

**Establishing Sustainability or Sustaining the Established:
An Agroecological Analysis of Recent Canadian Food Policy**

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Dedication

I want to dedicate this project to my grandparents, Lyle and Eleanor Van Allen and the other farmers from Celsa Farm, as well as my grandmother Ann Thompson (DeRuyter).

Abstract

This research project explores to what extent the design of major recent federal initiatives within the *Food Policy for Canada* (the *Policy*) supports a sustainable food system within Canada according to agroecological principles. The project conducted a content analysis supported by NVivo 12 to categorize grey literature and a qualitative literature review to analyze academic sources. The literature review provided context to present alongside the content analysis' findings. The most common principles of agroecological food system sustainability were connectivity, land and natural resource governance, social values and diets, and participation. While these principles indicate more transformative food system action, fundamental concerns about the *Policy*'s support and inclusion of agroecologically sustainable principles were identified.

Keywords: Agroecology, sustainability, Canada, food system, *Food Policy for Canada*

Ethics Statement

The author declares no conflict of interest. This study is a mixed-methods secondary data analysis with publicly available information and does not involve any participants, environments, species, or parties outside of this resource. On this basis, there are no special ethics considerations required.

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Chapter 1: Introduction

Food is an essential requirement for all life. Humans are not exempt from this necessity, and food production is fundamentally intertwined with our societies' development (Gibson, 2020). As a species with a unique and profound influence on the global environment, it is crucial that these food systems are sufficient for human beings and sustainable for the planet.

Overview of the Canadian Food System

A food system can be characterized as “the entire range of actors and their interlinked value-adding activities involved in the production, aggregation, processing, distribution, consumption, and disposal of food products that originate from agriculture, forestry or fisheries, and parts of the broader economic, societal and natural environments in which they are embedded” (Nguyen, 2018). The Canadian federal government’s conceptualization of a food system echoes this definition and oversees these actors and activities to achieve their priorities (AAFC, 2020d).

The current food system in Canada –one reflecting much of the global mode of food production– is designed to produce enormous quantities of commodified food on an international market (Gladek et al., 2017). In 2019, the world produced approximately 9.4 billion tonnes of primary crops, which had increased by 53% from 2000 (Food and Agriculture Organization of the United Nations (FAO), 2021). During this same period, Canada produced 149 million tonnes of agricultural goods; this was approximately 1.6% of the annual global production, despite Canada only accounting for approximately 0.5% of the global population and 1.2% of global agricultural land at the time (Statistics Canada, 2022) (United Nations, Department of Economic and Social Affairs, Population Division, 2019) (Statistics Canada, 2022b) (FAO, 2022b) (FAO, 2022a).

This impressive technological and logistic achievement comes at the detriment of the environment and ultimately does not ensure food security in Canada (Polsky & Garriguet, 2022). The agricultural sector produces enormous waste, is resource intensive, and degrades the environment (Agriculture and Agri-Food Canada, 2020b) (AAFC, 2020a) (AAFC, 2020c). For example, approximately 10% of greenhouse gas emissions in Canada are from the agricultural primary production sector (AAFC, 2020b). In 2000, it was estimated that 67% of global freshwater withdrawal and 86% of global freshwater consumption could be attributed to agriculture (AAFC, 2020a). Across Canada, the ramifications of unsustainable agricultural practices can be seen. One example of this is the increased soil erosion that results from dominant methods of food production; this impacts soil health, may contribute to the eutrophication of bodies of water, and can decrease overall soil productivity (AAFC, 2020c).

Moreover, food insecurity – or lack of access to healthy, safe, and culturally appropriate food - still exists at alarming rates, with Indigenous and marginalized groups disproportionately impacted (Polsky & Garriguet, 2022). In 2020, 9.6% of Canadians reported experiencing food insecurity, with the most vulnerable individuals belonging to Indigenous and visible minority groups (Polsky & Garriguet, 2022). Furthermore, food insecurity impacts a significant portion of Canadian children; a study by PROOF, a Canadian research program, found that an alarming 1.4 million children lived in households with food insecurity in 2021 (PROOF, 2022).

The success of food production with the juxtaposition of social and environmental failings is an inevitable consequence of the history of the Canadian government's approach to food policy.

Research Question, Scope, Significance, and Novelty

Research Question

What extent does the design of recent federal initiatives within the *Food Policy for Canada* support an agroecologically sustainable food system within Canada?

Scope

As food systems are complex, multidisciplinary, and overlap with numerous industries, it is crucial to narrow and specify the scope to align with this project's time limit. My project will be primarily interested in agriculture and, to a lesser extent, aquaculture; agroforestry will not be considered. This scope was chosen to align with the content of the *Food Policy for Canada*. Additionally, this project will consider the food system prior to consumption, including the production and distribution of food, to ensure relevancy to the content within the *Food Policy for Canada*. However, this research will include a discussion of food insecurity through a food systems perspective, as it is a crucial component of agroecological sustainability principles and determining food system efficacy in general. Finally, to ensure compatibility with agroecology, this study will exclusively consider the ecological, sociocultural, economic, and political dimensions of food systems.

