-governmental organizations and associations, is necessary to create a national food policy that will support new farmers. Our findings found significant variation among the supports available by province depending on provincial and municipal government programs as well as programs offered by other non-profits and universities. These successes could be built on in other provinces, including the building of Local Food Acts such as those developed in Ontario and Québec in 2013 that include food literacy and ecological agriculture programs and support the development of local food economies (Desmarais & Wittman, 2014; Government of Ontario, 2013).

A national food policy should support partnership and capacity-building among community organizations and local governments as they work towards protecting farmland, supporting new farmers, and increasing local food production. Funding to scale-up, expand, replicate and sustain successful programs should be made available alongside funding to innovate and experiment with community-based approaches to supporting new farmers. In addition, because new farmers are increasingly coming from non-farming backgrounds or communities, urban municipalities should also be recognized by the federal government as strategic locations to attract and train new farmers. In addition, the UN report emphasizes that a national food strategy should be regularly updated in order to address changes that may arise over time. Without integrating feedback from a multi-stakeholder governance mechanism and adjusting the policy as needed, we believe that a national food policy will fail to help new farmers whose circumstances are often changing at a rapid pace. We were

pleased to see that a recent Standing Committee on Agriculture and Agri-Food (2017) report recommended that the national food policy include an additional pillar on the next generation of farmers, although it remains to be seen whether this recommendation will be enacted.

The success and relevance of a national food policy for new farmers depends on having an open and ongoing process that incorporates a wide diversity of perspectives on food. For example, a national food policy needs to address ongoing issues regarding Indigenous land rights and self-determination (Wilson & Martorell, 2017). A national food policy also needs to take into consideration issues of racial justice and economic inequality that prevent some aspiring farmers from entering agriculture.

Using a food sovereignty and agroecology framework will help address these injustices by emphasizing the rights of farmers and other food workers, while also protecting the environment and resisting corporate, neoliberal, and productivist food and farming systems (Desmarais & Wittman, 2014; Méndez, Bacon, & Cohen, 2013; Wittman, 2010). Finally, engaging new agroecological farmers means working with all food producers, whether they are agroecological, conventional, or both since it is only through working in partnership that the food system be transformed.

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Article de revue

Pesticides: Le Talon d'Achille des politiques alimentaires canadiennes et québécoises

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Résumé

Comment expliquer que le projet de politique alimentaire du Canada ignore le dossier des pesticides alors que la récente politique bioalimentaire du Québec évoque vaguement la question, mais sans engagements significatifs? Pourquoi évacuer ainsi l'analyse des enjeux et des effets sanitaires et environnementaux préoccupants des pesticides et notamment du glyphosate, premier pesticide au monde, en croissance exponentielle, qui, déclaré cancérogène probable par le Centre international de recherche sur le cancer (CIRC) de l'Organisation mondiale de la santé (OMS) (IARC, 2015), constitue au Canada 56 pour cent des pesticides agricoles et 44 pour cent de ceux du Québec (Santé Canada, 2017a; MDDELCC, 2017)?

Presqu'omniprésent dans les champs, les cours d'eau agricoles et dans 30 pour cent des aliments au Canada, le glyphosate est l'objet de vives controverses scientifiques et citoyennes dans le monde entier (Robin, 2008, 2018). En Europe, sa ré-autorisation, suite à deux ans de vives controverses a été limitée à 5 ans. Aux États-Unis, 3,500 victimes d'un lymphome non-

[1] Cet effort de compréhension des enjeux et des impacts des herbicides à base de glyphosate (HBG), témoigne des recherches du CREPPA, le collectif de recherche écosanté sur les pesticides, les politiques et les alternatives, réunissant une vingtaine de chercheurs-es universitaires de sociologie, biologie, agronomie, médecine, éco-toxicologie, anthropologie et phyto-génétique et plusieurs ONG. Ces travaux ont bénéficié de plusieurs subventions de recherche: grands débats de l'Institut Santé et société (ISS-UQAM), Faculté des sciences humaines de l'UQAM (Pafarc1, service aux collectivités et Pafarc2, Alternatives aux pesticides), CIRODD de l'École Polytechnique, RRSPQ (Réseau de recherche en santé des populations), FDE d'Environnement Canada et FRQSC pour équipe émergente.

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hodgkinien attribué au Roundup, premier herbicide à base de glyphosate (HBG) en importance au monde, poursuivent en justice son principal fabricant Monsanto (Gonzague & Michel, 2017) alors qu'en France et en Argentine, des poursuites pour malformations congénitales s'amorcent également contre Monsanto (Foucart, 2018).

Cet article examine, dans une approche interdisciplinaire et intersectorielle, les facteurs de la montée en puissance des HBG, leurs principaux effets sur l'environnement et la santé, et les lacunes d'évaluation et d'encadrement des pesticides, contribuant à leur diffusion massive et à leurs effets. Il met aussi en évidence que les projets et politiques alimentaires canadiennes et québécoises, centrés sur le développement de modèles agro-industriels intensifs et technicisés d'exportation soumis à une conception de croissance économique, sont peu compatibles avec les exigences de protection de la biodiversité, de la santé et de la sécurité alimentaire. Or, dans un contexte de globalisation des marchés et d'accords de libre-échange avec l'Europe, plus soucieuse du Principe de Précaution et de droits des consommateurs, la négligence de ces enjeux écologiques et sanitaires risque d'en constituer le talon d'Achille.

Mots clés: pesticides, herbicides, glyphosate, politiques publiques, politique alimentaire, politique bioalimentaire, santé, environnement, Canada, Québec

Introduction

Bien que le Canada ait ré-homologué le glyphosate 6 mois avant l'Union Européenne, il a pris sa décision en toute connaissance de cause. Déjà en 2015, le CIRC de l'OMS avait déclaré le glyphosate, cancérogène probable chez l'humain (IARC, 2015). Et le Canada ne pouvait guère ignorer les scandales sanitaires plombant la réputation de Monsanto, notamment les 20 000 victimes des BPC d'Anniston aux États-Unis et celles de l'agent orange utilisé comme défoliant au Vietnam. Il ne pouvait ignorer non plus les nombreuses accusations de propos mensongers, de manipulations et d'études inconsistantes voire fallacieuses, ni les documentaires et livres d'enquêtes de Marie-Monique Robin, *Le Monde selon Monsanto* (2008), *Notre Poison quotidien* (2011) et *Le Roundup face à ses juges* (2017), diffusés à des millions de personnes, et qui avaient déjà contribué à transformer "une marque commerciale en marque de disgrâce" (Vandelac, 2018). En outre, à l'hiver 2017, filtraient déjà les informations sur les *Monsanto Papers* et s'organisait, en Europe, l'opposition citoyenne de plus de 1,3 millions de personnes au renouvellement du glyphosate.

La double toxicité, au sens propre et figuré, des HBG et du Roundup de Monsanto était un secret de polichinelle. Rappelons qu'un brevet émis en 1964 qui en fait un précurseur de chélateur de métaux, avant que le glyphosate soit utilisé en 1974 comme principe dit actif de formulations commerciales d'HBG comme le Roundup et qu'il soit breveté en 2010 comme antibiotique, aux effets suspectés pour le microbiome (Mao et al., 2018). Le glyphosate n'est jamais utilisé seul dans les champs mais bien inclus dans des formulations commerciales très

rarement analysées par les instances réglementaires (Séralini, 2015). Or, plusieurs études ont mis en évidence que les co-formulants de 8 des 9 principaux pesticides au monde seraient jusqu'à 1000 fois plus toxiques que l'ingrédient dit actif dont les effets peuvent être observés en deçà des seuils réglementaires (Mesnage, Defarge, Spiroux de Vendômois, & Séralini, 2014, 2015). En outre, les effets observés lors d'études animales de perturbation endocrinienne et de dommages au foie et aux reins, ainsi que les impacts étudiés sur la dégradation des sols et de la biodiversité figurent parmi les effets des HBG.

Ces risques ont-ils été pleinement pris en compte par le principal fabricant et par les instances évaluatives et réglementaires? Rappelons que "les réglementations américaines et européennes ne demandent aux industriels aucune étude sur les effets sanitaires à long terme" (Horel & Foucart, 2017). Or, les effets chroniques se manifestent à long terme. En outre, soulignait une toxicologue en chef de Monsanto en novembre 2013, "Vous ne pouvez pas dire que le Roundup n'est pas cancérogène, car nous n'avons pas fait les tests nécessaires pour le dire " (Foucart & Horel, 2017).

Au sens figuré, la toxicité des HBG est révélée par les "Monsanto Papers " témoignant des stratégies de camouflage et de désinformation de la firme, qui, pour éviter d'ébruiter la dangerosité du Roundup, interfèrent avec les processus d'évaluation scientifique, et empoisonnentles règles élémentaires de la science, de la démocratie et de l'évaluation réglementaire au profit d'intérêts industriels (McHenry, 2018). Ces milliers de documents internes de la firme, rendus publics par la justice américaine, dans la foulée des poursuites contre Monsanto de plus de 3500 victimes d'un lymphome non-hodgkinien attribué à ce désherbant (Gonzague & Michel, 2017), ont fait la une des médias européens et nord-américains (Foucart & Horel, 2017, 2017a, 2017b, 2017c; Foucart, 2017; Gillam, 2017). Ils ont mis en évidence les stratégies de Monsanto pour présenter comme indépendantes des études scientifiques co-rédigées par des salariés de la firme (Lesnes, 2018), pour utiliser le nom de scientifiques "ghost-writer" pour signer des articles écrits par des employés de Monsanto, pour miner la réputation de chercheurs indépendants et orchestrer le retrait d'un article scientifique sur les effets nocifs du Roundup, rémunérant au passage le directeur de la revue où on a retiré l'article (Foucart, 2017; Gillam, 2018; Krimsky & Gillam, 2018).

Les allégations d'ingérences dans l'évaluation scientifique et gouvernementale ont même valu aux lobbyistes de Monsanto, le 28 septembre 2017, suite à leur refus de comparaître pour s'expliquer à ce sujet, de se voir retirer par les parlementaires leur droit d'accès au Parlement Européen, un évènement sans précédent (Neslen, 2017). C'est par ailleurs le lendemain de la publication dans *Le Monde* du plagiat des instances d'évaluation européenne, reprenant presque mot à mot des documents de Monsanto, que l'Union Européenne a renouvelé de justesse, le 27 novembre 2017, le glyphosate, et pour 5 ans seulement. Cette décision a fait suite au vote inattendu, contre son propre gouvernement, du ministre allemand de l'Agriculture, alors que la France, l'Italie, la Belgique et l'Autriche voulaient limiter l'autorisation à 3 ans (Foucart & Horel, 2017).

Bien que les agissements de Monsanto, principal producteur d'HBG aient été largement documentés depuis plus d'une décennie (Séralini, Mesnage, Defarge & Spiroux de Vendômois, 2014; Séralini, 2005; Robin, 2008, 2018), et bien que la présence croissante de ces pesticides dans les cultures, les sols, les eaux et aussi dans le corps humain, via leurs résidus dans les aliments, constitue un problème de taille, paradoxalement Agriculture et Agroalimentaire Canada (AAC) n'a même pas évoqué le dossier des pesticides lors du lancement de ses consultations sur *Une politique alimentaire pour le Canada*, un mois après la décision de l'ARLA.

Devant le scandale sanitaire sur la santé publique et sur l'intégrité de la recherche révélés par les "Monsanto Papers", comment expliquer que des instances responsables comme Santé Canada aient fait l'impasse sur des pratiques aussi contraires à l'éthique scientifique, au risque d'éroder la crédibilité même des dispositifs publics et d'accroître la méfiance des citoyens. Et comment, vu les risques pour l'environnement, la santé et l'alimentation de la hausse exponentielle du principal pesticide en usage au Canada, les responsables de la politique alimentaire canadienne ont-ils pu balayer ainsi du revers de la main, un dossier aussi crucial pour une alimentation viable? Cela est d'autant plus étonnant que la politique alimentaire canadienne vise, en écho au Rapport Barton (2017), une forte hausse des exportations agricoles du Canada, ce qui risque de se heurter aux exigences des partenaires d'Europe, sans doute peu enclins à avaler les couleuvres des importations alimentaires gavées au glyphosate, après en avoir limité le renouvellement sur leur territoire.

La sécurité alimentaire ne repose pas sur les pesticides

Ces questions touchent désormais le monde entier. Quelques mois avant les débuts de la consultation d'AAC fin janvier 2017, l'influence indue des multinationales sur les gouvernements et sur leur encadrement des pesticides avait été vertement critiquée par le Rapport conjoint de la Rapporteuse spéciale sur le Droit à l'alimentation aux Nations-Unies écrit en collaboration avec le Rapporteur spécial sur les incidences sur les droits de l'Homme de la gestion et de l'élimination écologiquement rationnelles des produits et déchets dangereux (Nations Unies, 2017). Selon ces auteurs-es, "L'affirmation de l'industrie agrochimique selon laquelle les pesticides sont nécessaires pour assurer la sécurité alimentaire est aussi inexacte que dangereusement fallacieuse" (Ibid, p.22). Ils ajoutent, "Les pesticides, dont l'usage fait l'objet d'une promotion agressive, posent un problème du point de vue des droits de l'Homme à l'échelle de la planète, et leur utilisation peut avoir de très graves répercussions sur l'exercice du droit à l'alimentation" (Ibid, p.3). Ce rapport, rappelant que "les doses d'utilisation ont considérablement augmenté au cours des dernières décennies", ajoutait que dans le monde, les pesticides seraient à "l'origine de 200 000 décès par intoxication aiguë chaque année au total, dont 99 pour cent surviennent dans les pays en développement" (Ibid, p.3).

Ce rapport faisait alors échos à plusieurs autres documents émanant de grandes agences internationales traitant des problèmes majeurs au sein des secteurs agricole et alimentaire, tout en

mettant en évidence les écueils de ces politiques et modes de production. Ainsi, un groupe international d'experts sur les systèmes alimentaires durables soutenait que " the modern agriculture is failing to sustain the people and resources on which it relies, and has come to represent an existential threat to itself." (IPES Food, 2016, p.9). Plus récemment, le Directeur général de la FAO soulignait que :

> L'agriculture est aujourd'hui parvenue à un tournant décisif. Le modèle agricole dominant actuellement appliqué est extrêmement problématique, non seulement en raison des dommages occasionnés par les pesticides, mais aussi de par l'incidence de ces produits sur les changements climatiques, la réduction de la biodiversité et l'incapacité de ce modèle à assurer la souveraineté alimentaire. (Nations Unies, 2017, p.25)

Le rapport *Perspectives territoriales mondiales* de la Convention des Nations-Unies sur la lutte contre la désertification (CNULCD), ajoutait que le "modèle actuel de l'agro-industrie profite à quelques-uns aux dépens de beaucoup". Or, avec des "terres dégradées et polluées axées sur les rendements à court terme" et les "schémas actuels de production, de distribution et de consommation alimentaires", un consensus émerge, celui d'un système alimentaire brisé et inefficace menaçant la santé humaine et la durabilité environnementale (UNCCD, 2017, p.8).

Dans ce contexte, le Canada, soucieux d'une image internationale avant-gardiste mais avide consommateur de pesticides, va-t-il faire prévaloir, pour des décennies encore, une conception agroindustrielle, centrée sur de grandes monocultures d'exportations à base de pesticides, jugées dépassées en raison de leurs ravages sur la santé, l'environnement et la vitalité rurale, comme l'évoquait déjà en 1962, *Silent Spring* de Rachel Carson?

Un secteur agroalimentaire, réduit au rôle de "moteur de croissance économique"?

La consultation sur la politique alimentaire canadienne, et notamment les termes mêmes du sondage auprès de la population, confirment la primauté d'objectifs économiques, centrés sur le développement des marchés d'exportations, tout en reléguant au second plan une " vision à long terme pour la réalisation des objectifs sanitaires, environnementaux, sociaux et économiques en matière d'alimentation " (Gouvernement du Canada, 2017a). Cela conforterait les tendances actuelles, où la valeur des exportations des cultures agricoles canadiennes a doublé au cours des dix dernières années, pour dépasser, en 2016, les 24 milliards de dollars, auxquels s'ajoutent deux milliards de dollars liés aux exportations de pesticides, d'engrais et autres produits chimiques agricoles, destinées à 97 pour cent aux États-Unis (Gouvernement du Canada, 2017).

L'actuel projet de politique alimentaire canadienne propose donc, et c'est là l'un des quatre thèmes du sondage de la consultation publique, de profiter d'une hausse de la demande pour soutenir l'innovation et accroître les exportations afin de devenir un "fournisseur

alimentaire" à l'échelle mondiale (Gouvernement du Canada, 2017a). Comment envisager de telles perspectives, quand le soutien réel du Canada à ses agriculteurs est l'un des plus faibles des pays de l'OCDE, soit 0,4 pour cent du PIB en comparaison de 0,7 pour cent en moyenne, et que les modalités d'attribution encouragent notamment la surconsommation d'intrants, souligne un récent rapport de l'OCDE (Desrosiers, 2018). En outre, ces perspectives d'exportation massive tranchent quelque peu d'avec les réflexions sur la sécurité alimentaire exigeant de préserver les cultures de proximité et refusant de réduire la production alimentaire à une simple marchandise comme les autres (Benhammou, 2009 ; FAO, 2015).

Le projet de politique évoque certes l'importance d'aliments sains, nutritifs et de qualité supérieure pour tenter de mettre en valeur la réputation du Canada et son rôle dans le développement des marchés internationaux. Cependant, l'étroite conception de la salubrité et du caractère nutritif des aliments, ignorant les usages massifs de pesticides et d'antibiotiques donnés aux animaux, et leurs effets sur la biodiversité, ainsi que l'absence d'étiquetage clair et complet ne passe pas inaperçue, notamment dans les marchés européens. En témoigne ces extraits du Rapport de la commission indépendante (Angot et al., 2017) sur *L'impact de l'Accord Économique et Commercial Global entre l'Union européenne et le Canada (AECG/CETA) sur l'environnement, le climat et la santé*, remis le 7 septembre 2017 au Premier ministre de la France.

> Du côté canadien, en dépit de la montée des préoccupations environnementales depuis le début des années 2000, la protection de l'environnement n'est pas encore au coeur de la politique agricole canadienne et les exigences environnementales demeurent bien moindres que dans l'UE… le Canada se situe loin derrière les États-Unis, l'Union européenne ou l'Australie en ce qui concerne les lois et politiques environnementales, qu'il s'agisse de la qualité de l'eau et de l'air, des pesticides et substances toxiques, du changement climatique ou de la biodiversité. Pour les pesticides, le Canada autorise encore 46 substances actives qui ont été interdites depuis longtemps dans les autres pays. (p. 46)

La politique bioalimentaire du Québec, conçue d'abord comme outil de développement économique pour l'agroalimentaire, les pêcheries, les industries de transformation et les détaillants (MAPAQ, 2016, 2016a, 2016b), et visant surtout à arrimer les besoins de croissance des entreprises avec les consommateurs et à développer de nouveaux marchés, a-t-elle pris en compte les exigences en vigueur en France et en Europe? Les conceptions "d'environnement" servent-elles d'abord d'argument de "verdissement promotionnel" pour se démarquer des compétiteurs? Et comment les perspectives santé, centrées sur la salubrité des produits, peuvent-elle ignorer l'approche globale et intégrée de ces enjeux? D'ailleurs, les documents de consultation n'évoquent pas les préoccupations sanitaires ou environnementales pour encourager le développement de l'agriculture biologique, mais essentiellement son rôle de nouveau créneau

de croissance économique…(MAPAQ, 2016, 2016a). De même, si la politique bioalimentaire reconnaît les préoccupations des consommateurs soucieux de réduire les impacts nocifs des pesticides (MAPAQ, 2018), et projette d'accroître le soutien pour doubler les cultures biologiques de 2 pour cent à 4 pour cent (Ibid, p.18), néanmoins aucune mesure significative ne permet ni de diversifier les pratiques agricoles, ni de réduire les principaux pesticides en usage.

Au Canada comme au Québec, les projets et les politiques alimentaires demeurent, en dépit de prétentions d'innovations, centrés sur des modèles de monocultures à engrais et pesticides, destructrices des sols, de la biodiversité et de la qualité de l'eau, en plus d'accentuer les changements climatiques, bref des modèles, qui souvent couplés à la production animale intensive, voient leur viabilité profondément remise en question (Nations Unies, 2017; UNCCD, 2017; IPES Food, 2016). En dépit de vertueux discours sur la santé et l'environnement, ces projets et politiques alimentaires, menés à l'ombre des multinationales des semences, des OGM et des pesticides, dont ils confortent l'influence, risquent fort, dans un contexte d'accords de libre-échange avec l'Asie et avec l'Europe, de contribuer à la prolifération croissante des pesticides. Par ailleurs, si, comme l'y autorise la CETA, l'exportation de porc du Canada vers l'Europe était multipliée par 13, on risquerait fort, pour nourrir ces animaux et absorber les lisiers, de multiplier les cultures de maïs et de soja transgéniques, gavés d'HBG et d'aggraver les problèmes liés (Angot et al., 2017).

Hausse exponentielle des ventes de pesticides dans le monde et au Canada

La vente de pesticides dans le monde, en constante augmentation, particulièrement depuis les deux dernières décennies, a atteint 3.5 milliards de kg d'ingrédients actifs (kg i.a.) par année dans les années 2010, la Chine, les États-Unis et l'Argentine utilisant alors près de 70 pour cent de ces pesticides (Pretty et Pervez Bharucha, 2015, p.154).

Le Royaume-Unis, l'Italie et même la France et le Danemark, grands consommateurs de pesticides ont réduit de façon marquée leur utilisation, suite notamment à des changements de politiques (Pretty et Pervez Bharucha, 2015, p.154). Le Canada, pour sa part, suit un mouvement inverse au point d'avoir enregistré une hausse de 157 pour cent des ventes de pesticides dans le secteur agricole entre 1994 et 2014 (OECD, 2013, 2017), un secteur où se concentraient 74.3 pour cent des pesticides en 2014, en hausse de 14 pour cent depuis 2008, première année de publication des statistiques sur les ventes de pesticides au Canada (Santé Canada, 2017a, 2011).

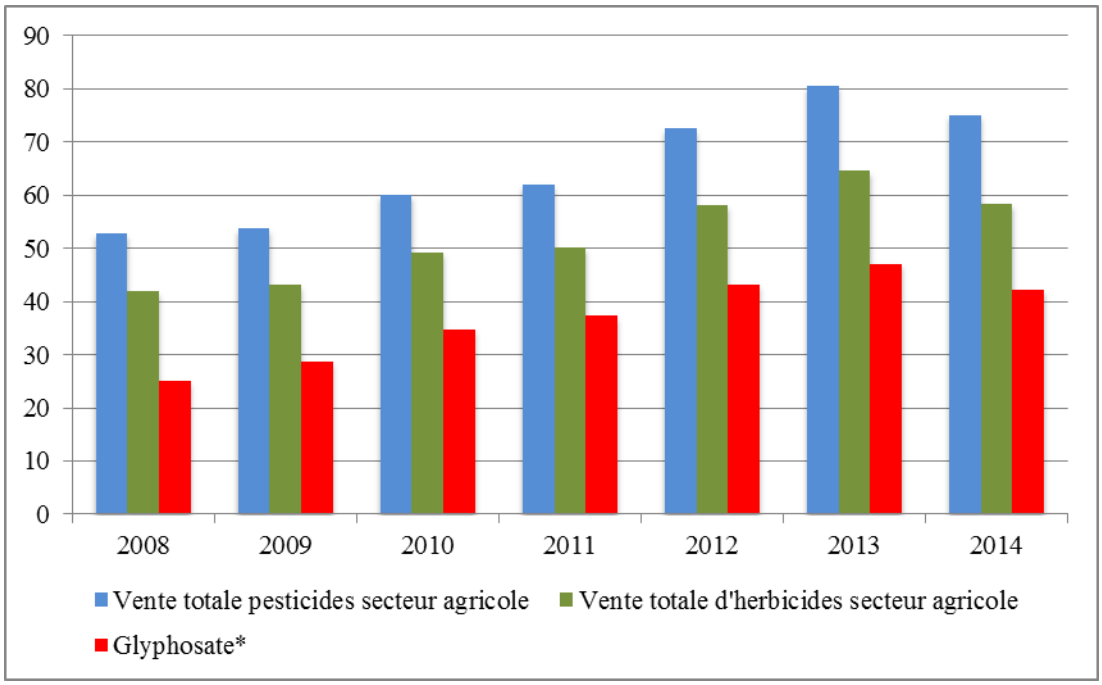
Le Canada a même homologué 1000 nouveaux pesticides entre 2008 et 2014 pour en compter 6866 en 2014 (Santé Canada, 2017a, 2011). Cependant, 10 ingrédients actifs seulement, dont le glyphosate trônant depuis 2008 à la première place des ingrédients actifs de pesticides les plus vendus au Canada, constituaient 66 pour cent des 101 millions de kg. i.a. de pesticides vendus en 2014 au Canada (Santé Canada, 2017a, p.2), témoignant d'une forte concentration des ingrédients vendus et des firmes impliquées.

On observe les mêmes tendances au Québec, avec une forte hausse des ventes de pesticides agricoles depuis 1992, sur des surfaces agricoles en constante diminution. Selon le plus récent bilan des ventes de pesticides du Québec, les ventes de pesticides agricoles, estimées à près de 4 millions de kg i.a. en 2015, en hausse de 32 pour cent depuis 2006, représentaient alors 87.5 pour cent des ventes totales de pesticides (MDDELCC, 2017). Or, ces ventes de pesticides, tant au Canada qu'au Québec, demeurent largement dominées depuis plus de 10 ans, par les herbicides à base de glyphosate.

Applications massives d'herbicides à base de glyphosate (HBG)

Au Canada, les herbicides représentent, depuis 2008, près de 80 pour cent des pesticides utilisés dans le secteur agricole, une hausse de 39 pour cent, entre 2008 et 2014, signifiant des ventes additionnelles de plus de 16 millions kg i.a. en 2014 (Santé Canada, 2017a, 2011). Ce marché est largement dominé par les herbicides à base de glyphosate (HBG) qui représentaient, en 2014, 56 pour cent de tous les pesticides vendus dans le secteur agricole et 71.5 pour cent (42 286 074 kg i.a.) de tous les herbicides vendus au Canada (Santé Canada, 2017a). Non seulement constituent-ils les herbicides les plus utilisés au Canada mais également ceux dont les ventes ont aussi le plus fortement augmenté depuis 2008 (Graphique 1).

Graphique 1 : Évolution des ventes totales de pesticides et d'herbicides pour le secteur agricole, et de glyphosate* au Canada entre 2008 et 2014 (millions kg m.a.)

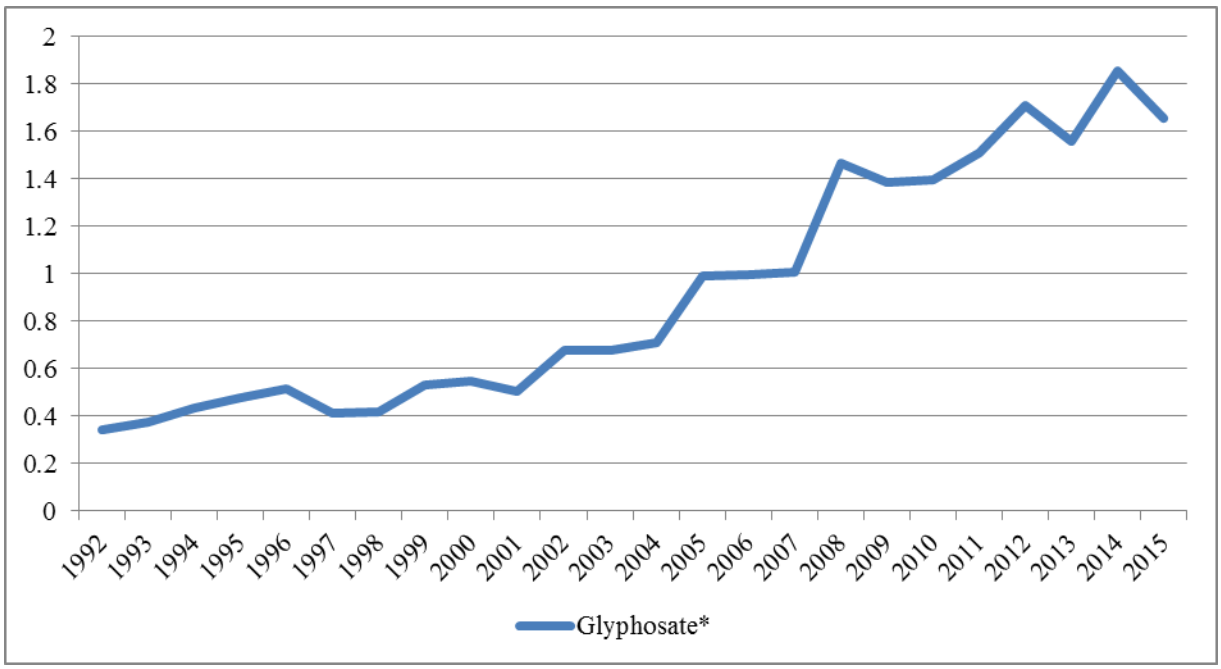


Source: Santé Canada, *Rapports sur les ventes de produits antiparasitaires*.
*Données pour le groupe des " acides phosphoniques et dérivés " principalement constitué des HBG

Le Québec n'échappe pas à une utilisation croissante des herbicides qui représentaient, en 2015, plus de 65 pour cent des ventes de pesticides. Les ventes d'HBG, en hausse de 60 pour cent entre 2006 et 2015 (Graphique 2), constituaient alors 44.2 pour cent (1 655 422 kg i.a.) des ventes de tous les pesticides agricoles (MDDELCC, 2017, Milieu agricole et annexe 1).

Ceci dit, les données sur les épandages d'HBG sont très partielles, en raison des lacunes majeures du Bilan des ventes et de données ne portant que sur le glyphosate qui ne représente qu'environ 40 pour cent des formulations commerciales d'HBG (Douzelet et Séralini, 2018). Les quantités totales de pesticides appliqués sont alors considérablement sous-estimées ainsi que leurs cascades d'effets dans les sols, l'eau, la faune, la biodiversité et la santé, d'autant plus, que ces effets se manifestent à des doses nettement inférieures à celles des limites réglementaires (Mesnage et al., 2015).

Graphique 2: Évolution des ventes de glyphosate* au Québec entre 1992 et 2015 (millions de kg m.a.)



Sources : Gorse et Balg, 2012 et 2014 ; Gorse et Dion, 2007 ; MDDELCC, 2016 et 2017
* Données pour le groupe des " acides phosphoniques et dérivés " principalement constitué d'HBG.

Sans prendre en compte tous ces éléments, le Vérificateur général du Québec a néanmoins conclu, dans son rapport sur les pesticides en milieu agricole, que les stratégies gouvernementales des 25 dernières années pour réduire les usages des pesticides et leurs impacts sanitaires et environnementaux, constituaient de cuisants échecs (Leclerc, 2016). Ce rapport soulignait l'augmentation continue des ventes de pesticides agricoles ainsi que la hausse de près de 30 pour cent, entre 2006 et 2014, des indicateurs de risque pour la santé et l'environnement qui y étaient associés (Ibid, P.7). Parmi les raisons invoquées de tels échecs: l'absence d'application de l'éco-conditionnalité lors du versement d'aides financières aux agriculteurs et

l'insuffisance voire l'inefficacité des stratégies du MAPAQ "pour amener les agriculteurs à adopter des pratiques agricoles favorables au développement durable et pour faire contrepoids à l'industrie agrochimique qui influence fortement le marché" (Ibid, p.22).

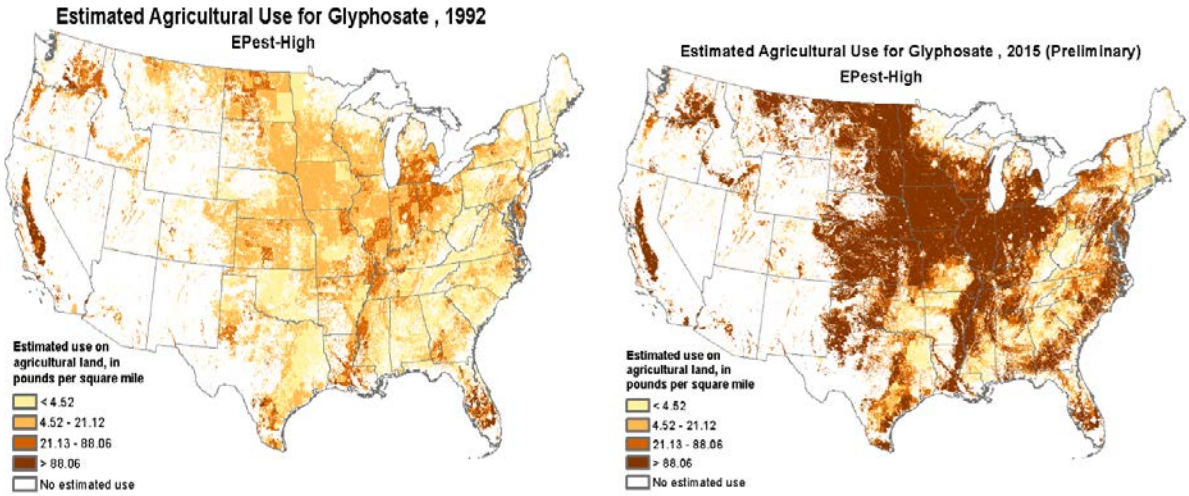
Rappelons à grands traits qu'en 1992, le ministère québécois de l'Agriculture, des Pêcheries et de l'Alimentation (MAPAQ) s'était engagé, dans sa première stratégie phytosanitaire, à réduire de 50 pour cent l'usage des pesticides agricoles avant 2000, une tentative depuis qualifiée d'échec. La Politique nationale de l'eau (2002), visant à encourager, avant 2010, une réduction de la pression environnementale liée à l'usage des pesticides en milieu agricole, ne fût guère plus concluante. La stratégie dite "phytosanitaire", adoptée pour l'horizon 2011-2021, ne visait plus à réduire de 50 pour cent les quantités de pesticides, mais à réduire de 25 pour cent les risques des pesticides pour la santé et l'environnement d'ici 2021. Or, bien que les HBG constituent 44 pour cent des pesticides agricoles en usage au Québec, ils ont été exclus de cette stratégie ainsi que de la *Stratégie québécoise de réduction des pesticides 2015-2018* (MDDLECC, 2015) et des nouvelles modifications réglementaires (MDDLECC, 2018).

Ces récentes modifications réglementaires prétendent réduire l'utilisation de 5 pesticides jugés toxiques, soit l'atrazine interdite en Europe depuis 14 ans, le chlorpyrifos aux effets neurotoxiques avérés et seulement 3 des nombreux néocotinoïdes tueurs d'abeilles, en rendant obligatoire leur prescription par un agronome. Permettre à des agronomes, non formés en santé environnementale, et dont une proportion significative travaille pour l'industrie des pesticides, d'autoriser, pour des raisons agronomiques, des pesticides jugés nocifs pour l'environnement et la santé s'annonce être une mesure pour le moins limitée. D'autant plus que l'on observe déjà une utilisation accrue de Dicamba et de 2,4-D, herbicides très toxiques, en complément des HBG, notamment pour tenter de limiter les problèmes de plantes résistantes résultant de la hausse constante des épandages d'HBG, un phénomène déjà bien connu aux États-Unis où les épandages d'HBG ont été multipliés par 15 entre 1996 et 2014, et où les deux-tiers des applications d'HBG y ont été réalisées au cours des dix dernières années (Myers et al., 2016).

Selon Charles Benbrook, agronome américain et ancien directeur de la division agricole de l'Académie nationale des sciences pendant 7 ans: "In the U.S., no pesticide has come remotely close to such intensive and widespread use" (Benbrook, 2016, p.1). Les cartes ci-dessous illustrent d'ailleurs la progression et l'ampleur de ces épandages aux États-Unis entre 1992 et 2015 (Figure 1).

Comme en témoignent ces cartes, les fortes concentrations d'HBG dans les zones agricoles des tributaires se jetant dans les Grands Lacs, auxquelles on pourrait ajouter les concentrations massives d'Atrazine, toujours autorisée aux États-Unis, invitent à vérifier l'hypothèse des impacts potentiels de ces épandages massifs sur la qualité des eaux des Grands lacs et possiblement celles du Saint-Laurent, objet éventuellement d'examen par la Commission mixte internationale.

Figure 1: Augmentation des épandages d'HBG en agriculture aux États-Unis entre 1992 et 2015



Source: USGS, 2017 (Ces cartes sont une gracieuseté du U.S. Geological Survey / Maps courtesy of the U.S. Geological Survey)

Usages accrus d'HBG: pour les OGM mais aussi pour tout, partout et en tout temps

Cette très forte hausse des ventes d'HBG en Amérique du Nord et de leurs épandages dans l'environnement résulte de facteurs structurels parmi lesquels on compte l'autorisation des OGM et la multiplication des formulations commerciales, des usages et des périodes d'utilisation des HBG.

Depuis 1996, la diffusion des semences génétiquement modifiées (GM) de maïs, soja et canola, conçues dans près de 75 pour cent des cas pour absorber des HBG sans en mourir ou encore pour produire leur propre insecticide, a largement contribué à la hausse des ventes d'HBG. Les superficies de cultures GM sont passées en 20 ans, de 2 millions à 185 millions d'hectares en 2016 (ISAAA, 2016, p.3). La majorité (89 pour cent) des cultures GM dans le monde sont concentrées en Amérique, d'abord aux États-Unis, avec 72.9 millions d'hectares en 2016, représentant 39 pour cent des superficies mondiales, puis au Brésil, en Argentine et au Canada (Ibid, p.5). Le Canada, considérant les OGM comme un " moteur de croissance économique ", en a fortement encouragé les développements, et se plaçait au 4ième rang mondial en 2016 avec 11.6 millions d'hectares de cultures GM, soit 6 pour cent des superficies mondiales (Ibid, p.5).

Or, l'utilisation des HBG va de pair avec les cultures GM. Ainsi, aux États-Unis, "Genetically engineered herbicide-tolerant crops now account for about 56 pour cent of global glyphosate use " (Benbrook, 2016, p.1). Les OGM agricoles de soja, maïs et canola, sont non seulement conçus pour tolérer des HBG, mais en outre les doses annuelles maximales de HBG qui y sont autorisées par l'Agence de réglementation de la lutte antiparasitaire (ARLA) sont de

17 pour cent à 25 pour cent plus élevées que dans les cultures non GM (ARLA, 2015, Annexe IIa).

Or, en autorisant les cultures GM et en haussant les seuils d'épandages d'HBG, on a accru à 35 le nombre de plantes résistantes à ces herbicides (Benbrook, 2012; Heap, 2018; Robin, 2018). Cette spirale toxique, marquée par la hausse des épandages d'HBG, la multiplication de plantes résistantes, le recours à d'autres herbicides toxiques comme le 2,4-D et le Dicamba, oblige certains agriculteurs américains, victimes d'infestations de plantes invasives comme l'amarante géante, à abandonner certaines cultures aux mauvaises herbes (Robin, 2018).

Autre élément clef, les pouvoirs publics ont progressivement multiplié le nombre d'homologations de formulations à base de glyphosate et les usages autorisés. Ainsi, au Canada, le nombre de nouveaux produits est passé, de mai 2012 à mai 2017, de 169 à 189 produits alors que 13 autres sont en cours d'homologation (ARLA, 2015, 2017). En agriculture, les HBG sont utilisés dans les cultures de céréales, de légumineuses et de petits fruits, trois secteurs importants de production et d'exportation, ainsi que dans le maraîchage (ARLA, 2015, pp. 71-92). Ces usages sont désormais étendus à toutes les périodes de culture, avant les semis, au moment de la levée, à la pré-récolte et lors de la post-récolte, si bien que ces HBG se retrouvent alors de façon quasi continue dans les cultures et les sols, dans les réseaux hydriques et les aliments.

L'ARLA a également autorisé l'utilisation de ces herbicides à large spectre à peu près partout, allant des pâturages, aux forêts, aux boisés et aux emprises de chemin de fer, en passant par les cultures d'arbres de Noël et de plantes ornementales, autant de menaces à la biodiversité, dont les effets cumulatifs peuvent s'avérer redoutables. Ainsi, la destruction des habitats par l'urbanisation mais aussi par la multiplication des grandes monocultures, ajoutés aux usages massifs de pesticides, détruisant " mauvaises herbes ", pollinisateurs, insectes et autres organismes jugés nuisibles, dégradent des pans entiers de la biodiversité et affectent toute la chaîne alimentaire, ce qui expliquerait qu'au Canada 61 pour cent des populations d'oiseaux champêtres ont été décimés en 40 ans, et que 1,2 million d'oiseaux par année succombent (Marceau, 2017).

Autre exemple éloquent, au Nouveau-Brunswick des HBG ont été abondamment pulvérisés sur des terres de la Couronne, pour entraver la croissance des arbres feuillus et favoriser ainsi la croissance des résineux, convoités pour nourrir les moulins des industries de pâtes à papiers (Livesey, 2017). Ces usages massifs d'HBG seraient responsables de la chute drastique de la population de chevreuil qui de 286,000 têtes au milieu des années 1980, serait tombée aujourd'hui à 70,000, suite à la destruction, par les HBG, des feuillus dont ils se nourrissent (Ibid). Selon certains observateurs, l'entente de 25 ans d'exploitation forestière intensive sur les terres de la Couronne, signée en 2014, avec J.D. Irving Ltd., magnat du pétrole, contrôlant aussi les plus importantes compagnies forestières de la région, risque d'anéantir complètement les chevreuils (Ibid). C'est pourquoi 35,000 personnes ont signé trois pétitions remises au parlement du Nouveau-Brunswick et que des citoyens ont fait des représentations au

sujet des impacts des HBG auprès de la Ministre canadienne de la Santé, députée fédérale de la circonscription de Moncton—Riverview—Dieppe.

Qui dit hausse des usages, dit hausse des résidus

La hausse marquée des quantités d'HBG pulvérisé dans l'environnement se traduit également par une contamination accrue des sols, des cours d'eau et des aliments, principales sources d'exposition humaine à ces herbicides (Leclerc, 2016; Myers et al., 2016). Le gouvernement canadien a établi des limites maximales de résidus (LMR) de glyphosate pour les aliments visant, dit-on, à minimiser les risques potentiels pour la santé. Or, tout porte à croire que ces LMR sont plutôt établis en fonction des pratiques agricoles, du niveau de contamination par les pesticides ainsi que des marchés d'importations et d'exportations et parfois même des vœux de certaines firmes.

Il n'existe pas de normes internationales unifiées quant aux limites maximales de résidus de glyphosate retrouvés dans les aliments. Et manifestement, pas de normes non plus sur le nombre et sur les effets cocktails de pesticides et de leurs résidus si le gouvernement fédéral autorise des résidus de 90 pesticides différents sur le blé et de 115 sur les pommes (Santé Canada, 2017b).

Établies à 0.1 partie par million (ppm) dans le *Règlement sur les aliments et drogues* (ARLA, 2015, p.117) pour les résidus de glyphosate dans les cultures, plusieurs de ces LMR ont été modifiées au cours des années. L'Union Européenne, dont la grande majorité des LMR de 378 produits est à 0.1ppm, a ainsi haussé les LMR de plusieurs produits agricoles, notamment les LMR de cultures GM (Tableau 1) et celles des principales cultures canadiennes.

Tableau 1: LMR de glyphosate pour les cultures principalement GM

Cultures	**Canada LMR en ppm**	**Europe LMR en ppm**
Maïs	3	1 3: Maïs sucré
Soja sec	20	20
Canola	20	10
Coton (graines)	40	10
Racines de betterave à sucre	10	15

Sources: Santé Canada, 2017b; Union Européenne, 2017

Ainsi, comme nous l'avons souligné, l'utilisation des HBG lors de la pré-récolte pour la dessiccation des céréales et des légumineuses, a engendré une hausse importante des résidus de glyphosate sur ces aliments. Les cultures transgéniques telles que le maïs, le soja et le canola, aux taux très élevés de résidus de glyphosate, ont également des LMR nettement plus élevées que le 0.1ppm de base. Ainsi, la LMR du canola est 200 fois supérieure au Canada et 100 fois supérieure en Europe à cette LMR de base.

Encore plus élevées que les LMR canadiennes et européennes, les LMR américaines de glyphosate atteignent 100 à 300 ppm selon les types de fourrage ou encore 120 ppm pour les enveloppes de soja, 210 ppm pour les sous-produits d'égrenage du coton, 200 ppm pour la menthe verte et 30 ppm pour les céréales dont le blé…trois fois plus que les 10 ppm au Canada et en Europe (ARLA, 2015; Santé Canada, 2017b).

L'augmentation des LMR du glyphosate aux États-Unis, au Canada et en Europe date des 10 dernières années, période correspondant à une hausse majeure des épandages d'HBG. Ainsi, suite à une demande de Monsanto, les États-Unis ont augmenté, en 2013, les limites de résidus de glyphosate dans les cultures d'oléagineux incluant le soja et le lin qui sont passées de 20 ppm à 40 ppm[2] (EPA, 2013). Les LMR des patates douces et des carottes sont respectivement passées de 0.2 ppm à 3 ppm et 5 ppm, soit 15 à 25 fois supérieures aux niveaux antérieurs. Or, quand plus de 48 pour cent des importations canadiennes de cultures agricoles proviennent des États-Unis (Gouvernement du Canada, 2017), et que ces hausses semblent continues, comment ne pas s'inquiéter?

Surtout que ces LMR américaines plus élevées n'incluent pas certains métabolites de glyphosate dans leur définition de résidus. En effet, les variations de LMR entre les pays dépendent selon Santé Canada, "des profils d'emploi des pesticides" et de "l'emplacement des essais sur le terrain, utilisés pour générer les données sur les résidus chimiques" (ARLA, 2015, p.117). Les LMR, découleraient aussi des définitions différentes selon le type de culture (classique, GAT transgénique, transgénique EPSPS/GOX, denrées d'origine animale) qui varient d'un pays à l'autre. Ainsi, contrairement au Canada, les États-Unis ont exclu du calcul des résidus préoccupants, les métabolites de dégradation du glyphosate, AMPA et N-acétyle AMPA des cultures transgéniques contenant un gène GAT. Quant à l'Union européenne, elle a récemment modifié ses définitions de résidus pour tenir compte des importations en provenance des États-Unis de nouvelles variétés de soja et de maïs génétiquement modifiés contenant ce gène GAT (Ibid, pp.119-120).

Si ces LMR peuvent servir d'indicateur des niveaux de contamination, leur utilité en termes de santé publique est en réalité assez limitée. Comme pour l'ensemble des évaluations d'HBG, elles ne portent que sur le glyphosate et ne tiennent pas compte des co-formulants, pourtant jusqu'à 1000 fois plus toxiques que l'ingrédient dit actif dans 8 des 9 pesticides les plus vendus au monde (Mesnage et al., 2014). Ainsi, alors que les amines de suif polyéthoxylées

[2] Sauf pour les semences de canola demeurant à 20 ppm pour des raisons d'harmonisation réglementaire avec le Canada et le Codex (EPA, 2013).

(POEA) ont été interdits en Europe, en 2016, en regard de leur toxicité, ils comptent parmi les multiples co-formulants d'HBG au Canada, et la récente reconduction du glyphosate pour 15 ans par l'ARLA autorise formellement jusqu'à 20 pour cent en poids de POEA dans les HBG (ARLA, 2017, p.7). L'ARLA ignore donc les POEA lorsqu'il s'agit d'évaluer les risques pour l'environnement et la santé, et d'établir des LMR.

Ces niveaux maximum de résidus de glyphosate dans les cultures ont non seulement des limites évidentes, mais elles deviennent parfaitement inutiles quand les instances réglementaires canadiennes ne se donnent pas la peine de tester les aliments afin d'en déterminer les niveaux de résidus.

Aliments au glyphosate !

Bien que le Canada ait mis en place un Programme national de surveillance des résidus chimiques et bien que l'Agence canadienne d'inspection des aliments (ACIA) ait effectué, en 2013-2014, "a total of 31 306 tests for pesticide residues on 10 589 monitoring samples of domestic and imported foods of animal and plant origin (2013-2014)" (ACIA, 2015, p.19), jusqu'à tout récemment, les HBG n'étaient pas inclus dans ce programme.

Ce n'est qu'en 2017, suite à des années de demandes soutenues de citoyens canadiens, dont Tony Mitra (Mitra, 2017), pour obtenir les données sur les résidus de glyphosate dans l'alimentation, que les premières données, très succinctes, ont enfin été publiées. Les constats sont troublants : sur les 3188 échantillons analysés par l'ACIA, près de 30 pour cent étaient contaminés par ces résidus (Tableau 2), soit presque la moitié (47.4 pour cent) des fèves, pois et lentilles ainsi que 36,6 pour cent des céréales, principaux produits de l'agriculture canadienne (ACIA, 2017).

Plus troublant encore, 30,7 pour cent des aliments et 31,7 pour cent des céréales pour nourrissons, une population particulièrement vulnérable aux effets délétères des substances chimiques et aux cocktails de ces substances, contenait des résidus de glyphosate (Ibid). En outre, 1.3 pour cent des échantillons dépassaient les LMR établies, dont 3.9 pour cent des échantillons de produits céréaliers, comme l'illustre le tableau ci-dessous (Ibid).

Ces résultats n'étonnent guère compte tenu des usages pré-récolte des HBG afin d'assécher les céréales, les grains et les légumineuses. Ces épandages pré-récolte, interdits en France et en Italie, ont même conduit, en avril 2018, Barilla, premier producteur mondial de pâtes alimentaires, à réduire de 35 pour cent ses commandes de blé dur canadien en raison des forts résidus de glyphosate (Vandelac et al., 2018). Aux risques d'altérer la santé s'ajoutent donc ceux d'entacher la réputation de produits canadiens et de compromettre certaines exportations. L'eau et les aliments étant les principales sources d'exposition humaine aux formulations d'HBG, ces résultats sont préoccupants pour la santé et notamment celle des nourrissons.

Tableau 2: Résultats des analyses de détection de résidus de glyphosate dans les aliments par l'ACIA, 2015-2016

Program	Food Type	# Sample Tested	% Samples with Glyphosate Residues Detected	% Samples with Glyphosate Residues above MRLs
National Chemical Residue Monitoring Program	Fresh fruits and vegetables	317	7.3%	0%
	Processed fruits and vegetables	165	12.1%	0%
Targeted Surveys	Grain products	869	36.6%	3.9%
	Juice and other beverages	496	16.3%	0.2%
	Bean/pea/lentil products	869	47.4%	0.6%
	Soy products	263	11.0%	0%
Children's Food Project	Infant cereal	82	31.7%	0%
	Infant food	127	30.7%	0%
	Total	**3,188**	**29.7%**	**1.3%**

Source : ACIA, 2017

Du champ…au corps humain

Alors que les HBG sont les pesticides les plus utilisés au pays depuis 2008, et que 30 pour cent des aliments analysés contiennent des résidus de glyphosate, classé comme " probablement cancérogène pour l'humain " par le CIRC de l'OMS (IARC, 2015), comment expliquer que le Canada n'inclut ni le glyphosate et ses métabolites, ni ses co-formulants nettement plus toxiques, dans le programme de *Biosurveillance humaine des substances chimiques de l'environnement* de Santé Canada (Santé Canada, 2017), mis en place depuis 2007?

Plusieurs analyses menées en Europe, montrent pourtant la présence de glyphosate dans l'organisme humain. En France, l'analyse d'échantillons d'urine de 30 personnes provenant de divers milieux et ayant des régimes alimentaires forts différents, a révélé que 100 pour cent des échantillons contenaient du glyphosate (Générations Futures, 2017). De plus, la concentration moyenne de glyphosate trouvée était de 12,5 fois la concentration maximale admissible pour un pesticide dans l'eau potable en Europe (0.1 ng/ml) (Ibid, p.7). Ces résultats rejoignent ceux de

deux autres études réalisées en Allemagne et sur des eurodéputés de plusieurs pays européens (Ibid, pp.8-9), révélant ainsi l'ampleur de l'exposition de la population aux HBG.

Ces études, dans des pays où les usages d'HBG et les normes sont pourtant nettement moindre qu'au Canada, mériteraient sans doute d'être répétées au Québec et au Canada, compte tenu notamment des effets de perturbations endocriniennes des HBG à de très faibles concentrations (Benachour et al., 2007; Gasnier et al., 2009; Richard et al., 2005).

D'autant plus que la première étude de toxicologie générale indépendante sur les effets chroniques à long terme des HBG, réalisée sur la vie entière de 200 rats pendant 2 ans, a mis en évidence les effets toxiques du maïs génétiquement modifié NK603 (tolérant au Roundup) et du Roundup dans l'eau à des doses aussi faibles que 0.1ppb (soit 0.1µg/L, la norme européenne). Il provoquerait donc des tumeurs ainsi qu'une toxicité au niveau du foie et des reins (Séralini et al. 2014a). Que doit-on alors penser des recommandations canadiennes qui établissent les seuils de glyphosate dans l'eau potable à 280 µg/L, soit 2,800 fois de plus que la norme européenne fixée à 0.1µg/L? (Santé Canada, 2017c; AIDA, 2017)

Alors que les expositions aux HBG de la population canadienne, et celles des populations vulnérables, ne font l'objet d'aucun suivi, comment les instances publiques canadiennes peuvent-elles prétendre protéger la santé de la population? Pensent-elles pouvoir se dédouaner d'éventuels problèmes sanitaires qui y seraient liés en omettant d'analyser les formulations commerciales complètes de ces pesticides et en ignorant l'incontournable mise à jour des normes canadiennes de glyphosate dans l'eau potable à la lumière des normes européennes ?

Rappelons que le rapport des Nations Unies sur le Droit à l'alimentation (2017) souligne que "l'opinion publique reste encore insuffisamment sensibilisée aux dangers liés à certains pesticides," ajoutant que "cette situation est aggravée par les efforts que déploient les fabricants pour minimiser les dommages causés, ainsi que par certains gouvernements complaisants qui avancent fréquemment l'argument fallacieux selon lequel la législation et les cadres réglementaires existants offrent une protection suffisante" (p.25). Cela ne rappelle-t-il pas la rhétorique utilisée par le gouvernement canadien pour affirmer l'innocuité des HBG, les autoriser jusqu'en 2032 et ignorer les 46 pesticides encore autorisées au Canada mais interdits presque partout ailleurs en raison de leur toxicité (Angot et al., 2017).

"An apple a day keeps the doctor away?"

L'étroite conception de la santé et de la salubrité des aliments, souvent réduite à la valeur nutritionnelle des aliments, participerait-elle d'un certain aveuglement volontaire des instances publiques au sujet des pesticides? Ainsi, dans son projet de politique bioalimentaire, le Québec réduit les enjeux de santé et d'alimentation aux teneurs en sel, en sucre et en gras dans les aliments, à leur valeur nutritive, aux toxi-infections et aux allergies, tout en évacuant complètement la question des résidus de pesticides qu'il renvoie aux normes établies par le gouvernement fédéral (MAPAQ, 2016), alors qu'il a toute la latitude pour être plus exigeant.

Quant aux préoccupations sanitaires envers les agriculteurs et employés du secteur agricole, elles se résument à la santé psychologique tout en négligeant les risques sanitaires associés aux expositions aux pesticides des agriculteurs, de leur famille et des employés (MAPAQ, 2016b), notamment certaines maladies professionnelles, dont la maladie de Parkinson, désormais officiellement reconnue en France (Bolis, 2012) ou encore, les impacts neurologiques chez les enfants exposés in-utéro aux pesticides organophosphorés (Bouchard et al., 2011).

Le sondage auprès des Canadiens du Gouvernement du Canada (2017a), va même jusqu'à réduire le thème "Améliorer la salubrité des aliments et la santé" à la simple perspective "d'accroître la capacité des Canadiens de faire des choix alimentaires sains" via notamment "la promotion d'une vie saine", sans égards, ni à la pauvreté endémique, ni aux déserts alimentaires, ni aux très hauts niveaux tolérés d'HBG dans l'eau, ni aux résidus de pesticides et ni à l'exposition croissante des populations aux pesticides…

Quant à l'objectif, "d'empêcher les produits alimentaires portant des étiquettes trompeuses…d'entrer sur le marché", on croit rêver… Quelle ironie de la part d'un gouvernement qui refuse, depuis des années, l'étiquetage des OGM, en dépit des pétitions signées par des dizaines de milliers de citoyens, et en dépit des nombreux sondages révélant, comme celui de 2016, une "profonde aversion des consommateurs canadiens pour les aliments génétiquement modifiés" et un appui de 78 pour cent des participants à l'étiquetage obligatoire des OGM dans les aliments (Bérubé, 2016). D'ailleurs "82 pour cent des participants à cette étude avouent être préoccupés par l'utilisation d'herbicides et de pesticides et 80 pour cent par celle d'antibiotiques et d'hormones de croissance en élevage" (Ibid.). Que le Canada, tout premier pays au monde à mettre en marché un animal transgénique, à savoir un saumon GM, sans étiquetage, ni filière, bref à l'insu de la population et à raison de 4.7 tonnes déjà en 2017, prétende s'inquiéter d'étiquettes trompeuses, laisse sans voix.