Significance

Identifying strengths and vulnerabilities in the current policy proposals can contribute positively to the policy cycle, provide alternative perspectives for government decision-makers, improve the sustainability of the legislation, and hold the government accountable to political promises and legislative outcomes. In the academic sphere, my research project will contribute to an underexplored area in the scholarly domains of critical food studies and environmental policy scholarship.

Prior Research

Academics have previously offered critical analyses of the Canadian food system and have explored how agroecological principles could aid in a transition to a more just and sustainable system (Abergel & MacRae, 2012). Additionally, academic and activist spheres have advocated for comprehensive federal legislation in Canada, including the *People's Food Policy* and the Food: Locally Embedded Globally Engaged (FLEdGE) network (Andrée et al., 2020). However, there has been limited research that measures the sustainability of current federal food policies, partly due to how new the policy is and that it has not been fully implemented in practice. Notable research measuring the sustainability of current policies includes research conducted by Andrée et al. (2021), which critically analyzes the *Food Policy for Canada* using an ecological public health paradigm.

Report Structure

The report will provide a brief background to the history of the Canadian legislative food system, the *Food Policy for Canada*, and agroecology in Chapter 2. In Chapter 3, the methodological approach, motivation, and design will be outlined. The highlights of results from the literature review and document analysis will be provided in Chapter 4, with the complete findings presented in the Appendix. Finally, Chapter 5 will provide an analysis of these findings, a summary of the research, and potential future research areas.

Chapter 2: Background

Brief History of Food Policy in Canada

The Canadian food system originated from the exploitation and violence of colonial settlers, the results of which can still be felt today (MacRae, 2017a). Upon arrival to North America, Indigenous peoples offered invaluable agricultural knowledge to support the survival of European settlers (MacRae, 2017a). In return, Indigenous peoples experienced colonial violence, including being displaced from agricultural lands through violence and the creation of deeply coercive treaties (MacRae, 2017a) (Coyle, 2008). The British government gave these lands to the European colonizers, who used the appropriated Indigenous knowledge to produce domestic vegetation for harvest (MacRae, 2017a).

The original constitution created by European colonizers contained limited provisions concerning federal responsibility over food system management (MacRae, 2017b). The earliest legislation related explicitly to food was the Inland Revenue Act (1875) and the Adulteration Act; this legislation was not focused on food production, distribution, or management but on regulating food safety and quality (MacRae, 2017b).

From this period until the 1930s, Canadian food policy included minimal government market intervention; it was designed to produce food for international allies and trading partners and expand control of agricultural land in the Canadian west (Skogstad, 2014) (Belshaw, 2016a). This system's outcome-focused design excluded the complexities associated with environmental impacts (MacRae, 2017b). Instead, food production and distribution were motivated by technological advancements and productivity; the system was valued based on its contribution to Gross Domestic Product or overall economic "good" (MacRae, 2017b).

The vulnerabilities of this design were exposed during major global events, including the Great Depression and World War II (MacRae, 2017b). Coinciding with the beginning of the Great Depression, the prairie Dust Bowl plagued the prairie region during the 1930s, bringing severe drought conditions and dust storms (Struthers, 2013). While any crop would be negatively impacted by this environmental stressor, the crops grown in the Canadian prairies were uniquely susceptible to these conditions due to unsustainable farming practices (Belshaw, 2016b). Dryland farming techniques involved breaking the soil and accessing moisture deep within the soil; once the water source is depleted, the quality of the soil and its resiliency to drought is severely compromised (Belshaw, 2016b) (CBC News Online, 2004). Additionally, the prairie's reliance on monocropping wheat left farmers vulnerable to market forces, pests, and disease (Belshaw, 2016b). Grasshopper infestations, crop diseases, and the market value of wheat plummeting severely diminished the value, quality, and quantity of wheat harvested (CBC News Online, 2004). Finally, the Canadian social welfare structure was inadequate to respond to this crisis, and those of lower-class status, small business owners, and farmers were disproportionately impacted (Struthers, 2013).

Following this period of socioeconomic and environmental turmoil was the beginning of World War II in 1939. The war demanded greater food system efficiency, disrupted international markets and the associated demand for food, and dysregulated food prices (MacRae, 2017c). A market-based, hands-off approach by the government, which the state had previously employed, was deemed inadequate to address these issues (MacRae, 2017c).

During these extraordinary periods, the Canadian government began establishing social welfare and aggressive market interventions to mitigate potential market failures of inflation and food shortages (MacRae, 2017b) (Skogstad, 2014). However, these mechanisms were broadly eliminated following the end of World War II (MacRae, 2017b).

Since World War II, there have been three attempts at establishing an integrated federal food policy (Riches, & Tarasuk, n.d.). These include *A Food Strategy for Canada* in 1977 and *Canada's Action Plan for Food Security* in 1998 (Riches, & Tarasuk, n.d.). Andrée et al. (2018) identify the limited impacts of these policies on the Canadian food system landscape and characterize *A Food Strategy for Canada* as shaped by a blend of productivist and neoliberal ideals. Productivist agriculture is "a commitment to an intensive, industrially driven expansionist agriculture with state support based primarily on output and increased productivity" (Lowe et al., 1993). Additionally, neoliberalism has been defined as:

...the first instance a theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets, and free trade" (Harvey, 2020).

While the legislative landscape has evolved, Skogstad asserts that productivist components of prior iterations of the Canadian food system remain core elements of the present food system (Abergel & MacRae, 2012). Furthermore, Andrée et al. (2018) characterize the evolving legislative food system as being motivated by vaguely defined goals of sustainability and human rights.

Despite past attempts, no integrated federal policy has been meaningfully implemented until the *Food Policy for Canada*, 2017 (Andrée et al., 2018) (Food Secure Canada, 2017). The current national Canadian food system can be categorized as a patchwork of uncoordinated policies, legislation, guidelines, and initiatives across all levels of government (Food Secure Canada, 2017). This system includes an approach to food security that almost exclusively relies on non-profit organizations, does not legislatively enshrine the right to food, weakly monitors and enforces sustainable agricultural practices, intensifies agricultural greenhouse gas emissions and nutrient contamination, and approaches food production with the ambitions to maximize food output and international exports (Riches, & Tarasuk, n.d.) (Abergel & MacRae, 2012) (Andrée et al., 2017). This myriad of systemic issues has recently motivated renewed political interest in establishing a national food policy.

The Food Policy for Canada (2017)

The *Food Policy for Canada* is the first-ever integrated policy approach to governing the food system at a federal level (AAFC, 2020d). Inclusion and Diversity, Reconciliation, Innovation, Sustainability, Evidence and Accountability, and Targets have all been identified as critical principles shaping the development of legislation (AAFC, 2020d). These targets include aligning with specific United Nations Sustainable Development Goals (SDG) such as SDG Zero Hunger, Target 2.1, which aims to end hunger and ensure nutritious, safe, and sufficient food access year-round (AAFC, 2020d). Priority outcomes of these policies include the following: increased community capacity and resilience, increased connection within food systems, improved food-related health outcomes, strong Indigenous food systems, inclusive economic growth, and sustainable food practices (AAFC, 2020d). At the time of this research proposal, the federal government has announced investments of \$134.4 million in various policies and initiatives such as

the Local Food Infrastructure Fund, Northern Isolated Community Initiatives Fund, Buy Canadian Promotion Campaign, Reducing Food Waste, and Tackling Food Fraud (AAFC, 2019).

Agroecology and Approaches to Food Systems

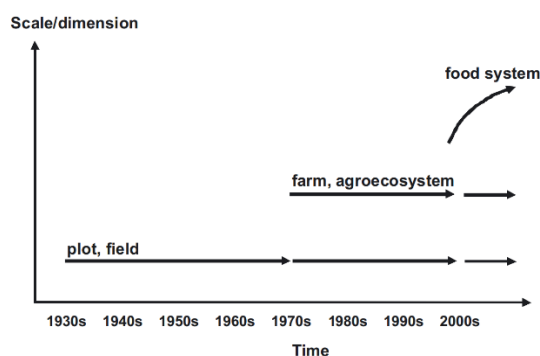
Historical and Present-Day Agroecology

Agroecology is a complex and evolving approach to science, agriculture, and policy (FAO, 2022c). During its infancy throughout the 1930s, this approach began to view agriculture as a fundamentally ecological issue; agroecology was interested in harmonizing with and applying natural ecosystem processes to optimize agricultural practices and sustainability (Wezel et al., 2009). This includes practices like nutrient recycling, intercropping, cover cropping, and ensuring crop diversity (Wezel et al., 2009). Over time, academia began to identify the value of local farmers' knowledge and incorporate this knowledge and associated practices into the discipline (Wezel et al., 2009). From the 1970s onward, agroecology began to expand as a movement and set of practices to create agricultural sustainability, productivity, and equity (Wezel et al., 2009). During the 1990s, this definition was further expanded to move beyond farm or agroecosystem framing and included agroecology as a food systems approach (Wezel et al., 2009).

Figure 1 includes a figure created by Wezel et al. (2009) to illustrate this shift in scope.

Figure 1

Temporal Changes in Scale and Dimension in the Definition of Agroecology and in Applied Research



Note. Figure sourced from Wezel, A., Bellon, S., Doré, T., Francis, C., Vallod, D., & David, C. (2009). Agroecology as a science, a movement and a practice. *Agronomy for Sustainable Development*, 29(4), 503–515. <https://doi.org/10.1051/agro/2009004>

Today agroecology can be applied as a scientific discipline, agricultural practice, or political and social movement, has fundamental debates associated with each approach, and can have varying definitions depending on region (Wezel et al., 2009) (McInnes et al., 2017) (Carmona-Zabala & Panagiotopoulos, 2022). Modern definitions of agroecology include the following:

...[A] holistic and integrated approach that simultaneously applies ecological and social concepts and principles to the design and management of sustainable agriculture and food systems (FAO, 2022c)

...[T]he science of the relationships between an organism and an environment modified by human beings for food production (Garcia-Oliveira et al., 2022)

Agroecology is the integration of research, education, action and change that brings sustainability to all parts of the food system: ecological, economic, and social. It's transdisciplinary in that it values all forms of knowledge and experience in food system change. It's participatory in that it requires the involvement of all stakeholders from the farm to the table and everyone in between. And it is action-oriented because it confronts the economic and political power structures of the current industrial food system with alternative social structures and policy action. The approach is grounded in ecological thinking where a holistic, systems-level understanding of food system sustainability is required. Transforming agriculture in a fundamental way—putting it on a sustainable path—is going to be a tremendous challenge. A basic assumption of agroecology is that we can hope to meet this challenge only if we approach it on three different fronts simultaneously. (Gliessman, 2018)

Therefore, when applying the term agroecology, it is crucial to clearly state the definition and scope of the term. The definition and approach taken for this paper will be elaborated upon in Chapter 3: Methodology.