Dans ce contexte, comment croire aux nobles objectifs d'une politique alimentaire visant à ce que les aliments soient "aussi sains que possible" sans définir ce qu'elle entend par "sains"…ni d'ailleurs par "autant que possible"? La qualité nutritionnelle des aliments, n'est-elle pas en lien direct avec la qualité des sols et la maturité des fruits et des légumes, qui sont tous deux en chute libre depuis les dernières décennies, notamment à cause de l'appauvrissement des sols, gavés d'intrants chimiques et de l'allongement des distances entre la production et la consommation?

Dans la même veine, comment prétendre avoir pour objectifs de prévenir et de diminuer l'obésité et les maladies chroniques, en reportant l'essentiel de la responsabilité sur les choix alimentaires des individus, sans pointer les pratiques de l'agro-industrie largement responsable en amont et en aval de tels problèmes chroniques. En effet, outre les excédents de gras trans, de sel et de sucre, nombre de substances liées à l'industrie agroalimentaire, tels les phtalates ou encore le Bisphénol A encore utilisé au Canada, contrairement à la France, comme enduit interne des boîtes de conserve notamment, ainsi que plusieurs pesticides aux effets reconnus de

perturbation endocrinienne dont les HBG, contribuent à "l'épidémie de maladies chroniques "[3] (Cicolella, 2013). Rappelons que plusieurs études scientifiques témoignent de la contribution des perturbateurs endocriniens aux maladies chroniques, notamment aux maladies métaboliques (obésité et diabète de type 2), mais aussi aux cancers hormonaux–dépendants, à la baisse de la spermatogénèse, à la hausse des malformations congénitales et aux troubles du spectre de l'autisme (Colborn. et al, 1996; Myers et al., 2016; Vandelac & Bacon, 1999).

La politique alimentaire canadienne osera-t-elle laisser ainsi dans l'ombre la charge de substances chimiques dans les aliments et dans l'eau ainsi que leurs effets cocktails dans toute la chaîne alimentaire? Cela est paradoxal quand on sait qu'Ottawa a souvent été, depuis le Rapport Lalonde de 1974 et les approches écosanté des dernières années du CRDI, à l'avant-garde internationale en matière d'élaboration de modèles de santé globale. Comment comprendre alors que cette future politique alimentaire canadienne présente la santé comme un simple " choix individuel ", faisant ainsi abstraction de 60 ans de débats et de réflexions, en plus de passer sous silence les inquiétudes légitimes de la population quant aux impacts des pesticides et sans prendre des mesures essentielles pour réduire substantiellement l'usage des pesticides.

Dans un contexte où la population se nourrit et vit désormais dans une véritable "soupe chimique", les autorités publiques ne peuvent continuer de nier les liens entre les atteintes à la faune et à la flore et les actuels problèmes sanitaires aux proportions épidémiques. Alors que, depuis 2008, la presque totalité des semences de maïs et la moitié des semences de soya au Québec sont enrobées de néonicotinoïdes (Champagne, 2017), des pesticides aux conséquences dramatiques sur les pollinisateurs et la biodiversité, Jean-Marc Bonmatin, écotoxicologue et vice-président du Groupe de travail sur les pesticides systémiques qui a rendu public, à Ottawa, en septembre 2017, un rapport sur les insecticides néonicotinoïdes (Task Force, 2015), souligne:

> à part les venins foudroyants de certains animaux, ils présentent des niveaux de toxicité jamais égalés. Ils sont plus de 5000 fois plus toxiques que ne l'était le DDT dans les années 1970, par exemple. Comment pouvez-vous imaginer que, s'ils tuent tous les invertébrés, ils soient inoffensifs pour l'humain? (Champagne, 2017)

Dans le cas des HBG, comment accepter que leur ré-homologation pour 15 ans repose sur des bases scientifiques aussi inadéquates que celles de l'évaluation des impacts du glyphosate réalisée par l'ARLA au gouvernement canadien?

[3] Les impacts monétaires de ces maladies et troubles chroniques plus spécifiquement attribuables aux PE (obésité, diabète, troubles de la fertilité et neurocomportementaux) et dans 80 pour cent des cas à des pesticides, ont été estimés en Europe entre 157 et 270 milliards d'euros par an, soit entre 1,23 pour cent et 2 pour cent du PIB européen annuel (Trasande et al., 2015).

Insuffisances des dispositifs d'évaluation et d'encadrement des pesticides

Comme en témoigne le scandale des *Monsanto Papers*, ces modalités d'homologation, souvent sous influence, reposent sur des bases scientifiques parfois très discutables. Mais dans le cas du document *Glyphosate: Projet de décision de réévaluation PRVD2015-01* de l'ARLA (2015), censé fonder la décision canadienne, ce document, au chapitre de la santé, est si daté, si partiel et partial que sa crédibilité en est complètement minée (Vandelac & Bacon, 2017). Ainsi, le volet toxicologique s'appuie sur 125 références, dont 118 provenant de l'industrie et donc non publiées, et sur 7 autres non identifiables, alors que l'examen des risques professionnels repose sur 9 documents, dont l'un venant de l'industrie et 7 autres non publiés, et que l'évaluation des risques alimentaires repose à 98 pour cent (340 références sur 347) sur les écrits de l'industrie agrochimique dont la très grande majorité date d'avant l'an 2000. Or, 68 pour cent des études scientifiques sur le glyphosate, publiées dans Pubmed (US National Library of Medicine), ont été produites au cours des 10 dernières années !

Ajoutons que l'ARLA conclue dans son évaluation dite " scientifique " du glyphosate, qu'il faut modifier les étiquettes des produits contenant du glyphosate afin d'ajouter que "Ce produit est TOXIQUE pour les végétaux terrestres non ciblés" et…"pour les organismes aquatiques". Néanmoins, elle continue d'affirmer que " Les produits contenant du glyphosate ne devraient pas poser de risques préoccupants pour l'environnement lorsqu'ils sont utilisés conformément au mode d'emploi proposé sur l'étiquette", ajoutant même qu' "Il est peu probable que les produits contenant du glyphosate nuisent à la santé humaine s'ils sont utilisés conformément au mode d'emploi figurant sur leur étiquette" (ARLA, 2017, pp. 4, 7 et 83). Dans cet étrange raisonnement, l'étiquette ferait figure de "bouclier magique" non pas pour garantir l'innocuité des HBG, mais manifestement pour tenter de dédouaner les firmes et les pouvoirs publics de leurs responsabilités, alors imputées aux seuls utilisateurs de pesticides. Cette modification mineure de l'étiquetage des HBG, faisant porter l'essentiel des problèmes de santé et d'environnement sur les agriculteurs, leurs familles, les travailleurs agricoles et les consommateurs, ne tient-elle pas alors d'une manœuvre perverse?

En raison des très sérieuses lacunes et omissions dans l'évaluation du glyphosate et des HBG, plusieurs avis d'objection (Equiterre et al., 2017; Vandelac & Bacon, 2017) envoyés au gouvernement canadien, en juin 2017, ont demandé à la Ministre de la santé, la création d'un comité d'examen indépendant conformément au paragraphe 35 (3) de la *Loi canadienne sur les produits antiparasitaires*. Prétendre que les HBG n'ont aucun impact sur la santé et fonder la décision de les ré-homologuer jusqu'en 2032, essentiellement sur la base de documents non publiés de l'industrie, en l'absence d'un examen rigoureux de la littérature scientifique indépendante, tout en passant sous silence les tricheries et les manipulations révélées par les *Monsanto Papers*, est en effet indigne d'autorités réglementaires responsables.

Une agriculture et une alimentation sevrées de leur dépendance aux pesticides?

L'élaboration de politiques alimentaires au Canada et au Québec devrait constituer un moment clé pour sortir de l'infernal engrenage des pesticides et protéger la qualité des sols, de l'eau, de l'air, des aliments et de la santé tout en assurant la pérennité d'une agriculture viable permettant aux agriculteurs de nourrir le monde tout en répondant aux défis posés par les crises combinées du climat, de la biodiversité et des évènements climatiques majeurs.

Mais, cela implique de s'attaquer aux facteurs structurels qui en sont largement responsables et notamment de s'intéresser aux différentes formes de soutien public offertes aux producteurs agricoles. Or, au Canada, selon de récentes données de l'OCDE, ces aides étaient 4 fois plus importantes il y a 30 ans, alors qu'aux États-Unis, en Europe et dans les pays de l'OCDE, cette baisse n'a été que de moitié (Desrosiers, 2018). En outre, ces soutiens publics aux producteurs agricoles au Canada, de l'ordre de 9.3 pour cent des recettes agricoles brutes au cours des 3 dernières années, sont deux fois plus faibles que ceux de la moyenne des pays développés (18,2 pour cent) et de l'Union Européenne (19,3 pour cent) et ils sont à des lieux du Japon (46 pour cent) ou encore de l'Islande (57.6 pour cent) (Ibid.). Si une transition vers des modèles agroalimentaires alternatifs et diversifiés, axés sur un développement viable, exige le retrait des substances chimiques les plus toxiques conjuguée à une sortie progressive de productions agroalimentaires basées sur les intrants, de telles perspectives ne peuvent être envisagées sans un réinvestissement massif pour soutenir les producteurs agricoles.

Un système alimentaire résilient et diversifié pouvant répondre aux défis des crises alimentaires, de la biodiversité et du climat, ne signifie donc pas nécessairement de multiplier les " innovations " technoscientifiques chères, sophistiquées et brevetées du type OGM, nanotechnologies et intelligence artificielle, ni d'augmenter davantage encore l'hyper concentration horizontale et verticale du secteur agroalimentaire, où quelques firmes contrôlent plus de la moitié des semences mondiales et l'essentiel des intrants et de la R&D (Vandelac, 2015; ETC Group, 2017, 2015). Les pouvoirs publics ne peuvent feindre d'ignorer à quel point certaines puissances économiques peuvent tout faire pour nier la toxicité de leurs produits quitte à tenter de détruire des évaluations scientifiques indépendantes et d'inféoder l'évaluation publique à leurs intérêts privés (Foucart, 2017).

En ce sens, limiter dans le monde les usages d'HBG et d'autres pesticides exige, tel que le soulignait avec raison la Rapporteuse spéciale sur le droit à l'alimentation aux Nations Unies, "une véritable volonté politique pour réévaluer et remettre en cause les intérêts corporatistes, les politiques incitatives et les relations de pouvoir qui maintiennent en place une agriculture industrielle étroitement tributaire de l'industrie agrochimique" (Nations Unies, 2017, p. 25). A cet égard, la conclusion de ce rapport est limpide : "Il est nécessaire de remettre en cause les politiques agricoles, les systèmes commerciaux et l'influence exercée par les entreprises sur les politiques publiques si nous voulons renoncer aux systèmes alimentaires industriels qui reposent sur les pesticides" (Ibid). Le défi est de taille, notamment pour le Canada.

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Review Article

Can we eat our way to a healthy and ecologically sustainable food system?

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Abstract

The food system is a major contributor to climate change, biodiversity loss, eutrophication and deforestation. This article examines national dietary guidelines as a way to shift dietary patterns in the population toward diets that continue to promote health while being more ecologically sustainable. While some sustainability principles may be inherent in the 2007 Canada's Food Guide (e.g., an emphasis on plant-based foods), these were not made explicit. As Health Canada undertakes a revision of its national dietary guidance, a unique opportunity exists to situate dietary guidelines within the broader context of Canada's first-ever national food policy. Coherence between these two policies has the potential to position the role of diets as a core link between food systems and both human and ecological health. This paper explores the possibilities of advancing sustainability principles within Canadian national dietary guidelines by drawing on evidence-based literature and key sustainability messages within dietary guidelines from four countries that have integrated many of these principles. Lessons and perspectives from international experiences on incorporating environmental sustainability into dietary guidelines are described including: influence of the food industry; cross-sector collaboration and alliances; civil society participation; and "win-win" messages. Application of these lessons to Canada, followed by opportunities to advance the incorporation of sustainability principles within the country's national dietary guidelines are then proposed.

Keywords: sustainable diets; Canada's dietary guidelines; policy; Canada's Food Guide

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Introduction

> "Changing what we eat, how we eat and how much we eat is essential for sustainability" Food and Agriculture Organization (FAO) Director (Jose Graziano da Silva, 2013)

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Our food system is a major contributor to climate change (UNEP Division of Early Warning and Assessment, 2012), biodiversity loss (Lambin & Meyfroidt, 2011; Turner, Lambin, & Reenberg, 2007; UNEP Division of Early Warning and Assessment, 2012), eutrophication (Gephart et al., 2016) and deforestation (Garnett, 2014; Kissinger, Herold, & de Sy, 2012; UNEP Division of Early Warning and Assessment, 2012); these are areas where "planetary boundaries" researchers posit that we have moved beyond the earth's limits (Rockström et al., 2009; Steffen et al., 2015). We are only beginning to understand the ramifications of this to our health, culture and socio-economic systems. For example, biodiversity is essential for food production, ensuring the sustainable productivity of soils and providing genetic resources for crops, livestock, and marine species harvested for food (World Health Organization, 2017). The Food and Agriculture Organization of the United Nations (FAO) suggests that "the alarming pace of food biodiversity loss and ecosystem degradation, and their impact on poverty and health makes a compelling case for re-examining food-agricultural systems and diets" (He, 2010, p. 13). A key international response to this crisis is the sustainable diets agenda. The FAO has been a strategic driver of this agenda, and has defined sustainable diets as:

> Diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources (FAO, 2010, p. 1).

This international definition of sustainable diets is intended to address many dimensions, including—but not limited to—ecosystems, human health, and social justice. While dimensions outside of environmental aspects of sustainable diets are beyond the scope of this article, it is important to note that different facets of the definition are not mutually exclusive. For example, biodiversity loss is seen as a contributor to poverty in the developing world (Burlingame & Dernini, 2012). The World Health Organization (WHO) states:

> …intensified and enhanced food production through irrigation, use of fertilizer, pesticides (water and land, sterilization of soils), clearing land/ habitat, introduction of crop varieties and cropping patterns affect biodiversity, and thus impact global nutritional status and human health (2017, p.1).

This statement reflects the recognition that "the health of human beings cannot be isolated from the health of ecosystems" (Johnston, 2014, p. 419); it also reflects the link between our food supply, social justice and the environment. Perhaps in Canada, the most evident links can be seen with Indigenous communities. Their access to traditional foods is an integral part of cultural resurgence, reflecting values such as sharing, sovereignty, and inter-generational knowledge transfer; access, however, is not possible without a healthy ecosystem and access to land.

Johnston et al. (2014) contend that "sustainable diets highlight how food production and food consumption are interconnected and ecosystem dependent" (p. 427). This article centres on food consumption, in particular, examining national dietary guidelines as a way to shift dietary patterns of the population and impact consumption. Shifting dietary patterns is one of four approaches identified by Garnett (2013) for moving toward food sustainability (others include reduction of food waste, changing agricultural production practices to reduce ecological effects and conserve resources, and more equitable distribution of resources). In fact, changes in food consumption have been identified as effective in decreasing greenhouse gas emissions (GHGe)(Kiff, 2016) and even as having more potential for decreasing GHGe than agricultural technological mitigation options (Brunelle, Coat, & Viguié, 2017; Popp, Lotze-Campen, & Bodirsky, 2010).

The inclusion of environmental sustainability principles within dietary guidelines was broached as early as 1986 by Gussow and Clancy (1986). In 1996, the joint FAO/WHO publication "Preparation and Use of Food Based Dietary Guidelines" suggested that the question of "are the guidelines environmentally sustainable?" be considered (1996). Only now are some countries attempting to shift dietary patterns by integrating sustainability principles within their official national dietary guidelines.

As well as guiding individual behaviour change, national dietary guidelines are the foundation for nutrition policy and guidelines at national, provincial, regional, local and organizational levels. Nutrition policy also provides a foundation for the development of educational curricula and promotional materials, and for measurement and monitoring of food consumption and nutritional intake. While the gap between nutrition policy and consumption behaviour has become increasingly conspicuous due to increasing population health concerns (e.g., cardiovascular disease, diabetes), the need for effective policy remains.

In Canada, dietary guidelines (including the Canada's Food Guide) have not traditionally included ecological sustainability considerations in their recommendations. While some sustainability principles may be inherent in the 2007 Canada's Food Guide (e.g., an emphasis on plant-based foods), these were not made explicit. As Health Canada undertakes a revision of its national dietary guidance, a unique opportunity exists to situate dietary guidelines within the broader context of Canada's first-ever national food policy. While Health Canada has identified "environment" as a "consideration" in the guiding principles for the development of the guidelines, it remains to be seen how this "consideration" will be interpreted and applied (Government of Canada, 2017). At the same time, climate change and environmental

sustainability have been identified as priorities of the Government of Canada (Trudeau, undated). Coherence between these policies has the potential to position the role of diets as a core link between food systems and both human and ecological health.

This paper explores the possibilities of advancing sustainability principles within Canadian national dietary guidelines by drawing on evidence-based literature and key sustainability messages within dietary guidelines from countries, which have integrated many of these principles. Lessons and perspectives from international experiences on incorporating environmental sustainability into dietary guidelines are then described, followed by a brief examination of how these lessons are applicable to Canada. Finally, opportunities to advance the incorporation of sustainability principles within national dietary guidelines in Canada are proposed. A brief review on assessing the impact of food on the environment is first presented.

What is the impact of the food we eat on the environment?

Assessing the impact of food on the environment is complex and research is emergent. Many studies to date measure (1) the impact of individual foods on environmental indicators, and/ or (2) the impact of diets and dietary patterns on environmental indicators. Prior to examining these studies, it is important to understand which environmental indicators are assessed in considering the impact of food on the environment. Greenhouse gas emissions (GHGe) are by far the most frequent indicator used to measure the impact of the food system/food life cycle on the environment. Land use is the next most frequent, followed by water and energy use (Jones et al., 2016; Nelson, Hamm, Hu, Abrams, & Griffin, 2016). Nitrogen release into the environment is commonly measured (Jones et al., 2016), while biodiversity appears rarely assessed.

Research by Dernini et al. (2013) as well as "planetary boundaries" research suggests, however, that biodiversity should also be a priority for research in sustainable diets (Rockström et al., 2009; Steffen et al., 2015). The global food system is the largest contributor to the loss of biodiversity (UNEP Division of Early Warning and Assessment, 2012). Finally, waste is not generally considered as an environmental indicator. Nonetheless, food waste depletes natural resources across the food chain (production, processing, distribution, and consumption), and contributes to the accumulation of harmful substances in the ecosystem. Thus, food waste has the potential to impact all of the environmental indicators listed above.

Looking first to the impact of individual foods on environmental indicators, evidence from systematic reviews is consistent that animal based foods have a higher impact on the environment in relation to GHGe (Aleksandrowicz, Green, Joy, Smith, & Haines, 2016; Clune, Crossin, & Verghese, 2016; Nelson et al., 2016; Wickramasinghe, Scarborough, Goldacre, & Rayner, 2013), land use (Aleksandrowicz et al., 2016; Hallström, Carlsson-Kanyama, & Börjesson, 2015; Nelson et al., 2016), and water use (Aleksandrowicz et al., 2016; Nelson et al., 2016). Ruminant livestock (e.g., cows, sheep, goats) have the greatest impact on these indicators. UN reports suggest harmful environmental impacts of intensive livestock production also include

water pollution, soil degradation, eutrophication, and the degeneration of coral reefs, as well as human health risks such as antibiotic resistance (United Nations, 2011, 2013; World Health Organization and the Secretariat of the Convention on Biological Diversity, 2015).

There is also a hierarchy of GHGe across food categories (from lowest to highest CO2 emissions): root vegetables, field-grown vegetables, field-grown fruit, cereals (except rice), legumes and pulses, tree nuts and seeds, fruit and vegetables from heated greenhouses, rice, dairy milk and yogurt, non-ruminant livestock (including fish), cheese, and ruminant livestock (Aleksandrowicz et al., 2016; Clune et al., 2016; Wickramasinghe et al., 2013). Variations in this hierarchy can occur due to location (e.g., country, type of land), how food is produced (e.g., pasture-fed versus feedlot), and how it is distributed (local versus air transported produce) (Aleksandrowicz et al., 2016; Peters, 2016).

In addition to the impact of individual foods on the environment, the evidence is also clear that dietary patterns which are lower in animal-based foods have a lesser impact on the environment in relation to GHGe (Aleksandrowicz et al., 2016; Clune et al., 2016; Joyce, Hallett, Hannelly, & Carey, 2014; Nelson et al., 2016), land use (Aleksandrowicz et al., 2016; Hallström et al., 2015; Nelson et al., 2016), and water use (Aleksandrowicz et al., 2016).

The WWF modelled sustainable diet patterns based on typical eating habits in France, Spain, and Sweden. They showed that a sustainable diet in these countries decreases GHGe by 25 percent from the current average diet, costs no more than the current dietary patterns, complies strictly with national nutritional requirements, and closely resembles the current dietary patterns (WWF: LiveWell for LIFE, 2012). The Carbon Trust in the UK—on request from Public Health England analyzed the UK Eatwell guide for its environmental impact. They found that the Eatwell Guide shows a substantially lower environmental impact than what is currently consumed in the UK. While the UK dietary guide is not designed as a sustainable diet, this research suggests that it is still more sustainable than the less healthy, actual intake of the UK population.

In consideration of other elements of dietary patterns and sustainability, it has also been proposed that minimizing the overconsumption of calories (or simply, food) will reduce the environmental impact on the food system (Australian National Health and Medical Research Council, 2013; Garnett, 2011; Ranganathan et al., 2016). While this may hold true, the authors caution against how this argument is used, as we do not want to contribute to an already pervasive societal problem of disordered eating and “fat-shaming”.

Integrating sustainable diets into dietary guidelines

In addition to research completed by academics, work on sustainable diets in relation to dietary guidelines has been undertaken over the last decade in multiple ways. First, dietary pattern analysis has been undertaken (e.g., Carbon Trust analysis of UK Eatwell Guide 2016 (2016), World Wildlife Federation: LiveWell for LIFE (2012)). Second, evidence reviews have been

completed by countries (e.g., UK Sustainable Development Commission (2009), Australian National Health and Medical Research Council (2011), Health Council of the Netherlands (2011) US Dietary Guidelines Advisory Committee Scientific Report (2015)). Finally, unofficial guidelines from groups that have been forerunners in bringing this issue to public attention have been developed. These include guidelines from LiveWell (World Wildlife Foundation), Barilla double pyramid (Italian pasta company), and Food and Climate Research Network - FCRN (global research network). Collaborative research at the international level in the advancement of sustainable diets is burgeoning. These include, but are not limited to, the Global Alliance for the Future of Food, the International Panel of Experts on Sustainable Food Systems, and the Nordic EAT Forum (and their collaboration with the Lancet in launching the EAT - Lancet Commission on Healthy Diets from Sustainable Food Systems). Many Canadian scholars are involved in this international research and/or are also working to advance research in sustainable food systems.

This work has laid the foundation for attempts toward and the inclusion of sustainability principles within several national dietary guidelines. A comprehensive review of countries where the inclusion of sustainability was recommended or achieved, called "Plates, Pyramids and Planets", was completed by the Food and Climate Research Foundation and the FAO (Fischer & Garnett, 2016). The review details countries where sustainability principles were considered but ultimately not included (Australia, United States) and countries that have incorporated sustainability within national dietary guidelines (Brazil, Germany, Qatar, Sweden). Countries that have quasi-official guidelines with sustainability considerations were also described (Netherlands, Nordic Nutrition Recommendations, Estonia, France).

Key messages related to sustainability within dietary guidelines from the countries identified in the study who incorporated sustainability principles into dietary guidelines (Sweden, Brazil, Germany, and Qatar) are briefly outlined below.

Sweden

The Swedish National Food Agency published a revised version of their national dietary guidelines in 2015 (Livmedelsverket Sweden National Food Agency, 2015) which integrated the 2012 Nordic Nutrition Recommendations (Nordic Council of Ministers, 2014). Evidence for each of the recommendations was provided through a risk and benefit management report (Konde et al., 2015). The focus of the guidelines is on both the health and environmental consequences of specific foods (Bjørkdahl, Björklund, & Bignet, 2015). Sustainability is explicitly addressed in the title: "Find *your* Way to eat greener, not too much and be active". The first section of the guidelines, entitled "Sustainable Big Picture", encourages a holistic approach to eating which benefits to both human and environmental health (Livmedelsverket Sweden National Food Agency, 2015, p.3).

Foods are grouped into three categories: (1) *More*: vegetables, fruit and berries, fish and shellfish, nuts and seeds; (2) *Switch to*: wholegrain, healthy fats, low-fat dairy products; and (3) *Less*: red and processed meat, salt, sugar, alcohol.

Sub-categories are then either ranked for environmental impact. For example, wholegrain is ranked as low environmental impact, whereas dairy is more nuanced as "good and bad for the environment", which outlines negative environmental impacts of dairy, while noting the benefits of grazing animals on natural pastures (Livmedelsverket Sweden National Food Agency, 2015, p. 12). In addition, eco-friendly ideas and information is provided (e.g., choose sustainable seafood products or enjoying seasonal fruit and vegetables).

Germany

In 2013, the German Nutrition Society (2014) published the most recent version of the "Ten guidelines of the German Nutrition Society (DGE) for a wholesome diet". While communication about the launch of the guidelines highlighted sustainability, it is not a focus of the higher-level messaging of the guidelines(Fischer & Garnett, 2016). Five out of the ten main messages have explicit sustainability messages accompanying them. These include:

> #1. "Enjoy the diversity of foods available… They have a health-promoting effect and foster a sustainable diet".
> #3. "Fruit and vegetables - take '5 a day'… Rather favour seasonal products".
> #4. "Milk and dairy products daily; fish once to twice a week; meat, sausages and eggs in moderation… Choose fish products from recognised sustainable sources".
> #8. "Prepare carefully cooked dishes… Use fresh ingredients whenever possible. This helps to reduce unnecessary packaging waste".
> #10. "Watch your weight and stay active. This protects the environment and promotes your health [walk or take the bicycle from time to time]".
> (The German Nutrition Society, 2014, p.1).

Most recently, Germany has also become known for banning meat at official government functions, citing environmental concerns (Mosbergen, 2017).

Qatar

Qatar released its first dietary guidelines in 2015. While there is no over-arching message regarding sustainability, one (of eight) sections of the guidelines is entitled "eat healthy while protecting the environment". The six points within this section focus on: emphasizing a plant-

based diet, reducing leftovers and waste, consuming locally and regionally produced foods, choosing fresh, home-made foods over highly processed foods and fast foods, conserving water, and breastfeeding (versus natural resources and waste generated through the use of infant formula). The authors of the guide also suggest that sustainability messages cut across the overall recommendations in the guidelines (e.g., emphasis on plant-based foods or inclusion of legumes as a food group) (Seed, 2014).

Brazil

Brazil has become renowned for its 2014 dietary guidelines, which moved beyond a traditional "what to eat" approach, toward more holistic considerations (Ministry of Health of Brazil, 2014). Brazil's guidelines differ from nutrient-based guidelines, as they consider cultural, socioeconomic, environmental, biological, and behavioural dimensions of food consumption (Monteiro et al., 2015). Both environmental and social sustainability are explicitly considered under the guiding principle that "healthy diets derive from socially and environmentally sustainable food systems"(Ministry of Health of Brazil, 2014, p. 18).

Probably the most impactful feature of the Brazilian Food Guide is its classification of foods according to their levels of processing and the recommendations on their consumption. The guideline's overarching "Golden Rule", namely, "always prefer natural or minimally processed foods and freshly made dishes and meals to ultra processed products" (Ministry of Health of Brazil, 2014, p. 25) , is justified in terms of health, social, and environmental considerations (Ministry of Health of Brazil, 2014). The guidelines describe multiple social and environmental rationales for this statement. They also discuss many ecosystem concerns related to the production of animal foods.

Combining sustainability messages from dietary guidelines and evidence reviews

Table 1: Key dietary sustainability messages emerging from evidence and dietary guidelines

- Consuming a primarily plant-based diet
- Reducing meat consumption (especially ruminant meat)
- Consuming seasonal, field grown fruit and vegetables
- Reducing waste
- Choosing certified food (e.g. sustainably certified fish)
- Breastfeeding
- Limit consumption of processed foods/ Avoid consumption of ultra-processed foods

Table 1 outlines key sustainability messages which have emerged from both evidence reviews and the guidelines noted above. The first two messages are consistently demonstrated through systematic reviews (Clune et al., 2016; Hallström et al., 2015; Joyce et al., 2014; Nelson

et al., 2016; Wickramasinghe et al., 2013). Consuming seasonal, field grown fruit and vegetables is supported in systematic (Clune et al., 2016) and other reviews (Sustainable Development Commission, 2009). Reducing waste is supported in reviews by Garnett (2013), Nelson, et al. (2016), Food and Agriculture Organization (2013), Sustainable Development Commission reviews (2009) and the Australian National Health and Medical Research Council (2013).