Theoretical Debates

There are fundamental debates on the practical applications of agroecology. This includes what Levidow et al. (2014) describe as a conflict between the conform versus transform paradigms. Those who believe agroecology should "conform" to the dominant system believe principles can coalesce with the current industrial food regime; strategies that emerge from this perspective include intensifying sustainable practices and merging technological advancements with organic methods to compete with conventional methods (Levidow et al., 2014). Méndez et al. echo this sentiment, describing one approach to agroecology as being informed by western and natural science perspectives and supporting further scientific research in these realms.

In contrast, those who believe agroecology should "transform" the dominant system argue that agroecology should fundamentally alter the current industrial food regime and emphasize food sovereignty and sufficiency (Levidow et al., 2014). Strategies under this umbrella include developing mixed farming and broadening boundaries when implementing farm practices (Levidow et al., 2014). Méndez et al. characterize similarly and identify how agroecology can be applied as a transdisciplinary, participatory, and action-oriented approach grounded in ecology, agronomy, and politics (Méndez et al., 2013).

Chapter 3: Methodology

Overall Design

The primary objective of this research project was to characterize how the *Food Policy of Canada* contributes to the sustainability of the Canadian food system according to agroecological principles. This was addressed through two methodological approaches: an initial academic literature review analysing key ideas relevant to the *Food Policy for Canada* and a mixed-methods document analysis guided by the literature review. Two methodologies were chosen to produce a richer analysis of current policies and to compensate for the lack of information available on the implementation of the policies. In my analysis of the literature, I applied a qualitative narrative approach, and in the document review, I applied a qualitative and quantitative content analysis approach.

Motivation for Application of Agroecology

There exist a myriad of methodologies and disciplines to characterize food system sustainability. For this project, I chose to apply agroecology because of key stakeholders' recognition and use of the approach, and agroecology's utility in addressing this report's research question.

Agroecology is a common approach to food system sustainability and has been used by farmers, activists, academics, and governments (McInnes, 2019) (Varghese, 2022). The United Nation's Food Agriculture Organization, the Institute of Agriculture & Trade Policy, and the National Farmer's Union (NFU) are some of the many major organizations that have explicitly expressed support of agroecological practices with many more referencing agroecological practices to support sustainable food system development (FAO, 2022c) (Varghese, 2022) (NFU, 2023).

Additionally, agroecology has key characteristics that increase its utility and practicality to this research project. Agroecology is fundamentally interdisciplinary and includes a holistic, systems-based approach that aligns with variables of interest for this project. (FAO, 2022c). Moreover, these characteristics echo trends in academic literature that articulate the importance of treating the food system as a socioenvironmental structure when pursuing sustainable food system legislation. (Prosperi et al., 2016). The approach is also adaptable to many levels of food system actors, which is crucial when analyzing legislation that spans regional to federal scope (Wezel et al., 2009). Finally, there has been significant academic and activist work put into producing principles of food system sustainability that adhere to agroecology ideals; these principles can be easily translated into a metric to quantifiably analyze policy design, which is essential to implement this research project.

Research Project Components

Academic Literature Review

Design and Motivation. The academic literature review was a narrative literature review, as the methodology could be easily adaptable to this research project's required time constraints, level of complexity, and goals. The literature was selected to support the content analysis; it included academic perspectives on both the current Canadian food system and opportunities for food system transformation. Sources were collected using the University of Ottawa's search engine "Omni," as it contains information spanning several databases and is freely accessible to students. Terms used to find the literature included the following: "Canad* food system," "Canad* food system policy," "Canad* food system policy design," "Canad* agroecolog*," and "Canad* sustainability food system." Relevant literature from this search was reviewed and briefly summarized by characteristics, including the publication information, research

question, methodology, and findings in Microsoft Excel. These characteristics were used to sort, filter, and produce a narrative review from academic sources.

Variables of Interest. Variables of interest included the key research findings from relevant academic literature. Results from Omni were sorted by relevancy and filtered only to include online sources, peer-reviewed sources, articles published within the past 10 years, and sources written in English. This initial filter was done to optimize sources' relevancy and quality and ensure they were accessible. Sources were excluded from analysis if they focused on agroforestry, non-agricultural ecosystems, COVID-19 specific phenomena, food marketing unrelated to legislative decisions, or conducted nutritional based experiments not strictly related to food system analysis. This research project considered the first twenty results from each search to optimized relevancy and adhere to project time constraints.

Codebook

Design and Motivation. The codebook was informed directly by the 'Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition' report produced by the United Nations' High-Level Panel of Experts (HLPE) and research by Wezel et al. (2020). In 2018, the FAO produced the 'The 10 Elements of agroecology: guiding the transition to sustainable food and agricultural systems'; this report emerged from a regionally based multi-stakeholder process (FAO, n.d.). Following this publication, Wezel et al. (2020) conducted a review adding three principles to this to articulate the distinction between biodiversity and economic diversification, and to explicitly state the importance of soil and animal health in agroecology. These additional three principles were included in the most recent report by the HLPE on Food Security and Nutrition of the Committee on World Food Security (HLPE, 2019).

These 13 principles were selected as they were concise, well articulated, applied a systems-based view of agroecology, were presented with examples, and were developed through a consultatory process (FAO, n.d.). The definitions, examples, and principles included in this report form the basis of the codebook for this report.

Different food system and agricultural actors have a spectrum of conceptualizations of what agroecology means; these definitions vary in scope, motivation, and disciplinary focus. For the purposes of this study, it is more valuable to have a specific, accepted, and well-known set of agroecological principles, rather than principles that are as broad and varied as the term "agroecology" itself.

Variables. The codebook is adapted from a HLPE (2019) report. There were 13 principles including animal health, biodiversity, co-creation of knowledge, connectivity, economic diversification, fairness, input reduction, land and natural resource governance, participation, recycling, social values and diets, soil health, and synergy. Key details of the variables used can be found in Table 1. The entire table, including examples and further information about each principle, can be found in the Appendix.

Table 1*Comprehensive Set of Principles of the Different Innovation Approaches to Food Security and Nutrition*

Principle	Description
Animal health	Ensure animal health and welfare.
Biodiversity	Maintain and enhance diversity of species, functional diversity and genetic resources and thereby maintain overall agroecosystem biodiversity in time and space at field, farm and landscape scales.
Co-creation of knowledge	Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation, especially through farmer-to-farmer exchange.
Connectivity	Ensure proximity and confidence between producers and consumers through promotion of fair and short distribution networks and by re-embedding food systems into local economies.
Economic diversification	Diversify on-farm incomes by ensuring that small-scale farmers have greater financial independence and value addition opportunities while enabling them to respond to demand from consumers.
Fairness	Support dignified and robust livelihoods for all actors engaged in food systems, especially small-scale food producers, based on fair trade, fair employment and fair treatment of intellectual property rights.
Input reduction	Reduce or eliminate dependency on purchased inputs and increase self-sufficiency.
Land and natural resource governance	Strengthen institutional arrangements to improve, including the recognition and support of family farmers, smallholders, and peasant food producers as sustainable managers of natural and genetic resources.
Participation	Encourage social organisation and greater participation in decision-making by food producers and consumers to support decentralised governance and local adaptive management of agricultural and food systems.
Recycling	Preferentially use local renewable resources and close as far as possible resource cycles of nutrients and biomass.
Social values and diets	Build food systems based on the culture, identity, tradition, social and gender equity of local communities that provide healthy, diversified, seasonally and culturally appropriate diets.
Soil health	Secure and enhance soil health and functioning for improved plant growth, particularly by managing organic matter and enhancing soil biological activity.
Synergy	Enhance positive ecological interaction, synergy, integration and complementarity amongst the elements of agroecosystems (animals, crops, trees, soil and water).

Note. All information in the table is quoted directly from (HLPE. 2019. Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition. A report by the High-Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome.)

Document Analysis

Design and Motivation. Canada has no coordinated central federal legislation governing the food system except for the *Food Policy for Canada*; as such, this research project focused primarily on the programs proposed or implemented within this omnibus legislation. The choice to study these initiatives rather than the policy document itself is deliberate; I am more interested in the actual outcomes rather than the policy's initial, high-level intent. Additionally, as most of the *Food Policy for Canada* programs have only been recently proposed or implemented, it is at this stage difficult to thoroughly assess the effectiveness and outcomes of the initiatives. Therefore, the primary focus of this research was the grey literature related to each program that the Government of Canada (GoC) has published.

The official GoC's advanced search feature was used to gather grey literature on these programs. This approach was chosen as it addresses my research objective directly, uses easily accessible information, and can be done within the given timeline. The names of each program were inputted in the GoC web search bar, and the resulting web pages and documents were saved and analyzed using NVivo 12. The codebook based on agroecological principles of food system sustainability was used to manually code at least 10 references of each principle, excluding synergy. There were not sufficient references to this principle throughout the content analysis process. Using the manual references and codebook, NVivo 12 was then used to autocode all sources. Each code was manually reviewed to ensure accuracy and include or exclude references as needed. Following this, a final manual search using key terms was used to minimize the number of missed references. This table of key terms can be found in the Appendix.

Variables of Interest. The programs analysed included the following: the Agri Communication Program, the *Arctic Policy Framework*, the Canadian Food Policy Advisory Council, the Economic Strategy Table on Agri-Food, the Federal Leadership in Food Waste Reduction, the Healthy Eating Strategy, the Local Food Infrastructure Fund, the Northern Isolated Community Initiatives Fund, *Nutrition North*, the *Pan-Canadian Framework on Clean Growth and Climate Change*, the Poverty Reduction Strategy, the *Safe Food for Canadians Regulations*, and the Sustainable Aquaculture Program. The grey literature search used the advanced search engine on the Government of Canada's website and included the first 25 produced from each search. This was done to optimize relevancy and adhere to the project's timeframe. Some initiatives produced fewer than 25 results. The associated webpages and documents were then filtered manually; results that were duplicated or included a video without a transcript were excluded from the analysis.