Choosing sustainably certified fish is included in multiple reviews (Bradbear, 2011; Ranganathan et al., 2016) and choosing sustainably certified food and/or fish is included in messages in the Swedish, German, and Qatar dietary guidelines. While most messages originate from both the evidence noted above, and countries who have included sustainability principles within dietary guidelines, the last two messages are reflected only within dietary guidelines. Breastfeeding is included in Qatar Dietary Guidelines, reflecting the loss of resources required to produce infant formula (e.g. water or soya), and the resultant waste generated. Limited consumption of processed and/or cooking using fresh ingredients food originates from dietary guidelines from Brazil, Germany and Qatar.

Learning from international experiences

Multiple international experiences can be considered for application to the Canadian context. This includes the four cases reviewed above, as well as experiences from other countries who were not successful in incorporating sustainability principles into dietary guidelines. Key areas to consider that can influence the success of integrating sustainability messages are discussed below and include: the influence of food industry; intra-government collaboration and cross-sectoral alliances; civil society participation; "win-win" messages; and food waste. These are summarized as "lessons" in Table 2.

Influence of food industry

Observers of the US process of examining the inclusion of sustainability principles within the US dietary guidelines suggested that the lack of inclusion of sustainability considerations was the result of intense lobbying by the food industry, and in particular by meat producers (Bjørkdahl et al., 2015; Fischer & Garnett, 2016; Jelsøe, 2015; Merrigan et al., 2015). In Sweden, on the other hand, the meat and dairy industries appear to have in principle supported the integration of environmental sustainability into the guidelines (Bjørkdahl et al., 2015; Fischer & Garnett, 2016). Fisher and Garnett. (2016) also note that—on the counsel of dairy representatives—the Swedish guidelines highlight the importance of grazing animals for biodiversity conservation in Swedish pastures. In Qatar, a small domestic food industry who had limited participation in the creation of the guidelines coupled with the authority of the Emirate government over policy decisions helped contribute to the incorporation of sustainability principles within the dietary guidelines (Seed, 2014).

The Brazilian case offers some interesting lessons in terms of the influence of the food industry in the process of developing its latest food guide. The main opposition came from representatives of the Brazilian Food Industry Association (ABIA), but centred on the use of the classification of foods based on processing levels (Fischer & Garnett, 2016; Merrigan et al., 2015). This opposition, however, became explicit only after the initial draft of the guidelines were made available for public consultation, since, given the active role that big business has played in increasing consumption of "junk food" by Brazilians (Jacobs & Richtel, 2017), representatives from the food industry were not invited to participate in the elaboration of the guidelines (Carvalho, 2017). By then (during the public consultation phase with a final draft of the guideline), the view of a new dietary guideline based on social and environmental principles, and with recommendations about the consumption of foods according to their level of processing, had already achieved wide public support, particularly among public health and environmental groups. And despite last minute direct industry lobbying of the Ministry of Health to prevent the launching of the new guidelines, food industry opposition was not enough to turn the tide against the change.

Lobbying and pressure from the food industry in the development of dietary guidelines has long occurred (Jelsøe, 2015; Nestle, 2002). The High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security (2017, p.8) states that "power struggles present challenges as transnational food corporations use their economic power to hinder political action to improve food systems and diets" and also suggest that educating a new generation of food system professionals on nutrition could advance a nutrition-focused food system approach.

Intra-governmental collaboration and cross-sector alliances

It is notable that in Sweden, the Food Agency liaised with the Public Health Agency and the Swedish Board of Agriculture in leading the development of the guidelines (Fischer & Garnett, 2016). In Brazil, at the government level, collaboration between the Ministry of Health and the Ministry of Agrarian Development (with a mandate to support family farmers) effectively counterbalanced the opposition to the new guidelines coming from the Ministry of Development, Industry, and Foreign Trade and the Ministry of Agriculture (which supports agri-business interests) (Carvalho, 2017).

Cross-sectoral alliances may be helpful where governments feel politically constrained to include sustainability principles into dietary guidelines. It has been suggested that a focus on ultra-processed foods in Brazil broke down traditional coalitions between farmers (at least, family farmers) and agri-business, resulting in farmer support for the guidelines (Merrigan et al., (2015). While sustainability principles were not integrated in the US, Merrigan et al. (2015) argue that the process of guideline development aligned public health and sustainability advocates.

Fischer and Garnett (2016) suggest that the lack of inclusion of sustainability principles in the US and Australian dietary guidelines illustrated a lack of government support, or where governments prioritised other concerns. This occurred despite both countries having developed detailed evidence reports (Australian National Health and Medical Research Council, 2013; US Dietary Guidelines Advisory Committee, 2015). In both countries, it was argued that sustainability was outside the scope of the legal mandate for the committee developing the guidelines (which in the US one legal analysis later found to be false) (Fischer & Garnett, 2016). This suggests that evidence, while important, needs to be reinforced with support from cross-sectoral alliances in order to counter-balance competing interests influencing government decisions. As outlined in the next section, civil society involvement is also key in counter-balancing these interests.

Cross-sectoral alliances may also be helpful in leading the way through the creation of informal guidelines. For example, in France and Germany, arms-length or quasi-government institutions (e.g., German Council for Sustainable Development, French Agency for the Environment and Energy) set up complementary "shopping" guides which incorporated sustainability principles well before sustainability within dietary guidelines was considered (Fischer & Garnett, 2016).

Civil society participation

The development of the Brazilian guidelines is known for having a highly "participatory" process which included a wide range of stakeholders (Food and Agriculture Organization, 2014). However, there was a "controlled access" process, under which, before the elaboration of the draft for public consultation, some key stakeholders (notably, the food industry) were not invited to participate (Carvalho, 2017). The process and draft of the guidelines were led by a group of academics at the University of São Paulo and technical staff at the Ministry of Health. The version that was put for public consultation had inputs received during two workshops, which had the participation of experts in the areas of health, education, social work, and agriculture (but not environment).

These workshops were dominated by representatives from national and state governments, academia, professional associations (particularly nutritionists and public health practitioners), and NGOs operating in the areas of consumer advocacy, health, and food security. Consultations also occurred with the National Council for Food and Nutrition Security and the National Council for Health, which were both dominated by civil society representatives. Broader participation was solicited only at the public consultation stage, where people were invited to comment on a draft of the guidelines. Contributions from the food industry, opposing the draft, were mostly in the form of letters sent directly to the Ministry of Health rather than as comments on the online platform (Carvalho, 2017).

"Win-win" messages

In general, Nelson et al. (2016) concluded that dietary patterns which promote health also improve environmental sustainability indicators. Modest reductions in mortality rates and risks resulting from a shift from typical western diets to sustainable dietary patterns have been observed (Aleksandrowicz et al., 2016). Both the Sustainable Development Commission in the UK (Sustainable Development Commission, 2009), and the Health Council of the Netherlands (Health Council of the Netherlands, 2011) utilized the notion of "win-win" messages (for both nutritional and ecosystem health) when presenting advice to their national governments on sustainable diets. "Win-win" messages can satisfy agendas of different sectors (e.g., Health, Environment) and can also help to avoid messages that will result in trade-offs between health and the environment or have unintended adverse consequences (Garnett, 2014; Garnett, Mathewson, Angelides, & Borthwick, 2015; Sustainable Development Commission, 2009). For example, the frequent health recommendation to eat fish more often is problematic given dwindling global fish stocks and ecological concerns regarding some farmed fish. This raises the importance of policy analysis of potential recommendations in identifying win-win messages.

In the Brazilian dietary guideline, environmental groups complained of the lack of explicit condemnation of the high use of chemicals in agricultural production in the country, a major problem in Brazil. Step #6 of the "10 Steps to Healthy Diets" of the guideline states that people should "whenever possible, buy organic and agroecological based foods, preferably directly from the producers" (Ministry of Health of Brazil, 2014, p. 127), but that was considered too mild by these environmental groups (Carvalho, 2017). However, the very classification of food by level of processing and the recommendation to "avoid ultra-processed foods" can be seen as a "win-win" message for promoting better health and environmental sustainability just by the expected reduction of resources used in processing and transportation (e.g., energy), reduction in emissions to the atmosphere that occur through the production of heat in food processing, and the reduction in the use of wasteful packaging (Monteiro et al., 2015; Notarnicola, Tassielli, Renzulli, Castellani, & Sala, 2017).

Food Waste

Much international attention is focused on food waste. The Food Wastage Footprint report concludes that food loss and waste harms climate, water, land, and biodiversity (Food and Agriculture Organization, 2013). Food waste depletes natural resources across the food chain and highlights a lost opportunity to feed hungry populations. Most guidelines that include sustainability principles refer to the issue of food waste, with the rationale of a loss of resources. Food waste was the environmental issue that resonated most strongly with stakeholders in Qatar (Seed, 2014), as it is seen as unlawful (haram) to waste good food (Zaufishan, 2011). As the

issue of food waste has such interest and attention, it may be a key point in leveraging the incorporation of sustainability into dietary guidelines.

Applying international lessons to Canada

As noted above, involvement of the food industry—particularly early in the process of guideline development—can hinder the incorporation of sustainability principles. While the previous Canada Food Guide was criticized for influence by industry, Health Canada stated their intent to minimize influence in its more recent iteration (Kirkup, 2017). Dr. Hasan Hutchinson, Director General for Health Canada's Nutrition Policy and Promotion stated "We will not meet with industry during the development of our policy around the food guide, but they will be able to input in the formal [online] consultation process"(Johnson, 2016). Nonetheless, Canada's socio-political climate may be most similar to the US and Australia, where observers suggested that a lack of inclusion of sustainability principles occurred as a result of lobbying from food industry (Bjørkdahl et al., 2015; Fischer & Garnett, 2016; Jelsøe, 2015; Merrigan et al., 2015).

The development of the dietary guidelines in Canada is led by Health Canada. The development of more holistic dietary guidelines, however, could be fostered through intra-governmental collaboration with the Ministry of Agriculture and Agri-food Canada, along with the Ministry of the Environment and Climate Change. Likewise, if the country's first national food policy—the development of which is being led by the Ministry of Agriculture and Agri-food—is truly representative of the vast number of stakeholders that have participated in consultation surrounding it, this process could forge the path for both intra-governmental and cross-sector collaboration in all types of food and nutrition policy in Canada.

As noted above, cross sector alliances can provide a counter balance to food industry, supporting governments who feel politically restrained in integrating sustainability principles into dietary guidelines. In their Phase I consultations, Health Canada asked respondents to rate the importance of various concepts, including the "Impact of eating habits on the environment"(Ipsos Public Affairs, 2017). Details of the feedback about this was not made available. However, the fact that Health Canada has identified "environment" as a "consideration" for the development of the next iteration of the dietary guidelines (Health Canada, 2017) may reflect interest expressed by respondents (which included predominantly the general public and professionals). This may also suggest that Health Canada may deem considerations with environmental sustainability within the scope of dietary guidelines (unlike the US and Australia).

Civil society showed substantial interest in the latest revision of the Canada's Food Guide during the phase 1 consultations, where almost 20,000 submissions were made, with almost 15,000 coming from the "general public" (Ipsos Public Affairs, 2017). In phase 2 consultations, the largest number of submissions also came from "members of the public"(Health Canada, 2018). In parallel, growing attention to food issues by Canadians is demonstrated in many ways,

including municipalities taking a role in food policy and through the creation of food policy councils, food charters, and food procurement policy. Experiences in Brazil and Sweden suggest that civil society support could be instrumental in advancing the case for including sustainability principles within dietary guidelines. In the US, Merrigan et al. (2015) posited that the process "awakened civil society to the potential influence on dietary guidelines beyond food consumption" (p. 166). Lang (2017), however, stresses the need to engage diverse cultural groups to avoid rejection of sustainability principles on the basis of ethical, religious, ethnic, and national differences.

"Win-win" messages will be important in Canada, especially where health risks may trump the interests of the food industry. For example, Health Canada's 2015 evidence review links the intake of red meat to colorectal cancer (Government of Canada, 2016). Messages with multiple benefits—for human and environmental health, as well as cultural, social and economic benefits—may be best received. Indeed, Health Canada's 2017 "Guiding Principles" for the development of the dietary guidelines, propose a "shift towards a high proportion of plant-based foods"(Health Canada, 2017). This is a clear example of a "win-win" message for both human and environmental health.

Finally, akin to Qatar, the high profile of the issue of food waste could be used to leverage public interest in sustainable diets in Canada. Indeed, Health Canada has referenced the issue of "food waste" when describing the "consideration" of environment in their Phase 2 Consultation report (Health Canada, 2018).

Table 2: Summary of lessons from international experiences for incorporating sustainability principles into Canadian dietary guidelines

- Involve food industry later in the process of guideline development.
- Intra-government collaboration and cross-sector alliances can support governments who may otherwise feel constrained to act.
- The mandate of dietary guidelines must include sustainability concerns.
- Civil society can be strong advocates.
- "Win-win" messages (for human and ecological health) can satisfy agendas of different sectors.
- Attention to the issue of food waste can act as a lever.

Opportunities to advance the integration of sustainability principles into dietary guidance in Canada

Beyond the lessons derived from international experiences, opportunities exist to advance the case for the incorporation of sustainability principles within national dietary guidelines in Canada. These include: escalating concern regarding climate change and environmental degradation, increased awareness of externalized costs of food system to health care and

ecosystem, growth of Indigenous food sovereignty movements, and national and international interest in policy coherence.

Escalating concern regarding climate change and environmental degradation

Canada has shown a renewed interest in climate change with the new government elected in 2015, as demonstrated by the retitling of the Ministry of Environment and Climate Change. Concern over the significant impact that our food system has on climate change and environmental degradation underpins all of the research, policy, and practice related to sustainable diets. Research is also emerging on the different ways that climate change, in turn, impacts our food system. Crop losses due to more frequent and more severe floods and droughts, reduced nutritional values of important crops, and increased risks due to natural disasters are all examples of how climate change and environmental degradation may affect the food system (IPES-Food, 2017).

Related to these concerns, there is also increased recognition of the need for local and regional food systems that are resilient in emergencies and disturbances (increasing as a result of climate change). Tendell et al. (2015) describe resilience and sustainability as complementary concepts, where "sustainability is the measure of food system performance, whereas resilience can be seen as a means to achieve it… during times of disturbance" (p.18).

Increased awareness of externalized costs of food system to health care and ecosystem

Calculating and capturing the externalized costs of the current food system on health care and the ecosystem can help to give a clearer picture of the true costs of our food system to the public. Currently the negative externalities of our food system are not covered in the cost of food (Godfray et al., 2010), often resulting in the need for the public sector and other sectors of the economy to absorb these costs. In its 2017 report, "Unravelling the Food-Health Nexus", the International Panel of Experts on Sustainable Food Systems (IPES-Food) identified five key channels through which food systems are making people sick. People get sick because: (1) they work under unhealthy conditions, (2) they are affected by contaminants in water, soil, or air, (3) they eat foods that are unsafe for consumption, (4) they have unhealthy diets, and (5) they are food insecure and can not access adequate, acceptable foods at all times (IPES-Food, 2017).

One major concern of a health impact transiting through the environment is the spread of antimicrobial resistant bacteria due to heavy (nontherapeutic) use of antibiotics in intensive livestock farms, which threatens the effectiveness of antibiotics for human medicine. In this case, the private sector is beginning to show interest in managing the financial risks associated with this negative externality. The Farm Animal Investment Risk & Return (FAIRR) Initiative draws attention to antibiotic overuse and poor environmental management for global investors as

"sustainability risks likely to affect value and viability in the global food supply chain" (Coller, 2017, p.1).

Growth of Indigenous food sovereignty movements

Food sovereignty and Indigenous food sovereignty movements in Canada have a foundation in international movements such as Via Campesina (Food First News & Views, 2005; Via Campesina, 2011). Food sovereignty contends that "the people who produce, distribute, and consume food should control the mechanisms and policies of food production and distribution, rather than the corporations and market institutions they believe have come to dominate the global food system" (Food First News & Views, 2005, p.2). The Indigenous food sovereignty movement has since grown in Canada (Centre for Sustainable Food Systems & Land and Food Systems, 2017; Food Secure Canada, undated-b). These movements have the potential to gain more momentum in Canada given national attention to the Truth and Reconciliation Commission report recommendations, which include increasing self-governance by Indigenous communities, and cultural resurgence (Truth and Reconciliation Commission of Canada, 2015).

Greater national and international interest in policy coherence

Interest in policy coherence at international and national levels provides an opportunity to advance the integration of sustainable diets into national dietary guidance. A recent UN System Standing Committee on Nutrition report suggests that the UN Decade of Action on Nutrition (2016 – 2025) is positioned as an "opportunity to transform our current food system into one that is sustainable, resilient, and provides healthy diets for all" (UN System Standing Committee on Nutrition, 2017, p. 15). The High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security (2017) situates the "role of diets as a core link between food systems and their health and nutrition outcomes" (p. 2), recommending the integration of nutrition within national policies, programmes and budgets. This includes fostering policy coherence across sectors such as agriculture, environment, energy, water, health, education and finance.

Policy coherence is urgently needed in the case of trade agreement negotiations. In fact, addressing "the impacts of trade and investment agreements on food environments and diets" is an overarching recommendation of the 2017 High Level Panel of Experts on Food Security and Nutrition (2017, p.8), suggesting that "states and inter-governmental organizations should… ensure that multilateral and bilateral trade and investment agreements are consistent with nutrition policies and favour the transition towards more sustainable food systems."

Negotiating agreements that are more responsive to environmental and human health promotion and protection is essential so that proposals put forward in dietary guidelines are not challenged in international trade courts. Moving forward, given the escalating concern regarding

climate change and environmental degradation as well as increased awareness of external environmental and health costs of food systems, there could be an opportunity not only to add sustainability-linked recommendations to dietary guidelines, but also for those recommendations to be protected in trade agreement negotiations.

In 2017, the Government of Canada initiated the development of its first-ever national food policy, led by the Department of Agriculture and Agri-Food Canada. As noted above, Canada has a unique opportunity to advance policy coherence that includes and synchronizes the areas of health, the food system, and the environment by developing its national dietary guidelines within the context of this broader food strategy and within the Government of Canada's priorities of climate change and environmental sustainability. Canadian scholars, organizations, municipal food policy councils, and professional and citizen groups have been advocating for joined-up food policy in Canada since the 1990s (Heart Health Coalition of British Columbia, 1997; MacRae, 1999); this interest continues to grow (Food Secure Canada, undated-a; MacRae, 2011; Rideout, Riches, Ostry, Buckingham, & MacRae, 2007). Building on this interest, integration of sustainable diets into Canadian national dietary guidance can advance policy coherence by positioning the role of diets as a core link between food systems and both human and ecological health.

Table 3: Opportunities to advance the integration of sustainability principles into dietary guidance in Canada

• Escalating concern regarding climate change and environmental degradation
• Increasing awareness of externalized costs of food system to health care and ecosystem
• Growth of Indigenous food sovereignty movements
• Greater national and international interest in policy coherence

Conclusion

The marriage of human health and agriculture was first proposed by the League of Nations in the 1930's (1937). Building on this notion, MacRae (1999) recommended the creation of a coherent food policy having "optimal nourishment of the population as its highest purpose, making agricultural production and distribution a servant of that purpose, and ensuring the food system is financially and environmentally sustainable" (p.182). Due to escalating concerns regarding climate change and environmental degradation, it is imperative that we address the environmental consequences of our food system. While dimensions of sustainable diets beyond environmental aspects are outside the scope of this article, it is important to acknowledge that different facets of the definition of sustainable diets are not mutually exclusive. Emerging evidence reflects the link between our food supply, social justice, human health, and the environment.

Incorporating sustainability principles into national dietary guidelines is identified through the international "sustainable diets" agenda as one of many composite approaches required for the ecological health of the planet. The Canada Food Guide is a strategic tool for communicating dietary guidance to the general public, to health professionals, and to industry. Dietary guidelines are also the foundation for nutrition education, meal planning, and other nutrition policy across all levels of government and sectors of society. As noted above, environment is listed as one of three "considerations" under "Guiding Principles and Recommendations" for the next iteration of the Canada Food Guide (Government of Canada, 2017). How this "consideration" will be expressed in the next version of the national dietary guidelines is yet to be determined.

Canada has a unique opportunity to advance policy coherence across health, the food system, and the environment due to the 2017 concurrent launches of the revision of national dietary guidance and the formation of a national food policy. Policy coherence between sectors including fiscal, health, agricultural, and environmental does not need to occur at the expense of health. In fact, positioning the role of diets as a core link between food systems, human health, and ecological health could potentially help to identify, and in theory, address public health care costs associated with the current food system. Coordination between government departments that house disparate pieces of food policy has become crucial as Canadian society grapples with complex, interconnected issues such as climate change, ecosystem degradation, and escalating chronic disease, and their associated costs.

Shifting the objectives of the food system toward human and ecological health is ideal. At minimum, cross-ministry policies can be created to merge human and ecosystem health objectives with food and agricultural system policy and practices, including the incorporation of sustainability principles into dietary guidelines. Specific recommendations from the literature and the experiences and perspectives from other countries can be used as lessons for building the case for integrating sustainability principles in the Canadian dietary guidelines. This case is further strengthened through opportunities that exist for Canada to leverage this integration such as: escalating concern regarding climate change and environmental degradation, increasing awareness of externalized costs of food systems to health care and ecosystems, growth of Indigenous food sovereignty movements, and greater national and international interest in policy coherence.

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Perspective

The case for a Canadian national school food program

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Abstract

Canada is one of the only member countries of the Organization for Economic Cooperation and Development (OECD) without a national school food program. Good nutrition impacts children's health, wellbeing, and learning; and school food environments offer an important setting to promote health and other food system sustainability behaviours that can last a lifetime. We present an overview of national and international evidence, with a focus on promising practices that support the establishment of a national school food program in Canada. School food programs have been shown to benefit health and dietary behaviour and critical food literacy skills (learning, culture, and social norms) that support local agriculture and promote sustainable food systems. Finally, we make recommendations for key elements that should be included in a national school food program for Canada.

Keywords: school food programs, children, Canada

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Introduction

Once children reach school age, they spend more of their waking hours in school than in any other environment. High-quality nutrition impacts children's health, wellbeing, and learning, and school environments have been "identified as a focal point for intervention" (Ritchie et al., 2015, p. 647) as part of a systems approach to support the health of children and youth (Institute of Medicine, 2012) that can last a lifetime. Yet, Canada is one of the only member countries of the Organization for Economic Cooperation and Development (OECD) without a national school food program (Koç & Bas, 2012). School food programs (SFPs) include, but are not limited to, lunch, breakfast and/or snacks served in the school environment, with or without integration into curriculum, and have the potential to contribute to child, family, community, and environmental health and well-being in a variety of different ways (Oostindjer et al., 2017).

SFPs may be able to improve access, quantity, quality and sustainability of foods for school-aged children and youth. Available evidence confirms SFPs can be an effective response to food insecurity (Roustit, Hamelin, Grillo, Martin, & Chauvin, 2010). SFPs have the potential to increase student access and consumption of healthy foods, reduce the risk of chronic disease, as well as increase school attendance, behavior, and educational achievement (Bundy, Drake, & Burbano, 2012), and improve cognition and mental well-being (Hoyland, Dye, & Lawton, 2009). Furthermore, SFPs have the potential to improve child food literacy and strengthen local food systems (Powell and Wittman, 2018). In this paper we present an overview of national and international evidence that supports the establishment of a national SFP in Canada. We highlight evidence from high-income countries around the world, with a focus on promising practices that offer a model for a national SFP for Canada. Finally, we make recommendations for key characteristics that should be included in a national SFP for Canada (see Table 1 below).

Historical context of school food programs (1850–present)

Historically, there is great variability in the driving forces leading countries to introduce SFPs and as such, the models that exist vary significantly. For example, the United States (U.S.) offers their national SFPs through the U.S. Department of Agriculture in partnership with state agencies and local schools, often through a means-tested approach. Other countries either take a whole-of-government approach (i.e. Italy and Brazil) or the Ministry of Education operates SFPs, paired with private funds (from families) to offset costs (i.e. France and Japan) (Harper, Wood, & Mitchell, 2008). As result, there is variation in the cost of providing a school meal, based on several factors such as "prices, availability, and procurement methods" as well as the level of government subsidy (Aliyar, Gelli, & Hamdani, 2015, p. 11). In contrast, what school food provisioning currently exists in Canada is the responsibility of individual provinces and territories. The Federal government provides transfer payment funding to support health and education in the provinces which is allocated to meet various provincial priorities. The scope of

provincial and territorial funding often falls short on funding initiatives related to school food due to competing priorities (Martorell, 2017).

Nationally mandated SFPs in high-income countries were typically introduced as a response to hunger or in preparation for war (Oostindjer et al., 2017; Levine, 2010). The U.S. national SFP was also conceived as a market for surplus agricultural commodities during the depression (United States Department of Agriculture Food and Nutrition Service, 2017). According to Oostindjer et al. (2017), the development of SFPs in high-income countries follows three phases, the third of which is just taking hold today. In the first phase, from about 1850 through to about the 1970s, SFPs were established and maintained primarily to reduce hunger. They focused on provision of sufficient calories with minimal focus on food quality. Beginning in the 1970s, in some parts of Europe, and in the 1990s and 2000s, in the US and United Kingdom (UK), a shift towards improving food quality began, creating the second phase of SFPs. This second phase, which is ongoing in many countries and regions, shifted the focus towards dietary guidelines and policies for SFPs, with the intent of improving the nutritional quality of food served. The third phase, which is only in its infancy in most countries, is a response to increased rates of childhood obesity and chronic diseases and the larger societal context of food systems, climate change and environmental degradation. This phase is focused on incorporating broader food-system and societal issues into food programs and policies and integrating them more closely with curricula and the school environment.

Health and dietary behaviour and school food policies and programs

Many SFPs are designed to support childhood nutrition, but there is wide variation in the policies and guidelines programs are expected to follow in order to support healthy eating. In Canada, over the past decade school food policies or guidelines have been implemented by various provinces and territories. The intent of the policies or guidelines is to improve school food environments and support healthy eating while outlining requirements or recommendations for serving and/or selling food and beverages in the school environment, although almost all are voluntary. After New Brunswick (McKenna, 2003), British Columbia (BC) was one of the first provinces to introduce mandated standards for food served in schools (The Guidelines for Food and Beverage Sales in B.C. Schools, 2005), closely followed by Nova Scotia in 2006 (Government of Nova Scotia, 2006), and Ontario in 2010 (Government of Ontario, 2010). Since the release of Nova Scotia's policy in 2006, intake of sugar-sweetened beverages (SSBs) and overall energy intake have decreased, and dietary intake has improved among students in that province (Fung, McIsaac, Kuhle, Kirk, & Veugelers, 2013).

Several international reviews focused on changes in the availability and intake of healthy foods (especially vegetables and fruit) and unhealthy foods (SSBs or potato chips, for example) have found that policies improving the food environment in schools can be effective at changing food choice (Cohen, Richardson, Parker, Catalano & Rimm, 2014; Evans, Christian, Cleghorn,

Greenwood, & Cade, 2012; Taber, Chriqui, Powell, & Chaloupka, 2013). For example, in the US, studies have found that stricter nutritional guidelines in schools are associated with greater availability and intake of healthier foods, particularly vegetables and fruit (Evans, Christian, Cleghorn, Greenwood, & Cade, 2012; Jaime, & Lock, 2009; Taber et al., 2013), or reduced body mass index (BMI) (Taber et al., 2013). Overall, healthy food policies have been found to be associated with healthier food choices and intakes (Cohen et al., 2014; Greenhalgh, Kristjansson, & Robinson, 2007), especially in the U.S.

Research on the health and dietary behaviour impacts of SFPs in high-income countries finds modest positive effects overall, including higher vitamin intakes and increased vegetable and fruit consumption in some cases (especially in younger children) (Kristjansson et al., 2007; Van Cauwenberghe et al., 2010). Research that compares the nutritional quality of food consumed at school that was brought from home versus food acquired through SFPs has found that SFPs provide healthier food overall (Caruso & Cullen, 2015; Evans, Cleghorn, Greenwood, & Cade, 2010; Hubbard, Must, Eliasziw, Folta, & Goldberg, 2014; Hur, Terri, & Reicks, 2011; Johnston, Moreno, El-Mubasher, & Woehler, 2012; Neilson et al., 2017; Stevens & Nelson, 2011; Taylor et al., 2012). Studies have also found that SFPs can increase vegetable and fruit consumption (Bontrager et al., 2014; Joshi, Azuma, & Feenstra, 2008;) and can reduce disparities in vegetable and fruit consumption between children from higher versus lower socio-economic status households (Ahmadi, Black, Velazquez, Chapman & Veenstra, 2014; Longacre et al., 2014).

In the UK, a two-year pilot of free school meals in two local authorities, where free school meals were made universal to all primary school children, was compared to a third, where free school meal entitlements were extended to a larger number of students (a higher income threshold was applied in this district) (Kitchen et al., 2010). In the extended entitlement (not universal) authority, no impacts were seen on children's eating habits, whereas in the universal entitlement authorities, there were reductions in the consumption of potato chips and soft drinks and an increase in vegetables consumed at lunch. Parents in the universal pilot areas also had more positive perceptions of the school meals for health compared to food brought from home and thought that their children were more willing to try new foods.

Evidence has been emerging over the last couple of decades on the benefits of multi-component school food interventions and especially of those that focus on younger children (prior to adolescence) (Greenhalgh et al., 2007; Hollar et al., 2010). Multi-component interventions include the introduction of healthy foods in meals, integrated with curriculum, and often with parent involvement (Van Cauwenberghe et al., 2010). In the U.K., where a school meal intervention was implemented and integrated with curriculum on healthy and sustainable eating, significantly higher vegetable and fruit intake was seen among participants (Jones et al., 2012), suggesting important benefits of these types of more comprehensive interventions.

Furthermore, families can struggle to introduce healthy foods for a variety of reasons, including food availability, time scarcity, palatability of new foods, and affordability (Daniel, 2016; Engler-Stringer, 2009; Fielding-Singh, 2017; Slater, Sevenhuysen, Edginton, & O'Neil,

2012). Research in Canada has demonstrated that socio-economic status affects dietary intake for school-aged children (Ahmadi et al., 2014). Introduction of healthy foods in the context of a universal SFP has the potential to reduce this burden on families.

Aspects of mental health, such as stress and anxiety (among both child beneficiaries and their parents) are also important to consider when evaluating the health impacts of SFPs (Alaimo, Olson, & Frongillo, 2001). There are numerous parent- and family-focused websites and news articles that discuss the issues families face in trying to provide healthy school lunches for their children (Quotient Technology Inc., 2012; Belisle, 2016; Waverman & Beck, 2016; The Lunch Lady, 2016; Carlson, 2015; Loney, 2016). Provision of healthy school lunches is challenging for families for many reasons, including long working hours or poverty (Bauer, Hearst, Escoto, Berge, & Neumark-Sztainer, 2012; Griggs, Casper, & Eby, 2013). Parents may rely on highly processed foods, low in key nutrients but high in nutrients of concern (salt, sugar, and fat), to deal with time, poverty, and/or low-incomes (Slater et al., 2012).

Research examples from Canada

In a comprehensive school health intervention in Alberta, participating schools implemented a healthy eating policy (along with other food environment changes), resulting in a significant increase in consumption of vegetables and fruit, and decreased energy intake in intervention schools. Students also exhibited lower obesity rates compared to students elsewhere in the province (Fung et al., 2012).

In another study, the Child Nutrition Council of Manitoba offered a Vegetable and Fruit Snack Program (2008-2015) to schools across the province. This led to a significant increase in vegetable and fruit consumption and positive impacts on student behaviour and other indicators, such as attendance and social interaction (Child Nutrition Council of Manitoba, 2017).

In Ontario, a multi-component school fruit and vegetable program for First Nations youth improved their exposure to, and preference for, a variety of vegetables and fruit and enhanced their nutrition knowledge; however, it did not impact intentions or self-efficacy, which is likely due to high food insecurity rates and community-level barriers to healthy eating (Gates et al., 2011).

Learning and school food programs

Another purpose of school food programs (SFPs) is to support learning in the school context. Studies focused on SFPs and academic achievement, attendance, tardiness, and drop-out rates point to their other important impacts. Attendance and tardiness appear to be most affected, but some studies have found improvements in academic achievement with the introduction of SFPs (Alaimo, Olson, & Frongillo, 2001; Anderson, Gallagher, & Ritchie, 2017; Florence, Asbridge,

& Veugelers, 2008; Hollar et al., 2010; James, & Groff, 1997; Kleinman et al., 2002; Meyers, Sampson, Weitzman, Rogers, & Kayne, 1989; Murphy et al., 1998; Pollitt, Gersovitz, & Gargiulo, 1978; Symons et al., 1982; Turner & Chaloupka, 2015). Levy (2013) argues that arriving at school on time may be an important benefit of breakfast programs in particular and found positive associations between healthier diets in children overall and academic attainment. Two studies by Bro and colleagues, on teens considered to be "at risk", found that breakfast eaten before class (at school) improved attention during class (Bro, Shank, Williams, & McLaughlin, 1994; Bro, Shank, McLaughlin, & Williams, 1996).

Researchers from the U.K. two-year pilot of free school meals in three local authorities, discussed in the previous section, also measured changes in academic performance and only found improvements in the two regions where the free school meals were universal (Kitchen et al., 2010). The universal regions showed significant improvements in academic attainment, especially for children from the least affluent families and with lower prior attainment, leading the authors to speculate that the universal program may have reduced educational inequalities. Interestingly, the authors did not find differences in attendance between either the universal entitlement or increased entitlement groups and controls, thereby leading them to conclude that the attainment improvements were due to increased productivity at school (rather than improved attendance).

Oostindjer et al. (2017) argue that it is particularly important for SFPs to take an education-integrated approach. An education-integrated approach includes involving children in growing and preparing food, teaching them about sustainability in the food system (such as waste issues), and healthy behaviours along with provision of school meals. Using various international examples, they explain that integrated approaches are lacking in Sweden and the U.K., where evaluations have shown that meal programs are not viewed as positively by participants. They argue, "The lack of integration of food education with practice…results in under-utilization of the full potential of food and eating as source of learning" (p. 3948). In Italy, Japan, and Finland, where food programs have taken an education-integrated approach and there is more opportunity to integrate school meals with curriculum (food and nutrition, science, cultural learning, and more), the programs are viewed more positively.

Research examples from Canada

Evidence from Canada strongly supports the benefits of SFPs on improving learning-related outcomes. In Ontario, the Toronto District School Board introduced a school-based program called *Feeding our Future* that offered nutritious meals to all students regardless of their ability to pay (Easwaramoorthy, 2012). Evaluation of the program found improved student behaviours and attitudes, reduced tardiness, reduced incidence of disciplinary problems, and improved ability to stay on task (Easwaramoorthy, 2012), similar to the results of the *Kids Eat Smart Foundation Newfoundland and Labrador Evaluation* (Goss Gilroy Inc., 2013). The *Feeding our*

Future study showed students who ate the morning meal were less likely to be suspended and more likely to attend school regularly. Also, a greater proportion of high school students who ate the breakfast on most days were on track for graduation, compared with students who ate it only on a few days or not at all. Finally, a greater proportion of students who ate breakfast on most days at school achieved or exceeded provincial standards in reading, compared to those who never had the morning meals or ate them only a few days a week.

As discussed above, the vegetable and fruit snack programs intervention by the Child Nutrition Council of Manitoba showed positive impacts on student behaviour, attendance and social interaction (Child Nutrition Council of Manitoba, 2017). In Nova Scotia, research has identified a strong association between diet and academic performance, including evidence that school breakfast programs may potentially help to reduce food insufficiency, improve nutritional status and support academic performance in mathematics (McIsaac, Kirk, & Kuhle, 2015). These findings reinforce the findings of earlier studies in the province (Florence, Asbridge, & Veugelers, 2008). Finally, data from Prince Edward Island found that students with higher academic performance (average grades above 90 percent) were more likely to consume milk, vegetables, and fruit daily than were those who reported lower grades (MacLellan, Taylor, & Wood, 2008).

Culture, social norms and school food practices

In some countries, SFPs also have additional social and cultural education mandates. Some research has shown that SFPs contribute to positive behaviours including teaching about culinary heritage and social norms around food and eating (Larson & Story, 2009; Moffat & Thrasher, 2014; Oostindjer et al., 2017). In some countries, school meals are typically provided in a more traditional home meal-type setting where children sit together around tables with their teachers, and emphasis is placed on socialization (learning norms and values related to mealtimes for example), and about how to minimize food waste (Harper, Wood, & Mitchell, 2008; Oostindjer et al., 2017). Teachers may link the meal to learning about cooking, farming, and food cultures and thereby integrate the social and academic learning with consumption of the midday meal.

In countries such as Italy, Finland, France, and Japan, children sit around tables in groups at the midday meal (often with a teacher or other adult). Children serve themselves (or are served by other children) and are taught about table manners and aspects of their country's food culture (and are sometimes introduced to foods from other parts of the world) (Cather, 2016; Finnish National Board of Education, 2008; Harlan, 2013). In Finland, the meal program is considered a key aspect of the education system and is integrated closely with curriculum, including learning objectives related to social relationships, norms around eating, and appropriate behaviour. Research has shown some benefits of this type of social learning incorporated into school meal programs (Benn & Carlsson, 2014; Kubik, Lytle, Hannan, Perry, & Story, 2003; Tanaka & Miyoshi, 2012).

In lower-income countries, there is evidence that SFPs increase girls' attendance at school (Gelli, Meir, & Espejo, 2007), however, in high-income countries such as Canada, there is little known about whether SFPs contribute to gender equity. We know that women continue to do the majority of household food work in Canada (Slater et al., 2012). Hence, it could be argued that integrating SFPs with curriculum and hands-on learning with regards to growing and preparing food could contribute to a more equitable distribution of food labour in households, once participating children reach adulthood. Research on cooking programs with elementary school-aged children have found significant increases in cooking self-efficacy, improved attitudes towards cooking, and greater preference for vegetables and fruit, especially among boys (and children who had the least cooking experience prior to the cooking intervention) (Cunningham-Sabo & Lohse, 2014).

Research examples from Canada

Several studies in Canadian provinces have reported findings that support the role of SFPs in promoting a positive food culture and social norms. In BC, students who participated in Project CHEF, a hands-on cooking and tasting program offered in Vancouver public schools, reported an increased familiarity and preference for the foods introduced through the program. A significantly higher percentage of students exposed to Project CHEF reported an increase in skills such as: cutting vegetables and fruit, measuring ingredients, using a knife, and making a balanced meal on their own. They also reported a statistically significant increase in confidence making the recipes introduced in the program including fruit salad, minestrone soup, and vegetable tofu stir-fry (Zahr & Sibeko, 2017).

Food literacy and environmental education

Focusing SFPs on the provision of healthy and sustainable foods (vegetables and fruit, pulse crops, and locally produced foods as just a few examples) along with the promotion of sustainable food behaviours through school gardening and learning about how to reduce food waste, may work in a mutually reinforcing way (Oostindjer et al., 2017). These mutually reinforcing behaviours within school environments may then spill into life away from school (Suarez-Balcazar, Kouba, Jones, & Lukyanova, 2014). Stone (2007) and Weaver-Hightower (2011) both argue that food is not often used as a tool for education on environmental issues, about social and political systems, or about agriculture, yet it has great potential to be used for all of them. Food literacy education programs show how children can be involved in growing and preparing food, along with learning about how the food system works, and its critical environmental and social challenges, in age-appropriate ways to integrate learning with a meal program (Cullen et al., 2015). This integration allows students to learn greater appreciation for

food (especially food they have grown or prepared themselves), a greater willingness to try new foods (Dohle, Rall, & Siegrist, 2014; Morris, Neustadter, & Zidenberg-Cherr, 2001), and an understanding of how food systems intersect with other aspects of their lives.

Oostinjer and colleagues (2017) argue that the "emerging integration of school meals with classroom curricula aligned with food cultural learning and establishing an optimal food and social environment may facilitate learning of healthy and sustainable food behaviors" (p. 3950). An example from the U.K. is the Food for Life Partnership Program, which has a focus on sustainable eating behaviours and found a significant improvement in child participants' vegetable and fruit consumption (Jones et al., 2012). Brazil is also known worldwide for its SFPs with significant focus on food-system sustainability (Morgan & Sonnino, 2008).

Research examples from Canada

From 2010-2016, the Think&EatGreen@School project in B.C. worked to "build connections to create healthy, sustainable school food systems" (Rojas, Black, Orrego, Chapman, & Valley, 2017) by providing its entire school community "with opportunities to be involved in all aspects of the food cycle, to learn how to regain the right to participate in the decisions that shape the food system of public schools and educational institutions, and by extension, the food system of the City of Vancouver" (Rojas et al., 2011, p.773). In Ontario, emerging literature supports school gardens as a means to connect or reconnect children to the natural world in which they can form their own relationships with life and understand the origins of food (Harrison-Vickers, 2014).

The BC Farm to School Hubs program is part of a network formed in 2007 administered by the Public Health Association of BC and funded by the BC ministry of Health. In 2014, 50 new farm to school programs were developed across the province, towards the goals of bringing healthy, local food to schools, hands-on experiential learning opportunities for students, and fostering school and community connectedness. In a program evaluation, food literacy training was highlighted as the dominant activity emerging from the regional hubs, especially growing food in school gardens as a method to achieve other curricular learning outcomes and promote healthy lifestyle habits. For example, a school garden program at Smithers Elementary produces 35 types of edible plants, used in curriculum about climate change, food consumption, health and well-being, water quality, and food production. Other gardens work with elders and traditional knowledge keepers to cultivate native and traditional plants and share harvested foods in school programs (Powell & Wittman 2018).

Strengthening local and sustainable food systems through school meal procurement

Globally, government-sponsored institutional meal programs support redistributive and developmental goals such as food security, environmental sustainability, and economic growth in relation to local food systems. Farm to school programs, in particular, aim to increase the locally sourced share of sustainable and healthy foods procured, prepared, and/or eaten in schools by students. For local farmers, investment in agricultural production for target markets such as school meal programs can facilitate increased productivity, market access, better quality crops, and risk-mitigation strategies (De Schutter, 2014).

Strengthening local economies through investment in regional food production and distribution systems is a pillar of both the Federal Ministry of Agriculture and Agri-Food Mandate Letter in 2016 and provincial strategies, such as the 2015 BC Provincial Agrifood and Seafood Strategic Growth Plan. The BC plan includes goals for increasing within-province purchases of BC products by $2.3 billion (or 43 percent) by 2020, with a proposed action for achieving this goal to "encourage the development and adoption of buy local policies for food retail, food services, and public sector institutions" (British Columbia Ministry of Agriculture, 2015). Farmers and food processers who participate in local school meal programs indicate the benefits of structured school food procurement contracts for mitigating market volatility, for increasing market diversification and expansion and also as a mechanism for increased awareness of local agriculture among consumers (Izumi, Wright, & Hamm, 2009; Izumi, Wright, & Hamm, 2010; Wittman & Blesh, 2017).

In the U.S., the 2010 *Healthy, Hunger-Free Kids Act* modified nutrition guidelines for school meals, and established the USDA Farm to School program to connect local farmers to school nutrition programs. As of 2013, more than 12,000 farm-to-school programs were active in 50 U.S. states (Buckley, Conner, Matts, & Hamm, 2013). The USDA Farm to School program promotes targeted procurement of local foods for school meals; staff training; school kitchen equipment; and school garden and curriculum development (Benson, Russell, & Kane, 2015). U.S. schools purchased $789 million in local foods from farmers, ranchers, and food processors/ manufacturers during the 2013-2014 school year, as 4.8 percent of the total $16.4 billion budget for the national lunch and breakfast programs in 2014 (United States Department of Agriculture Food and Nutrition Service, 2016).

Brazil's national school meal program requires 30 percent of food served in schools to be sourced from local family farmers, with additional incentives for foods produced using organic and agro-ecological production methods. This 2009 policy change to the national school meal program was part of the larger Zero Hunger (Fome Zero) policy umbrella for increasing food access and nutrition that involved support for sustainable agriculture and local agricultural development (Wittman & Blesh, 2017).

Public institutions face several structural challenges in growing school meal programs, including increasing the procurement of local foods (Foodshare, n.d). While charitable models of

food provision struggle with issues of stigmatization and inconsistent service delivery (Raine, McIntyre, & Dayle, 2003), individual schools and school districts also have limited capacity to plan, procure, and deliver a meal program that meets nutritional guidelines and local food preferences with limited food preparation and storage infrastructure and human resources (Powell & Wittman, 2018). School meal programs often require long-term contracts with large institutional suppliers, who achieve economies of scale in food safety documentation and price that challenge the sourcing of seasonal local offerings.

Research examples from Canada

While there are limited Canadian data on the environmental, sustainability, and economic development impacts of SFPs, what does exist highlights the importance of ensuring best practices around food procurement and provision as part of a broader focus on food literacy and environmental sustainability in schools (Powell & Wittman, 2018). For example, BC has issued Sustainable Schools Best Practices Guides to help green-team leaders (e.g. students, teachers, administrators, support staff, parents) lead the school community through environmental actions in the areas of energy, waste, water, school grounds, and transportation (Government of British Columbia, n.d.).

The national organization Farm to Cafeteria Canada operates in several provinces. In BC, Farm to School BC was established in 2007 as a network administered by the Public Health Association of British Columbia (PHABC), a non-governmental organization that has multiple funding partners, including the Ministry of Health. PHABC, the BC Healthy Living Alliance, and other organizations support salad bar and produce availability-focused farm to school expansion initiatives throughout the province. The ongoing Farm to School Regional Hubs program also aims to increase and strengthen farm to school procurement to increase the provision of local foods in school meal programs (Powell & Wittman, 2018; Public Health Agency of British Columbia, 2017).

The Alternative Avenues to Local Food Procurement project, Ecosource and Roots to Harvest worked with teachers, students and food service providers in parts of Ontario to create and trial various approaches to incorporate local food procurement into SFPs, while engaging students in food literacy. This project has identified eight *Ingredients for Success* or guidelines for implementing local food procurement projects (Jones, Mitchell & Bailey, 2015). Jones et al. (2015) also highlights key challenges to local food procurement in the Canadian context which include the school calendar and resulting availability of local food in a Northern climate, the significant lack of knowledge that currently exists around what is available, when and how to access local foods, the volume of purchases which can be small when done at the individual school level, and higher costs associated with many local foods.

In Nova Scotia, the main provider of school food in the province, Nourish Nova Scotia, recently released an evaluation report on Nourish Your Roots, a fundraising initiative that sells

boxes of fresh, seasonal, and local produce to families of students. The first-year evaluation demonstrated that the fundraiser supported schools and local farmers, while also increasing awareness of the benefits of vegetables and fruit among participating families (Stewart, 2015).

Table 1: Key characteristics for a national SFP for Canada

Key Characteristic	Underlying Principle
1. Universal	SFPs welcome all students in a school community. They are offered at no cost or subsidized cost to families, and administered in a non-stigmatizing manner. In a shared cost model, payment is made in a way that ensures privacy.[1] Programs are promoted to ensure that all students have access to healthy food in school daily.
2. Health Promoting	SFPs are consistent with nutrition policies that focus on the provision of whole foods, and in particular vegetables and fruit. Nutrition policies that mandate the provision of a variety of vegetables and fruit (such as requiring lunches to include a minimum of two servings daily with variation) help to simplify the task for schools and districts. Focusing on the foods that fit within a healthy diet also provides an important modelling opportunity.
3. Respectful	Programs respect local conditions and needs so as to be culturally appropriate and locally adapted. Programs in diverse inner cities will look different from those in remote Northern communities, for example, and involvement by stakeholders with local experience is critical to success.
4. Connected	Programs are connected to local communities and work towards drawing upon local food resources where possible, supporting local producers and creating economic multipliers. Programs also engage the broader community including parents, grandparents, local businesses, and community leaders to foster sustainability.
5. Multi-Component	Programs use an education integrated approach with curricula to incorporate food literacy (from the farm to the fork to food waste), nutrition education, and food skills. Students are involved with SFPs through hands-on food preparation, budgeting, management, and other learning to foster experiential learning (learning by doing).
6. Sustainable	Programs are sustainable financially and in terms of capacity-building and in response to societal changes. This means ensuring that SFP staff and volunteers receive adequate training to ensure they understand their role in teaching and role modeling for students. Funding at the local level is stable and partnerships to support the program are created. Critical to the success of SFPs is regular monitoring and evaluation, and adaptability as circumstances change. This includes ensuring financial transparency and accountability for programs at the federal and more local levels.

[1]Payment is made in such a way as to ensure that children do not know who pays for the program and who receives a subsidy.

Conclusion: Key characteristics of a national school food program for Canada

Greenhalgh et al. (2007) state in their review on SFPs around the world: "Programmes are more likely to be effective when designed in partnership with the local community and interventions are piloted" (p.861). With this in mind, we put forward key characteristics that we believe must be part of a national SFP for Canada in Table 1. These characteristics are consistent with the research review presented in this paper, and in particular with the third phase of SFPs outlined by Oostindjer et al. (2017) in their comprehensive review of the evolution of school feeding around the world. A third phase of SFPs is a response to increased rates of childhood obesity and chronic diseases and the larger societal context of food systems, climate change, and environmental degradation, which are all issues that are very much of concern in Canada today (Oostindjer et al., 2017). SFPs in the third phase focus on incorporating food-system and societal issues into food programs and policies and generally integrating them more closely with curricula and the broader school environment, in addition to a strong focus on nutrition.

First, universality is important because it preserves the dignity of all students (both those who can pay and those who cannot) and creates a social environment that is most conducive to introducing unfamiliar foods (Kristjansson et al., 2007). Second, health promoting means that school food policies and the programs that follow them are consistent with the best evidence on optimum nutrition for children. The third and fourth characteristics, referring to a program that is connected and respectful are consistent with the most successful programs currently in operation across Canada, which reflect the diversity that exists in food cultures and geographies as highlighted in the examples put forward in this review. The importance of being multi-component has been highlighted time and again throughout our review, and is critical to being part of the third phase of SFPs as outlined by Oostindjer et al. (2017). The final characteristic, that it is sustainable, while not directly addressed in this review to date, must underpin the others. Provisions for on-going funding, staffing, and training must be part of a national program. Also important for sustainability is that local adaptations are regularly evaluated and modified to meet changing environments.

National organizations have been calling for a Canadian SFP (Conference Board of Canada, 2013; Food Secure Canada, n.d.). Yet, challenges faced by current ad hoc SFPs in communities across Canada must be considered when visioning the policy implementation of a national SFP. Schools and meal providers report a wide range of barriers to achieving a universal food program including small purchasing volumes, isolation and lack of capacity for evaluation (Jones et al., 2015), as well as lack of human and physical infrastructure for procuring, preparing, and serving regular meals (Powell & Wittman 2018). A national SFP could mitigate many of the barriers experienced when individual communities attempt to provide such programming on their own through practices such as knowledge and best practices sharing, community kitchen and locally centralized catering services, local food hubs, and group purchasing contracts. The shining lights of school food in Canada could serve as models for smaller or less experienced communities.

The time is right for Canada to establish a national SFP informed by the best evidence from around the world, as well as the hundreds of ad hoc programs that have been operating across Canada over the last few decades. While Canada is a laggard overall when it comes to establishment of a national SFP, it could be at the forefront of movement towards phase three of national SFPs (Oostindjer et al., 2017), through a curricular integration approach with a focus on chronic disease prevention, food systems, and sustainability. Such a program has the potential to support the health and learning of our children, transform our food systems, and foster the use of locally-produced food for strong economies, while cultivating community and environmental health (Sumberg & Sabates-Wheeler, 2011).

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Review Article

Tackling household food insecurity: An essential goal of a national food policy

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Abstract

Eradicating household food insecurity is key to the articulated vision of a national food policy that aims to promote healthy living and safe food for families across the country. Household food insecurity refers to the insecure or inadequate access to food due to financial constraints. Despite federal commitments to improve the situation, food insecurity in Canada increased between 2007-08 and 2011-12. It currently affects more than four million Canadians, and the situation is particularly grave in Indigenous communities. Food security takes a toll on individuals' health and well-being, and on our healthcare system. The social epidemiology of household food insecurity shows it to be inextricably linked to the social and economic circumstances of households. Federal and provincial policy interventions that improve the financial circumstances of very low income households have yielded reductions of up to 50 percent in household food insecurity prevalence, proving that effective, evidence-based policy responses are possible. Yet, high prevalence rates persist. A national food policy represents an opportunity to address food insecurity, but doing so requires the integration of policy actions, both horizontally—across social, economic, health and agriculture domains, and vertically—across the three levels of government. In addition, performance targets must be established, and ongoing monitoring and evaluation mechanisms implemented, to ensure that policies and programs meant to address food insecurity actually have a meaningful impact.

Keywords: Food insecurity, public policy, income, Canada

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The state of food insecurity in Canada

Scale of the problem

It is imperative that the 1.7 million households in Canada (Tarasuk, Mitchell, & Dachner, 2014) currently facing food insecurity be brought into the articulated vision of a National Food Policy that promotes the enjoyment of healthy and safe food for families across the country (Office of the Prime Minister, 2015). To realize the benefits associated with a long-term vision for the health, environmental, social, and economic goals related to food in Canada, Canadians must have the means to achieve adequate and secure access to sufficient food.

Food security is typically defined as the state that exists when "all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life"(Agriculture and Agri-Food Canada, 1998). Household food insecurity is often presented as the absence of food security, but population-level assessments of this condition have focused on a much more tightly circumscribed set of experiences of food deprivation and dietary compromise rooted in financial constraints. Household food insecurity, as the term has been operationalized in the Canadian context, refers to the inadequate or insecure access to sufficient food because of financial constraints.

Questions related to food insecurity have been included on national population health surveys in Canada for more than two decades now. Household food insecurity is currently monitored through the Household Food Security Survey Module (HFSSM) administered on Statistics Canada's Canadian Community Health Survey. The HFSSM captures a household's experience of food insecurity through a series of questions ranging from concerns about running out of food before there is more money to buy more, to the inability to afford a balanced diet, to going hungry, missing meals, and in extreme cases, not eating for a whole day because of a lack of food and money for food (Health Canada, 2007). The questions differentiate between the experiences of adults and children because of an abundance of research showing that when families are struggling to manage with scare resources, adults will deprive themselves of food as a way free up supplies for their children.

Household food insecurity now affects more than 4 million Canadians (Tarasuk et al., 2014), a number 4 – 5 times higher than the number reported to be using food banks (Loopstra & Tarasuk, 2015). Further, the problem is not diminishing. Despite federal commitments to improve the situation (i.e. *Rome Declaration on World Food Security and the World Food Summit Plan of Action)* (Mah, Hamill, Rondeau, & McIntyre, 2014), the prevalence of household food insecurity in Canada has increased significantly, with over 600,000 more people affected between 2007–08 and 2011–12 (Figure 1). These statistics understate the true prevalence of food insecurity in Canada because First Nations communities are not included in the Canadian Community Health Survey.