The content analysis was guided by a codebook designed directly from a United Nations Food and Agriculture Organization report, as outlined below. References were excluded from coding if they did not have a direct connection with the *Food Policy for Canada*.

Chapter 4: Results

Literature Review

Characteristics of Literature

Initially, there were 100 academic sources considered; 20 items of literature were reviewed with each of the 5 searches. Sources were then removed according to criteria outlined in Chapter 3: Methodology. There remained thirty-three academic sources.

Most studies were published within the past 5 years, with the mean year of publication being 2018, and mode year of publication being 2021. Approximately one-third of studies were located or analyzed data from sources across Canada. The second most common location was Saskatchewan with approximately 10% of the sources located in this province. Other locations include, in alphabetical order, Alberta, British Columbia, Ontario, Nova Scotia, Northern Indigenous communities, and Quebec. There was an eclectic mix of research methods spanning several disciplines and including quantitative and qualitative approaches. Interviews, surveys, mixed-method analysis, qualitative secondary data analysis, and quantitative secondary data analysis were the most common types of methodology. Other methods include reviews, case studies, and quantitative modelling. Frameworks spanned disciplines and included agroecology, ecology, critical food system analysis, Indigenous conversational method, and feminist analysis. While no one method dominated the literature analysis, the most common method was agroecology which was included in approximately 13% of the studies. This is in part due to search terms explicitly referencing agroecology. The authors were diverse and the most common researchers, including Laforge, Desmarais, McInnes and Pelletier, only contributed to 2 to 3 studies.

Table 2 includes a complete description of the citation, year of publication, research question, location, and methodology for the set of sources included in analysis.

Table 2

Research Statement, Location, Methodology, and Theoretical Framework used in Academic Literature Review Results

	Research Statement	Location	Methodology	Theoretical Framework
(Beingessner & Fletcher, 2020)	“Based on interviews and focus groups with 60 farmers, processors, policy experts, and retailers in the Canadian prairie province of Saskatchewan, this paper examines local food systems from the producer perspective in a rural context of high industrialization and geographical dispersion. We examine what motivates farmers to produce for local markets, and what forces they must resist to do so.”	Saskatchewan	Community based, participatory research project	
(Braun et al., 2020)	“Farmers, civil servants, and non-farming agricultural professionals alike are being encouraged to join the national conversation promoting the legitimacy of conventional agriculture. As part of this large-scale effort, women in agriculture (both on and off farm) are advocating, in gendered ways, for the safety and legitimacy of the agri-food system and its conventional farming practices. This is being done by utilizing their motherhood capital. This motherhood capital legitimizes the authority granted to mothers as expert decisionmakers regarding their children’s food consumption.”	Alberta, Manitoba, Saskatchewan	The qualitative, empirical study was based on semi-structure interviews	Feminist framework
(Desmarais & Wittman, 2014)	This paper examines how the concept and framework of food sovereignty has been incorporated in food policy agendas across diverse sectors of Canadian society, particularly in the work and discourse of the National Farmers Union, Québec’s Union Paysanne, Food Secure Canada and movements for Indigenous food sovereignty.	Canada, National Farmer’s Union, Indigenous movements, Québec’s Union Paysanne	Critical secondary analysis	Critical food system analysis, food sovereignty
(Desmarais et al., 2014)	This article examines how the changing political, economic, and legal context under neoliberalism has shaped patterns of farmland ownership in Saskatchewan, between 2002 and 2014.	Saskatchewan	Economic analysis	Food sovereignty
(Domingo et al., 2021)	The objectives of our project were: (1) to build a shared understanding of food security and sustainability; and (2) to document community priorities, challenges and opportunities to enhance local food access.	Williams Treaties First Nations in southern Ontario	Indigenous methodology, conversational method	Community-based participatory framework
(Fan et al., 2018)	We hypothesized that energy and energy analyses considered together provide a robust, comprehensive measure of sustainability, and evaluated this hypothesis using findings from two field studies in the semiarid prairie region of Canada: a systems experiment including nine different 3-yr cropping rotation systems and a stubble experiment involving five preceding crop stubbles treatments with three nitrogen (N) addition levels.	Saskatchewan	Joint energy and energy analysis on wheat cropping systems	Ecology
(Ford et al., 2016)	We examine if CFMs offer a feasible, sustainable, and effective model for strengthening food systems in Nunavut, examining the model of Greenland and drawing on semi-structured interviews with key informants (n = 45)	Denmark, Greenland, Nunavut, Southern Canada	Semi-structured interviews were conducted with 45 key informants: 6 in Denmark, 18 in Greenland, 20 in Nunavut, and 1 in southern Canada.	
(Harder et al., 2021)	The “circular bioeconomy” is extensively discussed in science and policy, and its implementation in practice is considered to be a panacea for fixing many current sustainability problems.	Okanagan bioregion, British Columbia	Secondary data analysis	Circular bioeconomy
(Isaac et al., 2021)	This article surveys the current state of agroecology in Canada, giving particular attention to agroecological practices, the related social movements, and the achievements of agroecological science.	Canada	Review	Agroecology