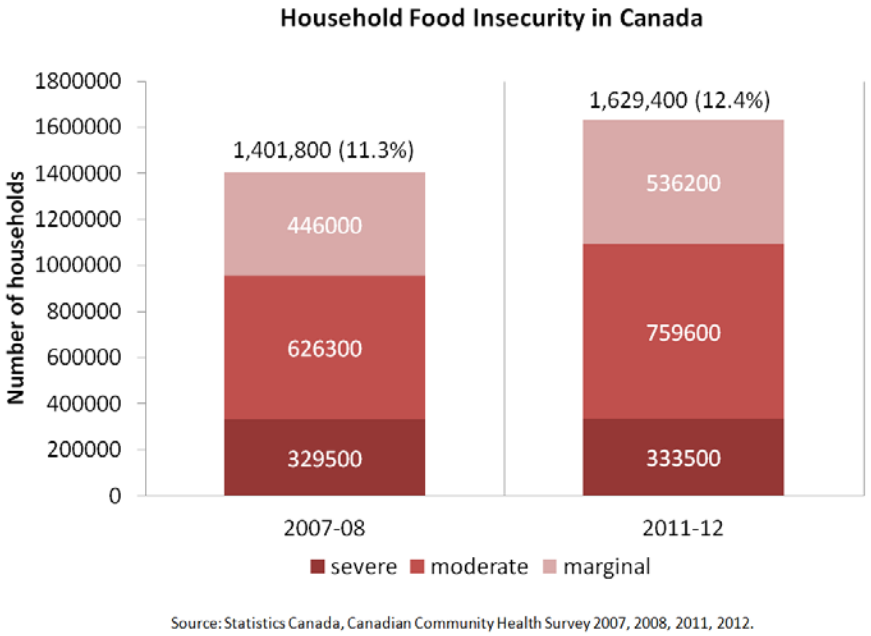


Figure 1: Household food insecurity in Canada, 2007-08 and 2011-12 (Source: PROOF, 2018)

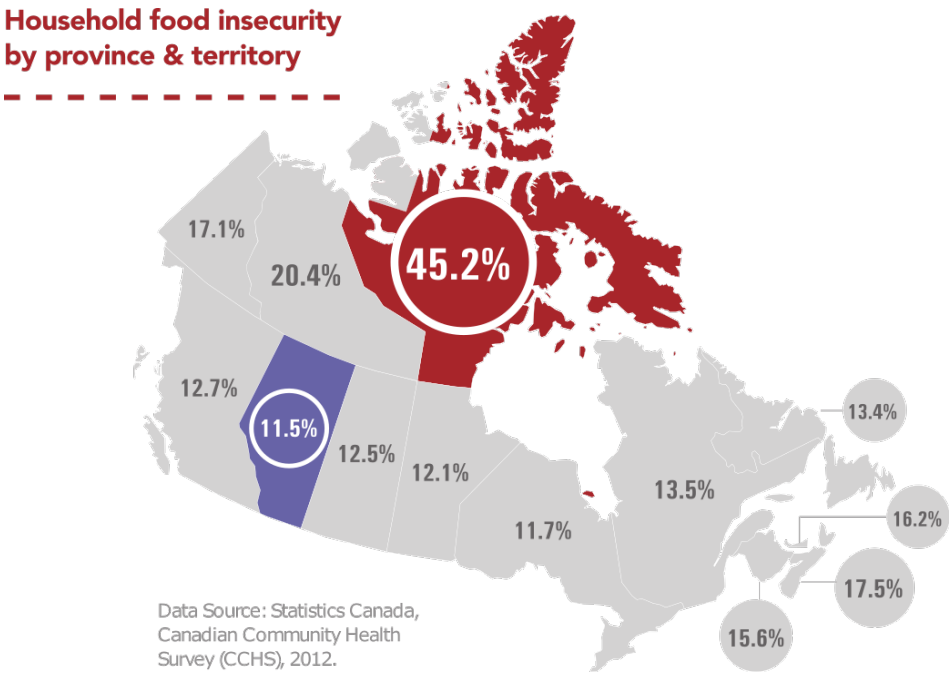


Figure 2: Household food insecurity in 2012 by province and territory (Source: Tarasuk et al., 2014)

Food insecurity is prevalent in every province and territory, but rates are highest in the Maritimes and the territories (Figure 2). Food insecurity is a particularly serious problem in northern and Indigenous communities. Based on data from the 2014 Canadian Community

Health Survey, 46.8 percent of households in Nunavut and 24.1 percent in the Northwest Territories reported food insecurity; almost two-thirds of children under the age of 18 in Nunavut were in food-insecure households (Tarasuk, Mitchell, & Dachner, 2016). The earlier Inuit Health Survey charted a food insecurity prevalence of 70 percent (Huet, Rosol, & Egeland, 2012). According to the 2012 First Nations Information Governance Centre (FNIGC), 54.2 percent of households in the 2008/10 First Nations Regional Health Survey, a survey of First Nations adults living on reserve and in northern First Nations communities, were food-insecure (40.1 percent moderate, and 14.1 percent severe).

Nutrition and health impacts

Analyses of population survey data, coupled with smaller in-depth studies of particularly vulnerable groups, have yielded a solid understanding of the nutrition and health impacts of food insecurity on Canadians, clearly establishing household food insecurity as a potent social determinant of health. Food insecurity is associated with poorer diet quality (Danyliw, Vatanparast, Nikpartow, & Whiting, 2011; Kirk et al., 2015; Kirkpatrick & Tarasuk, 2008; Mark, Lambert, O'Loughlin, & Gray-Donald, 2012), and increased risk of micronutrient inadequacies (Kirkpatrick et al., 2015; Kirkpatrick & Tarasuk, 2008; McIntyre et al., 2003; Vatanparast, Calvo, Green, & Whiting, 2010). In addition, there is a substantial body of literature documenting disturbingly high levels of nutritional vulnerability among food-insecure adults and children in Canada's North (Egeland, Johnson-Down, Cao, Sheikh, & Weiler, 2011; Egeland, Pacey, Cao, & Sobol, 2010; Huet et al., 2012; Pirkle et al., 2014).

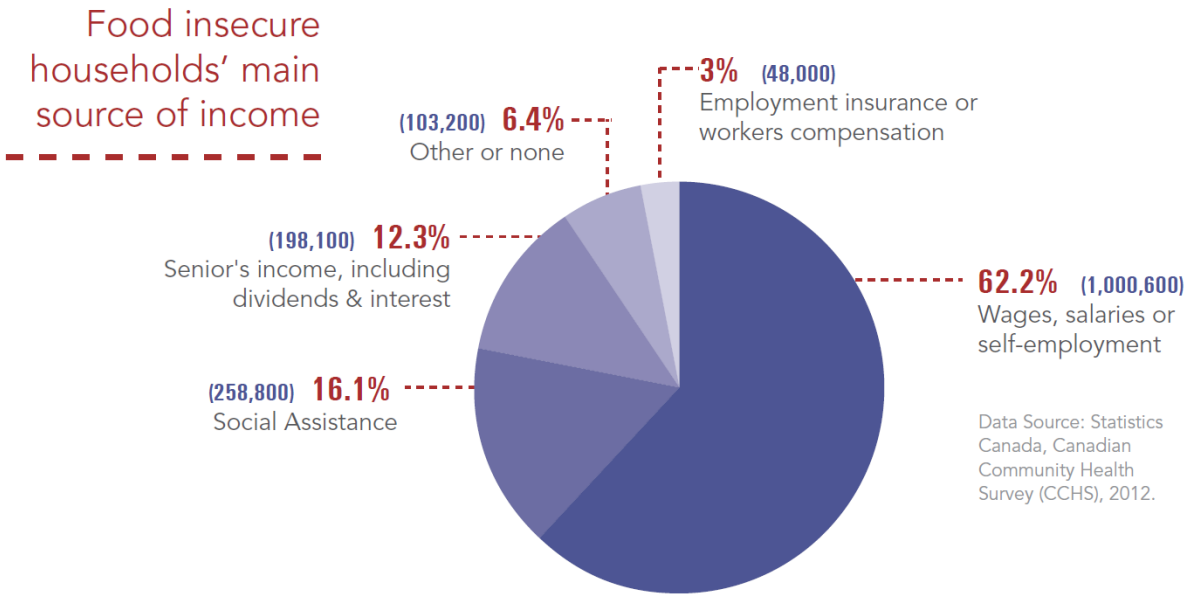
Apart from its effects on nutritional well-being, household food insecurity in Canada is associated with increased risk of negative physical and mental health problems, and among children, it is linked to poorer educational outcomes. Young children exposed to hunger are more likely to have mental health problems (e.g. hyperactivity and inattention) (Melchior et al., 2012), and a recent study of grade five students in Nova Scotia documented poorer academic achievement among those exposed to severe levels of household food insecurity (Faught, Williams, Willows, Asbridge, & Veugelers, 2017). Exposure to "hunger" in childhood increases the risk of developing various chronic health conditions (e.g. asthma, depression) in adolescence and early adulthood, independent of family poverty or other socio-demographic characteristics (Kirkpatrick, McIntyre, & Potestio, 2010; McIntyre, Wu, Kwok, & Patten, 2017). It has also been associated with increased likelihood of dropping out of high school (McIntyre, Kwok, & Patten, 2017). Among adults, food insecurity is associated with increased likelihood of numerous chronic mental and physical conditions (Che & Chen, 2001; Davison, Marshall-Fabien, & Tecson, 2015; Jessiman-Perreault & McIntyre, 2017; Muldoon, Duff, Fielden, & Anema, 2012; Tarasuk, Mitchell, McLaren, & McIntyre, 2013; Vozoris & Tarasuk, 2003; Willows, Veugelers, Raine, & Kuhle, 2011), and it impedes the management of chronic diseases (Anema, Chan, Weiser, Montaner, & Hogg, 2013; Cox et al., 2016; Gucciardi, DeMelo, , & Stewart, 2009; Jessiman-Perreault & McIntyre, 2017; Marjerrison, Cummings, Glanville, Kirk, & Ledwell,

2010). The gravity of the health consequences, especially those associated with severe food insecurity, is evident in the high burden that food insecurity places on our healthcare system (Fitzpatrick et al., 2015; Tarasuk et al., 2015; Tarasuk, Cheng, Gundersen, De Oliveira, & Kurdyak, 2018). Research in Ontario has shown that over the course of a year, the healthcare costs for adults in severely food insecure households are more than double that of those in food secure situations (Tarasuk et al., 2015).

What drives vulnerability to food insecurity?

Household food insecurity is tightly linked to household resources. Research into the household circumstances that mitigate or exacerbate risk indicates that food insecurity is primarily the product of household income, including both the amount and stability/security of the income (Leete & Bania, 2010; McIntyre, Dutton, Kwok, & Emery, 2016a), but it is also influenced by households' access to savings and assets (chief among these being home ownership) (Guo, 2011; Huang, Guo, & Kim, 2010; Leete & Bania, 2010; McIntyre, Wu, Fleisch, & Emery, 2015) and costs of living (Emery et al., 2012; Gregory & Coleman-Jensen, 2013; Nord, Coleman-Jensen, & Gregory, 2014; Sriram & Tarasuk, 2016). Other household characteristics repeatedly documented to increase risk include reliance on social assistance, Aboriginal status, lower education, and being a lone-parent female-led family (Che & Chen, 2001; Li, Dachner, & Tarasuk, 2016; McIntyre, Connor, & Warren, 2000; McIntyre et al., 2015; Tarasuk & Vogt, 2009; Willows, Veugelers, Raine, & Kuhle, 2009)—all markers of profound social and economic disadvantage. Employment does not guarantee household food security (McIntyre, Bartoo, & Emery, 2012). As shown in Figure 3, in 2012, almost two-thirds of all food insecure households in the country were reliant on salaries and wages (Tarasuk et al., 2014).

Figure 3: Food insecure households' main source of income, 2012 (Source: Tarasuk et al., 2014)



Consistent with the understanding of risk that has emerged from analyses of cross-sectional population survey data, a growing body of research indicates that household food insecurity status is impacted by policies that improve the adequacy and stability of the incomes of low income households. The strongest evidence comes from research into the relative protection against household food insecurity enjoyed by Canadian seniors (Emery, Fleisch, & McIntyre, 2013; McIntyre et al., 2016a). The risk of food insecurity among low-income adults in their fifties drops by more than 50 percent when they become eligible for an old-age pension (McIntyre et al., 2016a). The protection afforded by this guaranteed annual income is not only a function of the amount of income provided by Old-Age Security and the Guaranteed Income Supplement (which together provide more than double the income of someone on welfare in most provinces), but also the predictability and stability of this income (McIntyre et al., 2016a).

Further evidence of the sensitivity of household food insecurity to policy interventions that affect household finances comes from an examination of the effects of the poverty reduction strategy implemented in Newfoundland and Labrador between 2006 and 2012 (Province of Newfoundland and Labrador, 2014). In tandem with a series of substantial improvements to the province's income assistance program, the food insecurity prevalence among recipients fell, from 60 percent in 2007 to 34 percent in 2012 (Loopstra, Dachner, & Tarasuk, 2015). It is impossible from the available data to delineate the specific changes that precipitated this drop, but among the policy reforms enacted, the province increased Income Support rates, indexed them to inflation, and raised the earnings and liquid assets exemptions for people on Income Support (Loopstra et al., 2015). Consistent with the findings in Newfoundland and Labrador, a small decrease in food insecurity was documented among social assistance recipients in British Columbia immediately following a very modest one-time increase to benefits in that province (Li, Dachner, & Tarasuk, 2016). These studies suggest that the extraordinarily high rates of food insecurity among social assistance recipients stem from inadequate benefit levels.

The reduction in food insecurity charted among families with young children following the introduction of the Universal Child Care Benefit (Ionescu-Ittu, Glymour, & Kaufman, 2015) provides further evidence of the capacity for income interventions to ameliorate this problem. This benefit, introduced in 2006, gave all families $100 per month for each child under the age of six. In the years that followed, it yielded a 25 percent decrease in food insecurity among families who received it, with even greater reductions among lower income and single-parent families (Ionescu-Ittu et al., 2015). The Universal Child Care Benefit was discontinued in 2016, when the Canada Child Benefit came into effect. How this new benefit will impact food insecurity rates among families with children remains to be seen.

Food insecurity rates are also sensitive to macroeconomic conditions. In Canada, we have evidence that prevalence is impacted by heating cost inflation (Emery et al., 2012), increases in the rate of unemployment (Sriram & Tarasuk, 2015), and shelter costs (Sriram & Tarasuk, 2016). Additionally, temporal trends in the US suggest that food insecurity rates are sensitive to shifts in food prices (Gregory & Coleman-Jensen, 2013; Nord et al., 2014). Although analogous research has not yet been conducted in Canada, the last decade here has been characterized by an

unprecedented rise in food prices (Charlebois et al., 2014; Rollin, 2013). For those whose incomes are indexed to inflation or augmented by periodic cost of living increases, the effects of rising prices have been buffered. But for households most at risk of food insecurity (e.g. those reliant on social assistance or low-waged and possibly precarious work), such protection is likely non-existent.

While there is an abundance of evidence linking food insecurity to households' social and economic circumstances, this condition appears unrelated to food literacy or food retail access. National population survey data indicate that the probability of household food insecurity is not associated with individuals' skills in grocery shopping, food preparation, or cooking (Huisken, Orr, & Tarasuk, 2016). Adults in food insecure households appear acutely aware of the nutritional compromises they make as they struggle to accommodate the food preferences and nutrition needs of family members while working within a limited budget (Beagan, Chapman, & Power, 2017; Dachner, Ricciuto, Kirkpatrick, & Tarasuk, 2010; Frank, 2015; Hamelin, Beaudry, & Habicht, 2002; Williams et al., 2012). Consistent with these findings are studies suggesting that interventions designed to improve the nutrition knowledge or cooking skills of those experiencing food insecurity have limited capacity to lessen problems rooted in abject poverty (Engler-Stringer & Berenbaum, 2005, 2007; Engler-Stringer, Stringer, & Haines, 2011; Hamelin, Mercier, & Bedard, 2010, 2011; Loopstra & Tarasuk, 2013; Tarasuk, 2001). There has been less study of the relationship between household food insecurity and the food retail environment, but studies conducted in Toronto and Montreal found that food insecurity was unrelated to one's physical access to grocery stores (Kirkpatrick & Tarasuk, 2010; Perez, Roncarolo, & Potvin, 2017).

In contrast to evidence in the general population, issues of food insecurity appear tightly intertwined with the food environment for Indigenous peoples in Canada (Council of Canadian Academies, 2014). In northern Indigenous communities, food insecurity occurs in the context of diminishing access to traditional foods (Council of Canadian Academies, 2014; Egeland et al., 2011; Ford & Beaumier, 2011), concerns about affordability of food through market and traditional channels (Action Canada, 2013/14; Lambden, Receveur, Marshall, & Kuhnlein, 2006; Veeraraghavan et al., 2016), and ongoing questions about the effectiveness of the federal food subsidy program, *Nutrition North Canada*, in improving food access (Galloway, 2014, 2017). Within Indigenous communities, households most at risk of food insecurity appear to be those with the least economic resources (as indicated, for example, by a reliance on social assistance (Pirkle et al., 2014), highlighting the centrality of purchasing power to food access through market channels, but also the increasing need for financial resources to engage in traditional food acquisition practices. Community food security initiatives grounded in local experiences and working to improve food access to the most vulnerable are now well-established in many northern communities, but the limits of these efforts to address severe problems of household food insecurity are well recognized (Seed, Lang, Caraher, & Ostry, 2014; Wong & Hallsworth, 2016).

In sum, household food insecurity is a serious problem in Canada, taking a very real toll on individuals' health and well-being. After more than two decades of research and population-level measurement, the social epidemiology of this problem is well understood, and there is a growing body of evidence demonstrating the sensitivity of this problem to federal and provincial policy interventions that impact household resources. Yet, high prevalence rates persist.

The role of a national food policy

A national food policy represents a critical opportunity to address food insecurity in this country. National leadership is badly needed to spearhead effective and enduring policy responses. However, the policy levers to address food insecurity in Canada transcend the conventional boundaries (scope of work) of Agriculture and Agri-food Canada, a ministry whose primary focus is policies and programs related to the growth and development of the agriculture and agri-food sectors in Canada (Government of Canada, 2016). Addressing food insecurity requires coordinated action across several federal ministries and all three levels of government. Thus it challenges Canada to move toward a "joined up" food policy (MacRae, 2011).

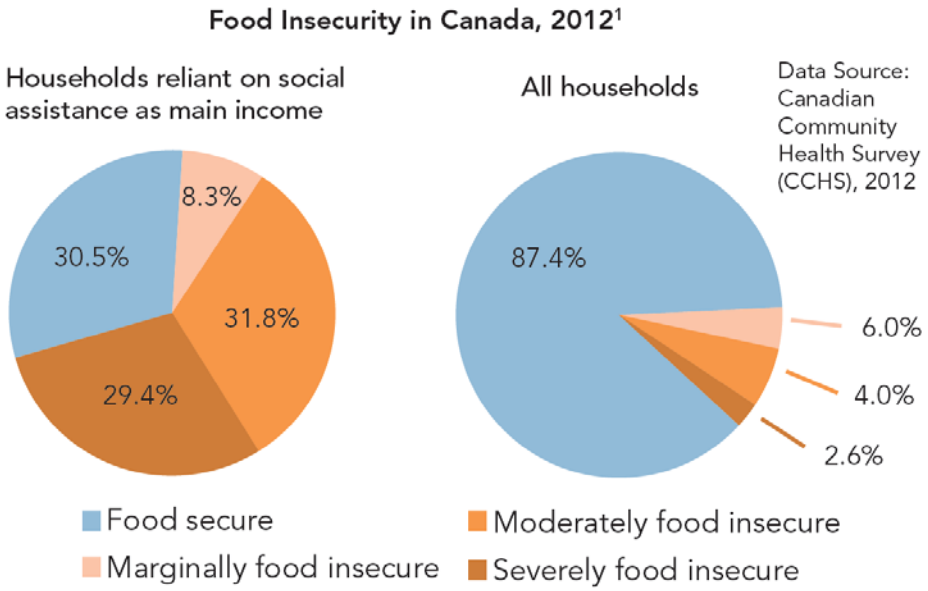
Although Canada has a long history of income transfer programs to support lower income households, these programs have not been explicitly designed to support household food security and none are accountable to this outcome. The aforementioned examinations of income-related policies on food insecurity prevalence have all been conducted by academic researchers, not government departments. As awareness of problems of hunger in our midst has grown, government actions have been limited to measures to support ad hoc, community-based initiatives, in particular the food charity system (McIntyre, Lukic, Patterson, Anderson, & Mah, 2016b). These include "Good Samaritan" laws that absolve corporations of liability for the health and safety of the food they donate, tax credits for farm donations, and public funds supporting food bank infrastructure. There is also continued public investment in community gardens, kitchens, meal programs, and food buying programs, partly based on the argument that they mitigate problems of food insecurity. This piecemeal approach has persisted despite legislators' clear recognition of the relationship between food insecurity and structural issues associated with poverty (McIntyre et al., 2016b; McIntyre, Patterson, Anderson, & Mah, 2016c).

Research on the impact of policy interventions that address low income is clear: In Canada, we have seen declines of up to 50 percent in household food insecurity prevalence and severity among vulnerable groups as a result of policy reforms that have improved their financial circumstances (Loopstra et al., 2015; McIntyre et al., 2016a). Thus effective policy responses are possible. However, more direct policy evaluations by the federal, provincial, and territorial governments are required to develop effective, evidence-based strategies to prevent household food insecurity. We need studies to determine the specific levels of income needed to minimize risks of food insecurity, identify the most effective mechanisms to ensure income adequacy (e.g., whether through a mix of targeted income supplements and universal benefits or through the

implementation of a basic income guarantee), and delineate the other services and programs required to support household food security. Ontario's Basic Income Pilot (Government of Ontario, 2017) should yield some insight into the food security effects of setting a modest income floor for working-aged adults, but this small-scale social experiment is only one step. Examination of the food insecurity effects of the full spectrum of federal, provincial, and territorial policies and programs that determine income adequacy and security for households at the bottom end of the income spectrum is needed to design effective policy responses. This includes evaluating the impact of the Canada Child Benefit on families' food insecurity, but also assessing the effects of minimum wage levels, Employment Insurance, and targeted benefits for low-waged, precarious workers to determine how best to address food insecurity in the labour force. A framework and action plan rooted in policy integration, both horizontally (across policy domains), and vertically (across the three levels of government) is required to reduce the prevalence and severity of household food insecurity in Canada.

Forging an effective response requires the alignment of policy objectives across departments. Whereas much of the responsibility for policies that impact household incomes lie within the federal departments of finance, employment and social development, housing and energy policies are also relevant to this problem. Within Agriculture and Agri-Food Canada, there is a need for ongoing monitoring of food costs to ensure that the after-tax (and after-shelter) incomes of our most vulnerable households are sufficient for them to meet basic food needs, and that vital income support programs are insulated from inflationary pressures. Additionally, given the strong intersection of household food insecurity with low-waged, seasonal, and precarious employment, measures to improve the labour conditions of those in the agri-food sector are part of addressing food insecurity (Weiler, McLauglin, & Cole, 2017).

Figure 4: Food insecurity in Canada, households reliant on social assistance and all households (Source: PROOF, 2017)



It is also imperative that the provincial and territorial governments be actively engaged in any comprehensive policy response to food insecurity because of their responsibility for minimum wages and programs such as social assistance. Although there is considerable interjurisdictional variation in the design and delivery of social assistance programs, nationally, 70 percent of households reliant on social assistance in 2012 reported food insecurity, with 29 percent reporting severe food insecurity (Tarasuk et al., 2014) (Figure 4) (a rate that is more than 10 times the national prevalence of severe food insecurity). Addressing food insecurity requires the commitment and coordinated actions of all levels of government.

A national food policy must also include the establishment of performance targets and mechanisms for ongoing monitoring and evaluation to ensure that the policies and programs implemented under the guise of food insecurity reduction actually achieve these goals. The continued monitoring of household food insecurity through the inclusion of the Household Food Security Survey Module on the Canadian Community Health Survey is an effective means to track the progress of efforts to address this problem in the general population. As the research on household food insecurity in Canada has already demonstrated, this measure is highly policy-sensitive. However, the current practice of permitting provinces and territories to opt out of food insecurity measurement on some survey cycles has resulted in sporadic measurement in most jurisdictions. National, annual measurement is required to inform policy interventions and effectively track progress towards the goals of national food policy. Additionally, it will be important to implement appropriate food insecurity monitoring in First Nations communities to support the development and ongoing evaluation of interventions to reduce food insecurity among this highly vulnerable group.

In conclusion, addressing household food insecurity in Canada is a necessary prerequisite to achieving the articulated vision of national food policy. Building on the vast body of evidence that now exists, an action plan for effective policy intervention to reduce, and ultimately eradicate, household food insecurity needs to be a core element of national food policy. Given the cross-cutting nature of this issue, effective intervention will require horizontal and vertical policy integration, engaging other federal departments and all three levels of government. In addition, national food policy should include performance targets and mechanisms for ongoing monitoring and evaluation to ensure that the policies and programs implemented to reduce household food insecurity actually achieve this goal.

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Perspective

Settler colonialism and the (im)possibilities of a national food policy

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Abstract

In this perspectives piece we ask: is it possible for a national food policy to form the foundation for sustainable and equitable food systems in Canada? First, we argue that under the current settler government, such a policy does not provide this foundation. Second, we consider what might be possible within the scope of a national food policy, examining our responsibilities as settlers to hold our government accountable so policies do not further exacerbate food system inequities. To mitigate some of the harmful effects of current food-related policy, we offer several suggestions regarding how settlers might begin to rethink our investments in the Canadian state and settler food systems: 1) repatriate land and transform private property structures; 2) support Indigenous food provisioners; and 3) build knowledge and support for non-extractive relationships. These suggestions will not decolonize a national food policy; rather, they present short-term actions that we urge settlers to advocate for in order to address some of the ways the Canadian government attempts to restrict Indigenous food systems.

Keywords: food policy, Indigenous food systems, settler colonialism

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Introduction

As the settler Canadian government moves forward to create a Food Policy for Canada, we ask: is it possible for a national food policy to form the foundation for sustainable and equitable food systems in Canada? First, we argue that under the current settler government, such a policy cannot provide this foundation. Second, we consider what settlers, such as ourselves, might advocate for within the scope of a national food policy, recognizing our responsibility to hold our government accountable so policies do not exacerbate food system inequities.[1] To mitigate some of the harmful effects of current Canadian food policy, we make three suggestions: 1) repatriate land and transform private property structures; 2) support Indigenous food providers in their work to build relevant and culturally appropriate systems; and 3) build knowledge and support for diverse non-extractive food networks. These suggestions will not decolonize a national food policy; rather, we argue they present short-term actions that settlers can advocate for within the settler state to address some of the ways the Canadian government attempts to restrict and oppress Indigenous food systems.

As two settler scholar-activists, we offer these suggestions as a starting place to invite other settlers to reflect on the ways that a national food policy reproduces investments in the Canadian state and white supremacy. In doing so, we recognize the tension between the phrase "nothing about Indigenous peoples without Indigenous peoples" and the need for settlers, and people of privilege generally, to take responsibility for engaging our own communities, including interrogating white supremacist and colonial policies and narratives. We attempt to work within this tension by taking guidance from Indigenous scholars and activists, highlighting their suggestions and teachings that relate to the discussion below, while at the same time being clear that this paper is based in our own experiences. Thus, we speak as scholar-activists rooted in a settler worldview, whose knowledge, perspectives, and experiences are partial and incomplete (Rose, 1997). In doing so, we do not pretend to overcome the above-mentioned tension; rather, we offer the following with humility, responsibility, and the hope that settlers such as ourselves will work towards better relationships with Indigenous nations.

Situating land, property and food policy in spaces beyond colonization

The development of a national food policy within the Canadian settler state is unable to lay the basis for decolonizing food systems as it relies on—and therefore reinforces—the institutions

[1] Settler is a "relational" term that refers to communities who are positioned in particular ways to Indigenous nations and the state (Vowel, 2016, p. 16-17). For example, a settler is created as a result of and in relation to colonialism and can be described as communities and individuals who occupy Indigenous lands (Snelgrove, Dhamoon, & Corntassel, 2014; Tuck and Yang, 2012). However, the category of settler is not monolithic. As Thobani (2007) argues, "the racial configurations of subject formation within settler societies are thus triangulated: the national remains at the center of the state's (stated) commitment to enhance national wellbeing; the immigrant receives tenuous and conditional inclusion; and the Aboriginal continues to be marked for loss of sovereignty" (p. 18).

and authority of the state. As we have argued elsewhere, the processes embedded in state policymaking are inherently colonial (Kepkiewicz & Rotz, 2018). Hence, to create sustainable and equitable food systems, settler food activists need to challenge our investment in, and focus on, such a policy. Moreover, critical Indigenous scholars have long stated that it is impossible to dismantle colonial relations within the structures of a settler state (Alfred, 2009; Coulthard, 2014; Maracle, 1996; Simpson, 2011; Tuck & Yang, 2012). As Alfred argues:

> History has demonstrated that it is impossible either to transform the colonial society from within colonial institutions or to achieve justice and peaceful coexistence without fundamentally transforming the institutions of the colonialist society themselves. Put simply, the imperial enterprise called "Canada" that is operating in the guise of a liberal democratic state is, by design and culture, incapable of just and peaceful relations with Indigenous peoples. (2009, pp. 183-184)

In this context, our understanding is that decolonization requires Indigenous self-determination and land repatriation to Indigenous nations (Tuck & Yang, 2012). Yet, the large-scale repatriation of land remains a distant reality as long as settler governments continue to claim sovereignty over Indigenous land and nations. Despite settler state attempts to remove Indigenous authority, Indigenous governance systems and jurisdiction continue to exist, embedded within landscapes and ecologies (Dennison, 2014; Pasternak, 2013). Thus, we feel it is necessary to preface this perspective article by arguing that it is impossible to decolonize a national food policy that is administered by the federal government.

National food policy: Possibilities within current settler government proposals

While we do not believe it is possible to decolonize a federally led food policy, settlers have a responsibility to demand that policy supports the work of Indigenous food activists as much as possible, for example, by improving immediate access to land and food. At the same time, we recognize that changing state policies is only one aspect of settler responsibility. Following the work of the People's Food Policy's *Indigenous Circle*[2] (Indigenous Circle, 2011), we understand policy change as a shorter-term strategy occurring alongside longer-term struggles for Indigenous sovereignty and jurisdiction over land. In this special issue focused on the development of a national food policy, we centre this shorter-term strategy by calling for policies that mitigate settler attempts to restrict Indigenous food systems. Following Indigenous scholars and activists, we argue that mitigation includes policies that address current land relations,

[2] The Indigenous Circle provided guidance during the creation of the People's Food Policy Project. As that project came to an end, the Indigenous Circle became "a space where Indigenous People and non-Indigenous allies can share, strategize, and act to ensure food sovereignty for Indigenous Peoples."

improve supports for Indigenous food providers, and prioritize resilient and non-extractive relationships.

Repatriating land and transforming private property structures

First, we argue for food policies that critically examine property rights and tenure, and re-configure how food, land, and water access is determined. Currently, the *nature* and *scope* of government support focuses on preserving private land ownership regimes. We believe this needs to be transformed, requiring a move away from private property regimes based on the understanding that "the Canadian system of property is predicated on the denial and exclusion of Indigenous political authority" (Dorries, 2012, p. 111). Additionally, this requires a shift away from state-centric designations of "rights", toward *community designed* and *led* governance processes, as, processes shape outcomes (Corntassel, 2012).

Following Indigenous scholars and activists, we suggest that these processes prioritize Indigenous designed and led systems that work within Indigenous governance structures and legal systems. In some places, Indigenous organizations and activists have suggested that this will require a re-commitment to treaty agreements that guarantee Indigenous access to hunting, gathering, and fishing lands and waters (Food Secure Canada, 2017b) as well as an immediate halt to resource extraction projects that restrict Indigenous access to land necessary for food provisioning (Morrison, 2008). For example, projects such as Site C dam that will "irreversibly damage" Indigenous lands (Blanchfield, 2007) must be stopped immediately as many Indigenous communities[3] have repeatedly explained that these lands are integral for their food systems, which include and are connected to broader spiritual, cultural, economic, and political systems (Morin, 2017). That said, holding the state to treaty agreements certainly does not apply to all land and water within the territory "claimed" by the Canadian government and would still likely imply colonial applications of rights discourse, which does little to support acts of resurgence on traditional territories, as it fails to "offer meaningful restoration of Indigenous homelands and food sovereignty" (Corntassel, 2012, p. 93).

In this context, we advocate for a national food policy that prioritizes land access for Indigenous food providers. As Indigenous food activists have argued, this will require prioritizing Indigenous food provisioning practices over settler food systems, including within forestry, fisheries, rangeland and agricultural policies (Morrison, 2008, p. 20). For example, the Indigenous Circle recommends working with different Indigenous nations to "set aside adequate tracts of land within the national and provincial parks and lands designated as "crown" land for the exclusive use of Indigenous hunting, fishing and gathering" (Indigenous Circle, 2011, p. 9).

[3] While, in many cases, Indigenous communities have stood together against extraction projects, we want to acknowledge the diverse range of opinions and perspectives within and between Indigenous communities. We recognize that Indigenous communities, cultures and politics are extremely diverse rather than homogeneous.

Relatedly, we suggest that a national food policy ought to play a role in mitigating rising settler and corporate land consolidation and land grabbing, with restrictions on settler development projects. As research has shown, land grabbing is driven by disparities in class and capital access within a settler colonial context (Rotz, Fraser, & Martin, 2017; Desmarais, Qualman, Magnan & Wiebe, 2015; Le Billon & Sommerville, 2016). Rather than foreign ownership restrictions, we suggest restrictions based on one's income, access to capital, number of properties owned, acreage, and, of course, interest in food provisioning.

Addressing land ownership, tenure, and consolidation in these ways is an important first step, but we recognize that it does not shift land policy away from the state-mediated rights discourse that has been heavily criticized by Indigenous scholars and activists (Corntassel, 2012; Coulthard, 2014). These policy proposals do not directly question or resist the ways in which land reform has, and continues to, reinforce settler control over Indigenous lands. Decolonization is not about Indigenous inclusion or involvement in settler spaces, but rather centers on the repatriation of Indigenous lands to Indigenous nations (Byrd, 2011; Coulthard, 2014; Lawrence & Dua, 2005; Tuck & Yang, 2012). Importantly, we believe this repatriation of land necessitates settler engagement with Indigenous legal systems as laws that apply not only to Indigenous nations but also to settler communities (Borrows, 2005; Todd, 2016). This is crucial when considering food provisioning, given that settler food systems have continually attempted to erase Indigenous food systems.

Supports for Indigenous food provisioners

Currently the vast majority of government support related to food provisioning is targeted toward expanding and commercializing conventional farming enterprises for those who are already settled on the land. For instance, under Growing Forward 2[4], well over 50 percent of government funding under bilateral agreements are devoted specifically to expanding "competitiveness and market development" and agricultural innovation activities, which often results in support for large-scale and/or export-oriented farmers and processors (National Farmers Union, 2013).

In this context, we advocate for divestment from industrial-scale chains and re-investment in marginalized food provisioners who tend to operate in more diverse ways and at a less corporate scale. In particular, we argue for support for diverse Indigenous food providers, including ecological growers, harvesters, fishers, and hunters. We suggest these supports include funding to build relevant and culturally appropriate markets and infrastructure, land transfers to Indigenous food providers, ensuring projects and programming are owned and directed by

[4] Growing Forward 2 was a five-year (2013-2018) federal policy framework for the agricultural and agri-food sector. GF2 included "a $3 billion dollar investment by federal, provincial and territorial (FPT) governments and formed the foundation for government agricultural programs and services. GF2 programs focused on innovation, competitiveness and market development" (Agriculture and Agri-Food Canada, 2018)

Indigenous communities, and removing structural constraints to knowledge sharing and creation related to Indigenous food systems.

Following Dawn Morrison (2008), Secwepemc founder and coordinator of the Working Group on Indigenous Food Sovereignty, we suggest a central component of any food policy should be based on support for projects that are designed and led by Indigenous communities themselves, rather than projects conceived in Ottawa which are then placed upon Indigenous peoples via colonial modes of "consultation". Similarly, we advocate for a shift in how government funding is prioritized and allocated and that Indigenous organizations and communities (for example, the Arctic Institute of Community-based research) would benefit from *ongoing and untied* resources to support their work to build community food sovereignty. Here we again follow Dawn Morrison (2008) who recommends that meaningful and adequate funding is allocated for programs created and led by Indigenous peoples based in Indigenous values and knowledge (Indigenous Circle, 2011). Morrison recommends funding for coordinators and technical support for community-based projects promoting food sovereignty in Indigenous communities. Additionally, she suggests incentives for the development of "local community based economies" as well as institutional support for community kitchens, smokehouses, feasting halls, and gardens (Morrison, 2008, p. 21).[5]

Following multiple calls to provide supports for Indigenous food systems (Indigenous Circle, 2011; Food Secure Canada, 2017b; Morrison, 2008), we suggest that a key part of doing so includes policy support for hunters, gatherers, and fishers, and specifically Indigenous communities who rely on these practices as part of their food systems and diets. This is vital in a context where government policies have continually undermined Indigenous nations' ability to harvest traditional land-based foods (Veeraraghavan et al., 2016). For example, provincial policies constrain the ability of Indigenous peoples to hunt certain animals as well as restrict when, where, and how much they are able to hunt (Veeraraghavan et al., 2016). Federal requirements that country foods must be processed through licensed facilities have constrained the flow of these foods, which scholars have argued negatively impacts Indigenous food sovereignty (Burnett, Skinner, & LeBlanc, 2015). Furthermore, the failure of programs such as Nutrition North to equitably address Indigenous food insecurity reveals the need to diversify who makes decisions and how different voices participate in policy development. In this context, we again argue that specific policy recommendations that support Indigenous food systems should be developed and directed by local Indigenous nations.

In a context where Indigenous food provisioning practices often receive scant governmental resources (e.g. no specific reference was made to Indigenous food systems within the Truth and Reconciliation's *Calls to Action*), we call settler attention to Indigenous discussions around how funding and support can be transferred from settler coffers to Indigenous food provisioning initiatives. We argue that settlers and settler governments need to focus on

[5] This could be through a mixture between Indigenous and Northern Affairs Canada (INAC), Agri-Food Canada, and public health funding, but would need to be consistent, secure, and untied.

making that money available while refraining from settler compulsions to define program guidelines and delineate what "successful" projects mean.

Building knowledge & support for non-extractive relationships

Third, we advocate for policy that fosters resilient and non-extractive relationships throughout the food system: namely, between food providers, the public sector, and the alternative food movement. Agriculture and Agri-food Canada's strong focus on market-based growth, competition, and commercialization has contributed directly to current conditions of social and ecological specialization (i.e. corporate concentration of land ownership and monoculture agriculture, etc.). The three main investment programs under Growing Forward 2—Agri-Innovation, Agri-Marketing and Agri-Competitiveness—have been directed toward industry-led commercialization, modernization, and market expansion of agricultural production, which isn't expected to shift significantly with the more recent Canadian Agricultural Partnership—of which trade, competition and commercialization make up the bulk of the funding (Agriculture and Agri-Food Canada, 2018).

Meanwhile, under the new Agricultural Partnership program there is little support for place-based, watershed-scale, or sector-wide efforts to enhance socio-ecological diversity. Yet, we suggest that settlers have a responsibility to push for provincial and federal food policy that enhances social and ecological health (which extends beyond agriculture), as these aspects are continually externalized by economic markets. For example, we advocate for government to improve access to high quality information produced by a range of interests. We believe the key here is that a diversity of viable (and sustainability focused) alternatives to intensification and commercialization should be made available to all food providers. Comprehensive education and skill building for diverse food system practices is possible through publicly- and community-supported workshops, mentorship programs, and food provider-to-food provider training.

For their part, alternative food networks (AFN's) have the potential to build closer, more enduring relationships with marginalized actors in the food system, while concurrently pressing for policy action. Building such relationships may help to broaden and strengthen non-commodified networks, build coalitions, and act in solidarity with one another. As Lugones (2010) asks, "How do we learn from each other? How do we do it without harming each other but with the courage to take up a weaving of the everyday that may reveal deep betrayals?" (p. 377). In this sense, how can settlers reflect on the breadth and depth of settler colonialism and, through this learning and reflection, mobilize in ways that support Indigenous visions for health, wellbeing and resurgence? Governments can learn from some of the coalitions between AFN's and Indigenous movements in ways that offer a deeper understanding of the structural injustice of current land relations and how public policy, and agri-food policy in particular, has shaped these relations. The question then becomes: what will governments do with that knowledge?

Considering the ways that those with access to land can offer their land (intermittently or permanently) in the service of educational activities is another potential starting place. We suggest this could include activities directed by Indigenous communities as well as supporting Indigenous knowledge reclamation (for example: the Working Group on Indigenous Food Sovereignty as well as programs such as the Dechinta Centre for Research and Learning). As Wildcat, McDonald, Irlbacher-Fox, and Coulthard (2014) argue "if colonization is fundamentally about dispossessing Indigenous peoples from land, decolonization must involve forms of education that reconnect Indigenous peoples to land and the social relations, knowledges and languages that arise from the land" (p. I).

Support for other educational activities might include settler education about Canada's ongoing attempts at Indigenous physical, cultural, and political elimination, including better support for organizations doing some of this work (for example: the National Farmers Union *Working Group on Indigenous Solidarity* and Meal Exchange's *Decolonizing Book Club*). To begin to heal Indigenous-settler relationships we suggest this kind of education allows settlers to collectively learn about colonial genocide, Indigenous presence, and Indigenous resurgence and resilience. More broadly, we suggest that settlers 1) educate each other about settler privilege and its relationship to land, 2) participate in acts of land-based Indigenous solidarity/support alongside resistance to settler privilege, and 3) fund and support Indigenous resurgence and knowledge circulation. Of course, this list is not exhaustive; there is much more to be done.

Conclusion

While we recognize the concerns with an approach that *moves toward* rather than *takes action,* most settler Canadians do not currently take responsibility for ongoing colonial violence (Simpson, 2011, p. 21). As we have argued above, a national food policy is based on settler state jurisdiction over Indigenous lands, and therefore does not provide a meaningful opportunity to repatriate all lands to Indigenous nations. In this context, we highlight the potential to use food policy as a shorter-term strategy to mitigate ongoing state violence, while creating conversations that demand settler Canadians confront the ways settler colonialism is reproduced and resisted on a daily basis. More pragmatically, and following calls from Indigenous scholars and activists, we advocate for a national food policy that allocates resources to Indigenous food systems and, most importantly, call on settlers broadly to support Indigenous struggles for land and sovereignty.

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Commentary

Building joined-up agricultural policies: Lessons from Québec

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Introduction

Under existing policy frameworks in Canada, provincial and territorial governments are granted a certain degree of autonomy over social, health, and agricultural policy and spending. This makes the institutional landscape quite uneven in many areas that are relevant to a "joined-up" food policy. Competitive and overlapping jurisdictions often deter collaboration and integration between levels of government (MacRae, 2011). New governance and policy paradigms are required to shift towards more sustainable, just, and healthy food systems in Canada (Skogstad, 2012). Alison Blay-Palmer (2012) points to three supporting principles: the precautionary principle[1]; multifunctionality, which seeks to support both economic and noneconomic outcomes of agriculture (environmental, rural, social); and, subsidiarity, "defined as appropriately scaled policy and interventions" (p.41). In this commentary, we explore ways in which Québec has integrated these operating principles in its policies and funding schemes.

Policy experiences of provinces and territories can inform policy development at the federal level (Martorell, 2017). For instance, British Columbia is regarded as a leader, with health prevention driving food policy change across departments (Seed, Lang, Caraher & Ostry, 2013). In social policy, income-based supports and poverty reduction measures have been notably more successful in Newfoundland and Labrador (Taras uk, Mitchell, & Dachner, 2014).

[1] In Québec law, the precautionary principle states, "where there is a risk of serious or irreversible harm, the lack of full scientific certainty should not be used as a reason for postponing the adoption of effective measures to prevent environmental degradation"(MDDEP, 2006).

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In Québec, food policy efforts have been studied through the lens of healthy eating (Addy, 2016), and food security (Hamelin & Bolduc, 2003). This commentary, however, discusses how Québec's unique approach in the Canadian context might provide lessons to build more integrated approaches to agriculture and rural policies.

Institutional arrangements in sustainable food and farming in Québec

Agricultural policy in Québec is distinct in relation to other provinces in Canada. One study on policy networks notes; it stands out as exceptional since it is the only province that has not hesitated to use intrusive and comprehensive command-and-control regulation and financial incentives (Montpetit and Coleman, 1999). As with other provinces, one key feature of agricultural governance in Québec is corporatism. This refers to the power of food producers and their organizational networks to influence officials in agricultural ministries (Skogstad, 2012). When comparing Québec's agri-environmental policy networks with Ontario and North Carolina, Montpetit (1999) pointed to Québec's relatively stronger performance. He argues that the institutional capacity of the farmers' union, the *Union des Producteurs Agricoles* (U.P.A.), was a facilitator to the adoption of agri-environmental policy. However, the UPA has also acted as an intermediary that has filtered pressures for reforms against those that have challenged its productivist standpoint (Benoit, 2015).

Québec's turn towards economic nationalism and a productivist paradigm in the 1970s was characterized by a centralized and top down approach to rural planning and the management of natural resources, such as farmland. Connell et al. (2016) assessment of land preservation regimes across Canada found Québec's to be the strongest, highlighting its flexible yet stable and integrated framework. The more recent provincial consultations (Pronovost Report in 2008 and the Ouimet Report in 2009), however, questioned the resiliency of the scheme to prevent urban sprawl (Vachon, 1991), and the ways in which it posed a barrier to farm renewal. Overall, greater evidence is needed on farmland use. Generating data on the loss of farmland, financial speculation, and changes to foreign ownership could represent a first step for provinces and federal government to work together on the issue (Connell et al., 2016).

The precautionary principle, multifunctionality, and, subsidiarity in Québec food policy

While Québec ranked behind British Columbia and Prince Edward Island as the third "greenest province" (Corporate Knights, 2014), it has made achievements integrating sustainable development, and the precautionary principle, into legal frameworks. "To date, the most elaborate and connected Canadian example [of comprehensive sustainability legislation] is Québec's Sustainable Development Act" (Blay-Palmer, 2012, p.65). In theory, this principle

could justify policy interventions in the field of agricultural inputs (e.g., pesticides and genetic engineered seeds) and livestock farming (e.g., hog manure pollution). Although legal precedents remain too few and, in the case of pesticides, limited to residential and cosmetic use[2], they indicate that public health concerns at sub-national jurisdictions have the potential to influence scientific risk assessments in Canada (Pralle, 2006).

As environmental awareness increased during the 1990s, the Québec government externalized research and advisory services[3] in its co-management agreement with the U.P.A. (Benoit 2015). The design of agri-environmental clubs is associated with an increase in the adoption of integrated pest management techniques and the development of large expanses of windbreaks to protect waterways in Québec (MacRae et al., 2004). These clubs have been instrumental for providing advice on organic food production, supporting on-farm research, and accompanying farmers in adopting beneficial management practices (BMPs). While many of those clubs have been privatized, they remain partly funded through cost-sharing schemes under current agricultural policy frameworks. The 2018 renewal of the federal agreement on agriculture should build on this model and invest in extension services in sustainable farming across the country.

An agro-ecological lens to Québec's policy landscape points to policy interventions in organic farming, as well as rural development (Jolin, 2015). One mandate of rural extension services supported through Québec's National Rural Policy (NRP) was focused on accompanying labelling schemes to designate regional origins of agricultural products associated with Québec's *terroir* (e.g., Charlevoix lamb, Neuville corn). The NRP is "one of the most advanced policy approaches to promote rural development in the OECD area" (OECD, 2010, p.17). Like in Europe, regional designation schemes should be privileged and recognized to ensure food quality and protect regional economies (Becker and Staus, 2008). In Québec, where these are in the early stages of development (Parent and Desjardins, 2015), a provincial council[4] manages both regional and organic designations, illustrating some degree of institutional coordination that should be expanded at a federal level through its value chain roundtables.

An important facet of Québec's National Rural Policy (NRP) was its ability to tap into policy networks outside of government, most notably civil society actors coalescing around *Solidarité Rurale*, in the early stages of the process: "Since 1997, this organization is recognized as the advisory body to the government of Québec with regards to rural development" (Doddrige and Senechal, 2014, p.5). Despite its innovative character (OECD, 2010), however, the NRP agreement with civil society was not renewed by the new liberal provincial government (Vaillancourt, 2017).

Québec has also been the first province to adopt a full strategic plan in the organic food and farming sector "that rival[s] plans in Europe" (MacRae et al., 2004). The most recent

[2] The *Hudson v. Spraytech* Supreme Court Ruling (2001) to ban lawn pesticides in the municipality of Hudson, Québec is a seminal case of appealing to the precautionary principal in Canada.
[3] These institutions were respectively known as the *Institut de Recherche en Agroenvironnement* and the *Club-Conseils Agroenvironmentaux*.
[4] The Reserved Designations and Added-Value Claims Board was implemented via legislation in 2006.

iteration of the strategy (2015) incorporates multifunctionality. It also represents a positive step towards integration with agri-environmental policy, another piece of the agricultural policy generally conceived in a silo. The strategy brings together a mix of policy instruments from both areas, including support for organic transition, extension services, and research. The institutional capacity of farming bodies was brought in to facilitate coordination[5] across commodity groups to advance organic food and farming in their respective sectors (e.g., poultry, eggs, etc.). Such a mandate could be extended to the Farm Products Council and across value chain roundtables, which are under federal jurisdiction.

Québec's experience in creating regional cooperation mechanisms applies the principle of subsidiarity by decentralizing decision making at appropriate levels of governance.[6] Regional development mandates and agricultural land use plans embodied the principles of multifunctionality and participative planning (Doucet, 2010; Doyon, Desrosiers-Côté, & Loyer, 2016). In the 1990s, the government supported the creation of seventeen agri-food roundtables, which were "mandated to bring together all actors in the food industry within a specific region" (Ashraf & Konforti, 2010, p. 12). A review of the seventeen regional action plans of another set of regional public sector bodies[7] indicated that 60 percent of orientations were aligned with a multifunctional paradigm to agriculture (Doucet, 2010). Finally, regional and county-wide[8] agricultural land use plans are contributing to anchor agricultural and food governance on a territorial basis (Doyon et al., 2016) with mandates to diversify farming activities, promote short supply chains, and institute participative planning mechanism. In Canada, the six regional development agencies under the Innovation, Science and Economic Development portfolio[9] are particularly well suited to build on these to invest in local and sustainable food systems.

Conclusion

We have focused our commentary on three key operating principles that have been integrated, to varying degrees, into Québec's agricultural policy – the precautionary principle, multifunctionality and subsidiarity – thereby providing opportunities for linking agricultural and food policy processes more effectively. This integration is only partial because a number of the programs mentioned remain marginal (<1 percent) within the overall provincial budget for agriculture (Benoit, 2015), and are subject to the same "neoliberal governmentalities" Andrée,

[5] The *Organic sector growth roundtable* was launched by tbe main farming organization in 2014.
[6] This level of administrative governance is located between the municipal, or county-level, and provincial jurisdictions. There are seventeen in Québec
[7] These bodies were known as as Regional development councils until 2004, when they were changed into the Conference of regional elected officials, before being dissolved by provincial reform in 2014.
[8] In Québec, counties are called Regional County of Municipalities (RCM)
[9] The agencies are the Northern Economic Development Agency, the Western Economic Diversification Canada, Canadian Northern Economic Development Agency, Federal Economic Development Agency for Northern (FedNord) and Southern Ontario (FedDev Ontario), Canada Economic Development for Québec Regions and the Atlantic Canada Opportunities Agency

Ballamingie, and Sinclair-Waters (2014) identify in Ontario. New operating principles continue to be needed to build policy and governance from the ground up. Ideally, agricultural policy must integrate across health, social, rural and environmental mandates. Québec has only taken small steps towards this larger goal. With these reservations in mind, Québec still provides examples of implementing policy to try and fill what has been an institutional void in the area of food policy. Its experience may therefore be of comparative value to other jurisdictions. In particular, key federal institutions could adopt a horizontal approach that builds on the experience of Québec with the precautionary principle, multifunctionality, and subsidiarity. Questions about how to achieve vertical policy integration between the provinces and national policy will arise. The 2018 unveiling of a new Québec "bio-food" policy (2018-2025), alongside the renewal of the Canadian Agricultural Partnership, ensure that these questions will need to be front-of-mind for observers as the federal government moves forward on a Food Policy for Canada. Our hope is that Québec and Canada will find a way to work together across these three overlapping policies (among others) in the spirit of a "joined-up" (MacRae, 2011) approach that benefits citizens in both jurisdictions.

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Commentary

The need for contextual, place-based food policies: Lessons from Northwestern Ontario

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Abstract

In recent years, several reports have highlighted the need for a national food policy that takes a comprehensive approach to addressing food systems (CAC, 2014; Levkoe & Sheedy, 2017; Martorell, 2017; UNGA, 2012). These findings suggest that, at the core, resilient food systems must be built on interconnected knowledge and experience that emerge from place-based interrelationships between human and ecological systems. Drawing on these important learnings, this commentary voices our hopes and concerns around the recent efforts of the Canadian Government to develop a food policy for Canada. While we commend the Government's desire to "set a long-term vision for the health, environmental, social, and economic goals related to food, while identifying actions we can take in the short-term",[1] we caution any tendency to develop "best practices" that assume a universal, or "one-size fits all" approach to food policy development. We argue that Canada requires a set of contextual, place-based food policies that emerge from the grassroots, address local needs and desires, and build on the strengths and assets of communities.

Keywords: policy, complexity, food systems, northwestern Ontario, place

[1] www.canada.ca/en/campaign/food-policy.html

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We suggest that sensitivity to place can be achieved through a shift toward understanding distinct experiences and patterns within food systems, rather than the standard approach of determining what is "best" through isolated perspectives and decontextualized data. Too often in policy development, multiple variables are assumed to possess a certain orderly and analyzable approach through the application of statistical probability techniques (such as regression analysis) applied uniformly to all situations. In this scenario, community knowledge and experiences are unknowns (randomized out) and thus not considered in policy development.

In contrast, we suggest that food systems are best viewed as complex systems comprised of factors such as human activities, industrial processes, and climate variability that all interact on growing capabilities such as soil, types of seed (e.g., hybrid, GMO, non-GMO, heritage) availability, water, and air to form a complex whole. All of these factors that comprise food systems are, on the one hand, independent from each other and unpredictable in their independence. However, all these aspects of the food system are interconnected such that small changes in one factor can have a significant impact for others, and thus co-evolve. Weaver (1948) referred to this as *organized complexity*, which implies that communities within the boreal ecosystem have different requirements to achieve viable, healthy, and nutritious access to food. Thus, a national food policy needs to consider place-based relationships that are open to the fluidity of social and environmental dynamics.

The perspectives of the three authors draw on over three decades of collaborative and community-engaged research in Northwestern Ontario. This research has explored access to, and utilization of, place-based food practices to enhance the quality, self-sufficiency, and sustainability of available food sources within both settler and Indigenous communities. The prospects for a national food policy afford the opportunity for participatory engagement processes and context-based priorities that support innovative and adaptive approaches to food systems development (Lang, Caraher, & Barling, 2009; MacRae, 2011). To encourage the diversity essential for addressing the heterogeneity of food sourcing pathways (cultivated and wild) available in Canada, a national food policy must be rooted in joined-up approaches that connect departments, sectors, and jurisdictions and establish opportunities for the self-determination of communities in relation to their food sources.

Based on our experiences working with northern communities, we caution against a universalist approach that considers the north as a single geography or homogenous area with a common set of assets and challenges. Instead, it is essential to consider the implications of "best practices" that are developed in one place and uncritically applied to another; and replace this "colour blind" approach with specificity and contextuality rooted in equity and an appreciation for the diversity of cultures and desires of communities. From this diversity, adaptive innovation for survival, connections, and purpose emerge. For example, our research with Indigenous communities has demonstrated that a historic agro-forestry approach to gathering and consuming traditional foods enhances connections to land, sense of purpose, and well-being (Stroink & Nelson, 2009; 2012).

A more detailed explanation of Northern Ontario's boreal forest ecosystem demonstrates the need to create contextual, place-based joined-up food policies. The immensity of the boreal ecosystem in Canada means that its characteristics have a major impact on how we sustain viable nutritious food within this biome. The boreal forest is noted for its spatial heterogeneity, which can aptly be described as a complex mosaic of landforms, soils, vegetation relationships, and animal population dynamics (Winterhalder, 1983). Since prehistoric times, evidence shows that survival and access to food depends on mobility as the boreal ecosystem is characterized by micro areas of rich food resources that are fragile unless rejuvenated by disturbance, such as regenerative growth by fire and periodic outbreaks of insects that open up the boreal forest canopy and add essential nutrients (Ontario Nature, 2017; Steegmann, 1983). This diverse aspect of geography points to the necessity of an adaptive, flexible, place-based approach to national food policy to ensure access to healthy, sustainable, and nutritious food.

To survive and sustain existence within this fluid and ever-changing dynamic of the boreal forest, Indigenous peoples have developed traditional knowledge for both abundance and scarcity. This traditional knowledge includes cultural adaptation, such as the major replacement of cattail pollen, pine moss, and lichen as flour for bread with European-sourced flour for making bannock when it became available in the late 1600s (Blackstock, 2007; Flannery, 1995).Through adaptation and trade, food plants indigenous to the Americas (e.g., potato, maize, beans, peppers, and squash) traveled northward to be integrated with northern indigenous food plants, *zizania aquatic* (wild rice) and *vaccinium angustifolium* and *vaccinium myrtilloides (*blueberries) (Boyd & Surrette, 2010; Boyd, Varney, Surette, & Surette, 2008; Nelson & Stroink, 2010). Vegetables were integrated into local habitats by being planted next to trapping routes. Indigenous food ways and governance systems were rooted in traditional knowledge that integrated social and ecological systems in decision-making processes. In other words, humans, plants, and animals coevolved in a symbiotic ecological relationship. However, European settlement and the abrupt imposition of the Indian Act with its imposed reserve system by the settler-colonial government brought severe limitations to Indigenous self-determination and mobility that was vital to the adaptation of the boreal ecosystem's dynamics.

A number of historical events and policies have severely eroded the sustainability of northern food systems. For instance, residential schools were inflicted on northern communities resulting in devastating impacts on the continuity of generational food knowledge through abruptly severing food getting and sharing practices, experiential knowledge and oral traditions (Truth and Reconciliation Commission of Canada, 2015). The residential school system eroded the basic family structure essential for gathering and harvesting boreal food sources (Stroink & Nelson, 2012). In addition, negative experiences with gardening and agricultural left painful memories of forced work and abuse related to the acquisition of local food sources.