(Isman et al., 2018)	In this case study, we show that the applicability of the Ecological Footprint, an overarching outcome measure of resource consumption, for targeting climate change mitigation in cities. We focus on the carbon Footprint subcomponent of the Ecological Footprint, and further translate and disaggregate the carbon Footprint into detailed classification of individual consumption according to purpose (COICOP) and analyze the Footprint of consumption associated with each of these categories for 15 Canadian cities according to census metropolitan area (CMA), from each province.	Specific Canadian cities	Case study	Ecological footprint
(Kenny et al., 2018)	Broadly, the objectives of this study are to examine food and nutrition security in relation to wildlife population and management status across Inuit Nunangat (the Inuit homeland, consisting of four regions across the Canadian Arctic). Specifically, we: (1) characterize the contribution of caribou to Inuit nutrition across northern Canada and (2) evaluate the population and management status of caribou herds/populations harvested by Inuit.	Inuit Nunangat	Mixed-method data analysis, literature review, statistical analysis	
(Laforge & Levkoe, 2018)	In this paper, we consider the subject-formation of new agroecological farmers through a case study of the Everdale Community Learning Centre, one of Canada's only agroecological farm schools. In particular, we explore how the knowledge, practice, and relational identities of participating graduates are informed by and build on the science, practice, and movement of agroecology.	Ontario	Survey, interviews	Agroecology
(Laforge & McLachlan, 2018)	This research examines the agroecological learning processes of new farmers in Canada in order to understand the role of learning communities in transforming food systems. We consider how these learning communities represent new farmer engagement with agroecology and community-based economies as part of a global movement building alternatives to dominant capitalist and productivist food systems. In particular, we examine how the lack of formal education in agroecological alternatives in Canada is being overcome by these new farmers.	Okanagan bioregion, British Columbia	Interviews	Agroecology
(Laforge et al., 2021)	Drawing on participants' insights following an Agroecology Field School and Research Summit held in Ontario, Canada in 2018, this paper presents the context for agroecology's potential expansion in this country. We argue that three key dimensions must be addressed in order for the concept to be advanced: 1) Engagement in food system governance; 2) Building networks of solidarity between academics, activists, and food producers/harvesters; and 3) Realization of Indigenous food sovereignty.	Canada (But based on summit held in Ontario)	Agroecologically-informed analysis of Agroecology Field School and Research Summit (2018)	Agroecology
(Li et al., 2021)	The purpose of this paper is to understand determinants of food waste through analysing patterns of practices including shopping, planning, consumption of leftovers and attitudes around best-before dates.	Toronto, Ontario	A survey and waste composition analysis, bivariate analyses, and confirmatory factor analysis (CFA)	Practice theory
(Lim & Hu,	We conducted a nationwide choice experiment to gauge Canadian consumers' willingness to pay (WTP) for local beef assigned with various mileage and geopolitical connotations.	Canada	Online choice experiment, data analysis of responses	
(Main et al., 2014)	"Neonicotinoids currently dominate the insecticide market as seed treatments on Canada's major Prairie crops (e.g., canola). The potential impact to ecologically significant wetlands in this dominantly agro-environment has largely been overlooked while the distribution of use..."	Canadian prairies	Water and sediment sampling, GIS mapping, chemical analysis, LC/MS/MS analysis	Environmental science
(Massicotte & Kelly-Bisson, 2019)	This paper focuses on the centrality of permaculture design courses (PDCs) as the principal sociopolitical strategy of the permaculture community in Canada to transform local food production practices. Building on the work of Antonio Gramsci and political agroecology as a framework of analysis, we argue that permaculture instruction remains deeply embedded within market and colonial relations, which orients the pedagogy of permaculture trainings in such a way as to reproduce the basic elements of the colonial capitalist economy among its practitioners.	Eastern Ontario, Brazil		Gramsci's counter hegemony, political agroecology