When residential schools were closed, children were mandated through the Indian Act to attend state run schools within and outside their communities. For many, this was viewed as another cultural blow to the continuity of traditional food knowledge and skills. The new schools imposed a provincial curriculum and scheduling timeframe that discouraged opportunities to

practice harvesting and foraging. After having lost their children through residential schools, many families were not willing to risk confronting the settler-colonial government by taking their children out of school to learn and practice traditional food knowledge (Driben, 1984).

Even today, few schools offer education and accommodation to participate in traditional food gatherings. For example, in order to take part in the *Fall Goose Hunt*, one of the most important food related cultural celebrations, students have to be away from school for a few weeks unless the school scheduling is modified to allow for these seasonal events. Accommodating additional food-related cultural events like Spring Walleye fishing or late Fall moose/caribou hunting can encourage the revitalization of agro-forestry food knowledge.

In addition, the reserve structure forced concentrated settlements that could not support nearby food sources (Durie, 2004). For a while, technologies like snow machines and four wheelers compensated for the longer distances needed to secure boreal food sources. However, in the last decade, the high cost of these machines and fuel has severely affected the acquisition of local food sources.

Further threats to food system viability and sustainability include legacies from past decisions and practices that still create challenges for a robust place-based food system. Provincial policy toward fire suppression began in 1917 and resulted in significant changes in the vegetation composition and thus in access to key food sources. The ecological impact of fire suppression is to drive critical food sources such as moose and caribou to areas further away from human settlements to areas where fire occurs naturally (e.g., through lightning strikes). Where there has not been imposed fire suppression, these animal food sources have access to shrubs for browsing, which is vital to their health and survival. Thus, fire suppression policy drives up the time (i.e., added days), fuel costs, and human power needed to hunt and transport essential traditional food sources like moose and caribou. In contrast, traditionally Indigenous peoples were able to intentionally burn land to create favourable plants and habitats as food sources (Johnson, 2013). In the last two decades there has been growing awareness of the important ecological role that fire plays in the boreal forest. Thus, when developing joined-up food policies, an ecological approach is vital to place-based food sources.

Other examples of these legacies are industrial mining and forestry activities that resulted in leaks of toxins into waterways and contamination of healthy soils for animal habitat and foraging activities. Other risks have occurred from flooding of land associated with hydroelectric energy projects that resulted in naturally occurring mercury being released from the decomposition of boreal forest trees and shrubs; toxic contamination of the boreal forest from abandoned mines and related limitations in legislatively controlled environmental codes; and forest management practices (e.g., herbicide sprays used to control competitive growth in forest regeneration).

Current policies that are intended to protect against overfishing by tourists are also a threat, as they may simultaneously compromise food security. Quota limits for harvesting of fish deter access opportunities for smoking and freezing of fish as a food source. In addition, in

Northern Ontario, hunting and harvesting restrictions for "species at risk" like sturgeon and caribou impact the availability of traditional and historic local food sources.

While many Indigenous communities are now reviving traditional practices, the harm, and the loss of cultural knowledge in gathering local traditional foods caused by these policies and government actions remain. This impact is clearly evident by observing the shift from less locally sourced foods to more refined, processed foods imported and accessed at considerable additional transportation costs. (Martin, 2012; Stroink & Nelson, 2009; Stroink & Nelson, 2012).

All of these examples point to significant challenges to revitalize and sustain an ago-forestry food system of cultivated and wild boreal forest foods as an alternative paradigm, one in which policy gives primacy to social and ecological relationships in Northwestern Ontario. This alternative paradigm affords opportunities to emphasize reconciliation and healing initiatives that address past Indian Act policies, such as discouraging Indigenous communities from selling cultivated food to non-native people (Waisberg & Holzkamm, 1993) and the ongoing residual impacts of forced participation in food production during the residential school era.

In summary, contextualized and place-based policy leads us in a different direction than a universalist, "best practices" approach. Policies that may facilitate sustainable food systems include ensuring children living in reserve communities have access to school programming that encourages learning about the gathering and harvesting of local food resources, and establishing respectful nation-to-nation relationships between Indigenous communities and the state. A joined-up policy framework that includes an ecological approach would include policies that encourage alternatives to herbicide spraying, such as with glysophate, since this practice jeopardizes healthy access to food sources such as blueberries and moose who browse on sprayed forests. In addition, establishing appropriate guidelines for controlled burns that offer a more balanced approach to fire suppression encourages diversity in the availability of vital traditional food sources near communities.

We encourage the Government of Canada to develop an innovative Food Policy for Canada that is not set in stone, but will evolve and endorse a contextual, place-based approach. As described in the examples above, food systems issues exist as contextual points in time, influenced by multiple factors that are interrelated into an organic whole (Weaver, 1948). Our research and experiences lead us to recommend that a Food Policy for Canada needs to consider place-based relationships that are open to the fluidity of social and environmental dynamics. It must embrace the specificity of context in order to realize the transformative opportunity to establish healthy, equitable, and sustainable food systems for all.

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Commentary

Closing the loop on Canada's national food policy: A food waste agenda

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Introduction

In the near future, Canada will be implementing a national food policy; in doing so, it will be joining a growing number of countries with policies and strategies that address the growing problem of food waste. Food waste is a major economic drain estimated to cost Canada $31 billion dollars annually or $107 billion in true cost, when the costs of wasted water, energy, and resources are included (Gooch & Felfel, 2014). Despite the staggering cost, there is currently a limited number of scholars tackling the issue of food waste in Canada (Abdulla, Martin, Gooch, & Jovel, 2013; MacRae et al., 2016; Parizeau, von Massow, & Martin, 2015). Some of the leading think tanks and research institutions, such as the World Resources Institute (WRI), National Defence Research Council (NRDC), as well as inter-sectoral collaboratives such as Canada's National Zero Waste Council (NZWC) have identified several priorities to address food waste. Key priorities include, but are not limited to: 1) education and awareness; 2) harmonizing food waste quantification through waste audits and establishing reduction targets; 3) addressing confusion over "best before" labels; 4) incentivizing surplus food donation; and 5) landfill bans on food waste. While these priorities are currently being debated and consulted upon in Canada, several countries around the world have already reached the implementation stage. Canada is therefore in a position to learn from the impacts of policies in other countries with a view to developing a more sustainable, systematic, and just approach to food waste prevention and reduction in Canada.

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The trend

Both France and the United Kingdom (UK) have led in the commitment to addressing the issue of food waste (Food Standards Agency, 2016; Mourad, 2015). For example, France enacted a law in 2016 banning supermarkets with an area of 400m^2 or more from throwing away or destroying unsold food. At first glance this law can be seen as a "win-win" solution to divert perfectly edible food from landfills, therefore reducing the greenhouse gas methane (known to be 20-25 times more potent than carbon dioxide) and assisting communities that are food insecure. The French government also urges supermarkets to sign contracts with food charities with respect to the donation of surplus food. Penalties for breaking the ban range from € 3,750- € 75,000 or a sentence of two years in prison (Gore-Langton, 2017).

The law itself, however, does not set a specific minimum amount for donation. Accordingly, supermarkets can donate any percentage of their surplus food and be seen as complying with the law (Gore-Langton, 2017). Food waste bans and the incentivization of surplus food donations by supermarkets to charities (in the case of France, under threat of penalization) do not address the root causes of food waste. In fact, such policies may potentially shift the responsibility for food waste/ surplus food waste management to the charitable sector without recognizing the complexity and labour-intensive process of managing, re-distributing, sorting, storing, and processing of food donations. More importantly, from the lens of social justice, these types of laws can pass on the risks and burdens of consuming and managing "unwanted foods" (as deemed by the market) to the lower-income communities who are the primary recipients of food from charities. It is therefore important to caution against food waste reduction strategies that entail reliance upon low-income communities to be "infrastructures" for food waste management.

While donating surplus food or food that is about to be wasted may be well intentioned or helpful in the short term, if adequate consideration is not given to the appropriate local context, it can in fact pose some harm (OXFAM, 2005; Riches, 2016; Soma, 2017; Tarasuk & Eakin, 2005). In an international context, Clapp (2012) has demonstrated that in some cases "food aid" is simply another term to guise the "disposal of surplus food." These types of "aid" could have deleterious effects including the disruption of domestic production, the creation of dependencies, displacement of local food sales, as well as food loss at the agricultural stage (Clapp, 2012). As argued by Tarasuk and Eakin (2005), we need to be careful not to create a second-tier food system that will mitigate against more holistic efforts to develop long-term effective solutions to both hunger and food waste.

Food waste reduction through public education has also been a popular approach. In the UK, the Love Food Hate Waste campaign was launched in 2007 by The Waste and Resources Action Programme (WRAP) to raise awareness and educate consumers about the issue of food waste. WRAP's campaign successfully raised the issue of food waste at a global level, assisted by developing tools such as apps and witty messaging. There has been a significant reduction in food waste during the duration of the campaign exemplified by the cutting of 219,000 tonnes of

waste at the retail and food manufacturing levels. The campaign has also inspired other countries and cities to follow suit. However, despite significant efforts placed on awareness and education, the UK government failed to meet its own target of reducing household food waste by 5% in 2015. Further data also found that food waste remains a major problem, with UK household food waste increasing by 4.4% between 2012 and 2015 due to economic factors such as population growth, price deflation, and increases in earnings (WRAP, 2017).

While public education and awareness campaigns are important components of a food waste reduction agenda, and will likely be part of the Canadian strategy, there is also a need to ensure that awareness leads to action and that backsliding does not occur after a campaign is over. Evans (2014) and Lee and Soma (2016) found that food wasting practices are influenced by numerous other factors (e.g., built environment, health-related anxieties, time scarcity) and hierarchies of prioritization that can compete with food waste reduction goals. A longer-term approach to food waste education requires complementary support for associated infrastructure and funding for research and innovation. Education should also include increasing food literacy through school curricula, improving the connection to food, and the understanding of food nutrient cycles to nourish the soil.

As Zsuza Gille argued in her work on "food waste regime", food waste is a multiscalar global problem and therefore "solutions to the 'food waste problem' limited to technological innovation and a few sites or even countries will prove insufficient and will likely exacerbate existing inequalities" (Gille, 2013, p. 27). Accordingly, food waste solutions should not be applied in isolation. While approaches such as taxation, campaigns, and incentives are tangible, and may be easier to implement, from a systems perspective they are considered the least effective because they fail to address root causes such as paradigm/worldviews and global food regimes. They can, however, function as stopgap solutions in the short term.

A systems approach based on social justice and reconciliation: All my relations

A comprehensive approach to a national food policy on food waste is critical when considering Gille's (2013) caution that solutions based on a few sites have the potential to exacerbate existing inequalities. In the case of food waste, language and worldviews are influential in shaping the narrative around food waste solutions.

I had the opportunity to learn firsthand about the importance of language and worldview, especially the principles of "All My Relations" from Indigenous community members Patrick Nadjiwon, Melanie Goodchild, Maria Montejo, and Johl Ringuette, each of whom were expert contributors to a social innovation project I co-founded called the Food Systems Lab. The Food Systems Lab started as a one-year pilot project utilizing social innovation methodology to address the issue of food waste in the City of Toronto. This collaborative process was developed with the aim to collectively contribute toward a more systemic approach to food waste and to build relationships with different stakeholders across the food systems.

Stakeholders who participated included farmers (both rural and urban), a migrant farm worker, food businesses, Indigenous community members, retailers, food processors, consumers, a school association, an industry association, civil society groups, faith leaders, charitable foundations, and local government (both municipal and provincial). From September 2016 to June 2017 the Lab conducted expert interviews with 47 informants, as well as engaged in a collaborative social innovation process with a total of 92 stakeholders across the food system. What emerged from the Lab demonstrated the complexity of the issue of food waste. An issue that is premised on injustice, which in the context of Canada is rooted in colonization, residential schools, spatial and mental distancing[1] connected to urbanization, and the globalization of the food supply chain.

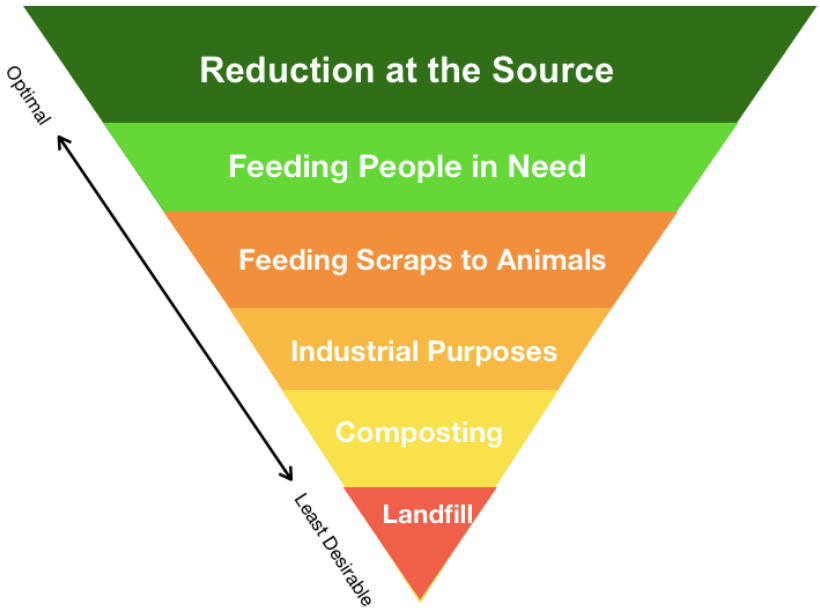

Figure 1: EPA Food Recovery Hierarchy, adapted from EPA (2017)

Currently, the dominant paradigm for managing food waste is based on a "food recovery hierarchy" developed by the United States Environmental Protection Agency. While the hierarchy has helped raise awareness and advance efforts in reducing food waste, it is still based on a paradigm that sees food as a commodity or material resource viewed through an industrial food system lens (Li and Soma, 2017). Further, it does not necessarily consider the cultural and spiritual expressions around food as premised in the Indigenous teachings of "All My Relations."

A National Food Policy can directly support initiatives to reduce food waste by recognizing alternative worldviews through a commitment to Indigenous food sovereignty, reconciliation, and a food system based on circularity. By doing so, it is possible to re-introduce

[1] Gap in knowledge between food production and consumption (Clapp, 2012)

alternative worldviews that do not commodify food and land. The province of Ontario has recently implemented a 2016 *Resource Recovery and Circular Economy Act*. More than simply a "resource," the teachings of "All My Relations" promote a circular philosophy based on consideration of both human and non-human relations in the food system. Shifting the governing paradigm on food waste reduction from a food recovery hierarchy to a regenerative closed loop food system is critical for Canada's food waste agenda and is the foundation for a more sustainable and just food system.

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Commentary

A food policy for Canada, but not just for Canadians: Reaping justice for migrant farm workers

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Abstract

In this policy commentary, I highlight opportunities to advance equity and dignity for racialized migrant workers from less affluent countries who are hired through low-wage agricultural streams of Canada's Temporary Foreign Worker Program. Core features of the program such as 'tied' work permits, non-citizenship, and workers' deportability make it risky for migrant farm workers to exercise their rights. I discuss five federal policy interventions to strengthen justice for migrant farm workers in Canada: 1) permanent resident status; 2) equal access to social protections; 3) open work permits; 4) democratic business ownership; and 5) trade policy that respects community self-determination. To realize a food system that enables health, freedom and dignity for all members of our communities, a Food Policy for Canada cannot be for Canadians alone.

Keywords: food policy, migrant workers, Canada

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Introduction

The abundance of food in Canada has long hinged on the labour of people who are denied the bundle of rights that come with Canadian citizenship. Industries such as meatpacking, fast-food, and fish-processing hire migrant workers from poorer countries through Canada's Temporary Foreign Worker Program. As a result of racialized global inequality, migrant workers often face pressure to accept the wages, working, and living conditions at hand (Binford, 2013). Canadian workers generally have greater power to refuse such employment. To realize a food system that enables health, freedom, and dignity for all members of our communities, a Food Policy for Canada cannot be for Canadians alone.

This policy commentary focuses on one part of Canada's low-wage migrant workforce: farm workers. Canada's treatment of migrant farm workers has attracted international concern. Following his visit to Canada, Olivier de Schutter (2012), United Nations Special Rapporteur on the Right to Food, critiqued the country's temporary farm worker regime: "In short, a marginalized category has been created essentially in order to compensate for the increased concentration in the farming sector and for the failure to ensure that farming remains attractive to Canadians" (p.9). I begin by outlining how Canada's migrant farm worker regime places workers in highly exploitable positions. Five federal policy interventions are proposed for a national food policy to ensure migrant farm workers in Canada have equal access to the material stuff of life, social recognition, and a political voice.

How Canada's labour-migration scheme undermines workers' rights and dignity

Initiated in 1966, the Seasonal Agricultural Worker Program (SAWP) allows employers to hire farm workers from Mexico and Caribbean Commonwealth countries for up to eight months (Binford, 2013). The SAWP is driven by employers' labour demands and based on bilateral agreements between Canadian and sending-country governments. Since 2002, employers have been permitted to hire workers through additional agricultural streams of the overarching Temporary Foreign Worker Program. These latter streams do not involve bilateral agreements and employ workers from any country for up to 24 months (Nakache & Dixon-Perera, 2015). Canada's migrant farm worker arrangement has continued to expand rapidly; the number of migrant farm workers hired through the SAWP and related streams grew from approximately 35,000 in 2008 to approximately 53,000 in 2015 (ESDC, 2016).

For a migrant farm worker to maintain their immigration status in Canada, they must remain employed by the person who hired them (Binford, 2013). If they encounter poor employment conditions, switching farms is often tricky. Workers also depend on employers to give them a positive evaluation and nominate them to return the following year. Migrant workers can labour each season for decades in Canada without a formal way of gaining permanent residency and settling in Canada with their families. The preferential recruiting and hiring of

men has resulted in stark gender inequity among migrant farm workers (Preibisch & Encalada, 2013). While migrant workers' motivation for working in Canada is often to provide a better life for their loved ones, prolonged separation can tear their families apart (Díaz Mendiburo, Lyn, McLaughlin, Vasilevska, & Wells, 2017).

Earning a higher wage in Canadian currency consistently comes at a high cost to migrant farm workers. Some of the systemic problems workers repeatedly report include substandard housing and transportation, employer expectations of extreme productivity, and a lack of control over workplace hours (Binford, 2013; Reid-Musson, 2017). Barriers to health care loom especially large. For example, in 2013 Jamaican SAWP worker Robert Sulph was working on an Ontario tobacco farm when a blade flew off a metal cutter, slicing open his neck and leaving him with a life-threatening injury (Mojtehedzadeh, 2016). Although Sulph was supposedly entitled to full compensation under provincial law, he had to pay for his medical expenses up front and was cut off of workers' compensation after just twelve weeks. Migrant workers' deportability undermines their ability to exercise the rights to which they are theoretically entitled, and it makes it dangerous for them to speak up.

Policy solutions

Researchers have identified a suite of policies for all levels of government to ensure justice for migrant farm workers in Canada (Fairey et al., 2008; Faraday, 2008; Hennebry & McLaughlin, 2011). Provincial governments can ensure livable wages, full protection under employment standards (including union legislation), proactive legislation to prevent extortion by private recruiters, and random spot-checks for workplaces and housing. At the federal level, five core opportunities for policy intervention include:

1. Immigration: A precarious immigration status underlies many of the systemic inequities migrant farm workers face. While some industry actors have championed a two-step 'pathway' to permanent residency, research on hog-processing workers in Manitoba demonstrates this two-step process can intensify the unequal power dynamic between migrant workers and employers (Bucklaschuk, 2016). Instead, workers and advocates have called for permanent resident status on arrival for all migrant workers.

2. Social Protections: Migrant workers' wages are automatically deducted for federal social benefits (Ramsaroop, 2016). Because migrants often cannot access those benefits, they are effectively subsidizing Canada's social benefits system. Migrant farm workers should have full coverage under those programs. This includes restoring eligibility for full Employment Insurance benefits, which were partly stripped away by the Harper government in 2012.

3. Open Work Permits: Shifting from tied work permits to open work permits would enable migrant farm workers to leave problematic workplaces more easily and would reward high-road employers.

4. Ownership: While respecting Indigenous sovereignty and land restitution, a national food policy for Canada can provide a framework to promote the democratic ownership of some farmland and farming businesses, including worker-owned cooperatives. It can also support modes of farming that allow workers to express their knowledge and skills through a diversity of activities, rather than a division of labour based merely on menial, hyper-specialized tasks.

5. Trade Policy: Canada's national food policy must address the context of poverty and unemployment that often drives many people of colour from less affluent countries to seek work abroad. This includes Canada's complicity in trade liberalization processes such as the North American Free Trade Agreement that have undermined livelihood self-determination in Mexico (Otero, 2011). Current policy choices have boosted the power of corporate agribusiness and supermarket retail chains to shape food prices, which undermines not only small and medium-scale farmers, but also hired workers.

Conclusion

What does the future hold for migrant farm workers? Climate change will likely have a profound effect on agriculture both in Canada and in migrant farm workers' countries of origin. Given the country's significant contribution to anthropogenic climate change, Canada bears an obligation to welcome current and future people who are displaced by climate change, and not simply to extract their labour. Ultimately, food security in Canada cannot occur on the backs of migrant farm workers, their families and home communities (Weiler, McLaughlin & Cole, 2017). A national food policy must ensure that all those engaged in the vital work of producing food and other agricultural products are granted respect and the material means to thrive.

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Commentary

What about the other 50 percent of the Canadian population? Food allergies ignored in national policy plan

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Food allergy is a growing public health epidemic in Canada and much of the western—and developing—worlds (Atiim, Elliott, & Clarke, 2017; 2018; Du Toit et al., 2015; Prescott et al., 2013; Sicherer & Sampson, 2014). US evidence suggests prevalence is increasing (Sicherer & Sampson, 2014), and while recent Canadian prevalence data are pending, data from the Montreal Children's Hospital suggest the percentage of anaphylaxis cases among emergency department visits more than doubled between 2011 and 2015 (Hochstadter et al., 2016). And yet, the Prime Minister's mandate letter outlining an agenda that aims "to develop a food policy that promotes healthy living and safe food by putting more healthy, high quality food, produced by Canadian ranchers and farmers, on the tables of families across the country" (Trudeau, 2015) makes no mention of the 50 percent of Canadian households affected, directly or indirectly, by food allergy (meaning an individual may not be diagnosed or have a food allergic person in the household, but attends a school or workplace where there is a nut ban, for example (Harrington, Elliott, Clarke, Ben-Shoshan, & Godefroy, 2012).

More recently, a September 2017 special issue of the journal produced by the Public Health Agency of Canada entitled *Health Promotion and Chronic Disease Prevention in Canada* focused on "The Food Environment in Canada". The papers in the special issue deal with sugar, food marketing to children, assessing healthy foods in supermarkets, support for healthy eating in schools, and provincial policies such as the Ontario Food and Nutrition Strategy. Again, none of these papers address the 2.5 million Canadians with a food allergy (Soller et al., 2015), ignoring a significant chronic health issue and growing public health problem in Canada.

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Allergic reactions range in severity, and symptoms can include swelling of the lips, hives and rash, nausea, difficulty breathing, asthma and diarrhea. The most severe form of food allergy is anaphylaxis and can be life-threatening, affecting an individual's respiratory, cardiovascular and gastrointestinal systems (Harrington, et al., 2012). In the Canadian context, the most common food allergens are peanuts, tree nuts, fish, shellfish, egg, milk, soy, mustard, or sesame (Soller et al., 2012). While 2.5 million, or 7.5 percent of Canadians are affected directly by food allergy (Soller et al., 2012), prevalence differs geographically and across socioeconomic groups (Soller et al., 2015); and remember, a total of 50 percent of Canadian households are affected, directly or indirectly, by food allergy (Harrington et al., 2012).

Food allergies not only increase the risk of fatality for those most severely affected, they regularly disrupt life for those diagnosed and their families. Impacts on psychosocial health and quality of life have been documented in the academic literature (Dean et al., 2016; Fenton et al., 2011), with many of those affected negotiating both physical safety and social wellbeing, including stigmatization and social exclusion for many children and teens (Fenton et al., 2011). Further, food allergies affect food security for the most vulnerable and are a major health literacy issue for new Canadians (Minaker, Elliott, & Clarke, 2014; Lu et al., 2014).

In order to improve the quality of life of those impacted by food allergy, the Canadian research granting councils have funded a Network of Centres of Excellence (NCE) for the past 13 years, called AllerGen (the Allergy, Genes and Environment Network), hosted by McMaster University. AllerGen aims to investigate the causes and consequences of allergic disease, including food allergy[1]. As such, AllerGen researchers have produced more than 50 peer reviewed journal articles related to the prevalence and consequences of food allergy for Canadians. Not only does AllerGen create knowledge; a primary aim of this research team is to engage in knowledge dissemination and mobilization, in order to inform effective, equitable and evidence-based public policy and educational programming. For example, AllerGen researchers collected the first national prevalence data for food allergy in Canada (Soller et al., 2012), data that influenced national and regional policies related to food labeling and helped to create safe spaces for children in local communities.

Continuing to inform strong policy that can minimize risk for affected Canadians is critical, as there is currently no cure for food allergy (Marra et al., 2017). Management for food allergic individuals is limited to strict allergen avoidance (Fenton et al., 2011), by navigating food labels, restaurants, and relying on the actions of others (friends, family, flight attendants, teachers, cafeteria staff, servers in restaurants, etc.) to minimize risk on behalf of the food allergic. Symptomatic treatment of reactions exists, and the most common medication used for an anaphylactic reaction is a shot of epinephrine (commonly through an epinephrine auto-injector) given as a rescue medication. Anaphylaxis is potentially fatal, and while it does not happen often, it does occur. Some of these deaths are well known: Sabrina Shannon, after whom

[1] http://allergen-nce.ca

Sabrina's Law[2] is named, died in 2003 in her Pembroke, Ontario school cafeteria at age 13 as a result of cross contamination (Fenton et al., 2011). She was not the first—a university athlete died in 1986 after eating chili in a restaurant in Providence, Rhode Island, that was flavoured with peanut butter (The New York Times, 1986). Despite these deaths, safe spaces have still not been adequately created. Andrea Mariano died in the cafeteria at Queen's University in September 2015 as a result of cross contamination in a smoothie she ordered (CBC News, 2016). Although most people affected by food allergy do not die, their lives and the lives of their families are constantly impacted: familial concern related to exposure risk, stigmatization, social restrictions, and isolation (e.g., birthday parties, sleepovers and school events become spaces of potential risk), bullying, restricted food choices and cross contamination concerns exist (Chan et al., 2016; Fenton et al., 2011). While some children outgrow certain allergies (for example, to milk and egg), others (peanut, tree nut) are rarely outgrown (Anagnostou & Clark, 2015). Although episodic acute food allergic events occur, food allergy is a chronic health issue.

As a relatively recent, emerging public health issue, food allergy has attracted interest from science, media, and the commercial sector. While both genetic and environmental risk factors are associated its development, the complete etiology of food allergy remains unknown (Harrington et al., 2012). While policy makers attempt to respond to the needs of affected individuals and develop risk management strategies in a range of settings, it is with a "weight of evidence" approach; meaning, while we do not have all the answers, we have enough information to make some strong policy choices (e.g., related to food labelling, creating safe spaces in school settings) that can intervene to maximize choice and minimize risk for affected Canadians, and place Canada at the forefront of food allergy management and research. As an increasing number of children with allergies are growing up and entering colleges, universities, and the workforce where no policies exist to provide safe spaces or compensate adverse reactions, the need for policy that recognizes food allergy as a chronic health issue that represents a significant public health problem in Canada is critical.

AllerGen has developed several legacy projects including a birth cohort (The Canadian Health Infant Longitudinal Development (CHILD) Study[3] and a team to develop a National Food Allergy Strategy for Canada (NFAST)[4]. Based on over a decade of commitment to working in an integrated fashion with end users and policy makers, NFAST is contributing to the creation of a culture of citizen-based, deliberative democracy in national food policy building and is a strong example of how community-academic partnerships can contribute to national policy building in this country. Until a national food policy in Canada accounts for the substantial and growing chronic public health problem of food allergies (e.g., expansion of school-based policies to post-secondary educational institutions; introduction of standardized restaurant training programs; provision of stock epi-pens [rescue medication used in the event of

[2] Sabrina's Law, the first of its kind in the world to seek to provide a safe school environment for food allergic children, was passed in Ontario in 2005. *https://www.ontario.ca/laws/statute/05s07*
[3] http://allergen-nce.ca/research/strategy/child
[4] http://allergen-nce.ca/outcomes-impacts/kmb/nfast

an anaphylactic reaction] in public places, similar to defibrillator machines), NFAST considers building a National Food Allergy Strategy a high priority.

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