McInnes, 2019)	The objective of this paper is to integrate these bodies of literature by examining a Canadian case study, Growing Forward 2 (GF2) through the multilevel perspective. I argue that this framework is a valuable tool for explaining why Canadian policy consultation processes are consistently viewed as failures by civil society organizations (CSOs) and provide clarity on the barriers to CSO consultation in food policy development.	Canada	Qualitative analysis	Sustainability transitions theory and Multi-Level Perspective
McInnes et al., 2017)	In this paper, we investigate convergence using survey results from 143 food movement organizations in four Canadian provinces.	Alberta, British Columbia, Ontario, Nova Scotia	Cluster analysis, descriptive statistics on online survey	
Musick et al.,	In this exploratory study, we assessed the relationships between socio-demographic variables, and self-reported food-waste behaviours through two-tailed significance testing.	Canada	Online survey, cross-sectional design	
Nesbitt &	The aim of this study was to determine if organic management of fields promoted soil quality indicators compared to sustainably managed fields following best-management practice guidelines.	Eastern Canada	Quantitative data analysis on environmental measurements	Environmental science
Ominski et al., 2021)	This review examines these complex interactions and trade-offs, as well as the potential impacts of changes in consumer dietary choice on environmental sustainability, nutritional adequacy, and land use.	Canada	Review	
(Parlee et al., 2021)	A collaborative research project involving a university and a regional Indigenous organization was initiated in 2007 to explore how CWD risk is being communicated to Indigenous peoples, how associated risk is being interpreted and the extent to which information about CWD and perceived risk is affecting harvest and food security.	Western Canada (Indigenous peoples)	Surveys, collaboration with regional Indigenous groups	
(Pelletier et al., 2018)	Here, we consider the past, present and potential futures for this industry through the lenses of environmental, institutional (i.e., regulatory), and socio-economic sustainability, with an emphasis on animal welfare as an important emergent social consideration. Our analysis identifies preferred pathways, potential pitfalls, and outstanding cross-disciplinary research questions.	Canada	Historical analysis, qualitative analysis	Environmental, institutional (regulatory), socioeconomic sustainability
(Pinkle et al., 2016)	In this article, we review the literature on the effects of mercury exposure and its management, in the context of other challenges that northern--primarily indigenous--Canadian communities face. These challenges include highly prevalent food insecurity associated with a rapid transition toward store-bought foods and decreasing access to local natural resources. (6,7) We also provide guidance for promoting patient health, especially during pregnancy, while addressing mercury exposure in at-risk populations.	Northern (primarily Indigenous) communities	Literature review	
(Rotz et al., 2019)	This paper explores these dynamics in Ontario and asks how they are impacting on-farm agroecological stewardship.	Ontario	Survey, interview, soil sample data analysis (Mixed methods)	Agroecology
(Sarkar, 2018)	We highlight some of the key policy drivers on an overarching national scale and those specific to agricultural research and innovation that are critical to fostering a supportive environment for innovation and a sustainable bioeconomy. As well, we delineate some major challenges and opportunities facing agriculture in Canada, including climate change, sustainable agriculture, clean technologies, and agricultural productivity, and some scientific initiatives currently underway to tackle these challenges.	Canada	Article	Policy-based
(Tarasuk et al., 2014)	Similar to the recent emergence of food banks in other affluent nations, the genesis and ultimate entrenchment of food banks in Canada has been tightly intertwined with the dismantling of the welfare state. Through an examination of Canadian data, the authors elucidate the implications of entrenching voluntary, extra-governmental, charitable food assistance programs as an adjunct to publicly funded social assistance programs. The paper aims to discuss these issues.	Toronto, Ontario	Qualitative analysis of food bank reports, health survey data, previous research	
(Thivierge et al., 2014)	The objective of this research was to adapt and further develop a set of indicators of environmental sustainability at the farm level for cash-crop farms of the province of Quebec, in order to provide a self-assessment and decision-aid tool to farmers.	Quebec	Focus groups of experts were used to develop sustainability indicator metric; interviews, data analysis	Environmental sustainability

(Turner et al., 2020)	Food systems are key drivers of environmental impacts, which may be assessed using life cycle assessment (LCA). Canadian agri-food LCA research has been limited by the unavailability of common life cycle inventory (LCI) data resources characterizing processes in Canadian-specific supply chains. We address this issue through identification and evaluation of publicly available Canadian agri-food LCI data for possible inclusion in the forthcoming Canadian Agri-food Life-Cycle Data Centre (CALDC).	Canada	Quantitative data analysis	
(Valdes et al., 2021)	While plant-based dietary practices (PBDPs) have been recommended to improve both population health and environmental sustainability outcomes, no nationally representative Canadian studies have described the prevalence or correlates of excluding animal source foods. The current study therefore: (1) created operationalised definitions of PBDPs based on animal source food exclusions to estimate the prevalence of Canadians who adhere to PBDPs and (2) examined key correlates of PBDPs.	Canadian provinces	Data analysis including Descriptive statistics and multivariable regression analyses	
(Weersink et al., 2020)	The purpose of this paper is to describe the short-term impacts and potential long-term implications of COVID-19 on the U.S. and Canadian farm sectors.	Canada	Mixed-method data analysis	
(Wilkes & Perttula, 2022)	Using Critical Discourse Analysis (CDA), the authors explore how the overarching narratives presented by the current federal government have evolved across the period from 2015 to 2021.	Canada	Comparative analysis	Critical discourse
(Yang et al., 2013)	Substantial improvements have been made to the Canadian Agricultural Nitrogen Budget model (CANB) for estimating residual soil nitrogen (RSN) and the indicator of the risk of water contamination by nitrogen (IROWC-N). These included new algorithms for manure, fertilizer and biological fixation inputs and losses as well as the incorporation of a versatile soil moisture model. The new semi-dynamic model (CANB v 3.0) was compared to the static model (CANB 2.0) for estimating both RSN and IROWC-N. Sensitivity analysis of the RSN component using 2006 land use practices was also conducted and crop yield and N uptake were found to be the most sensitive parameters, followed by biological N ₂ fixation and the addition of fertilizer N and manure N. Land use scenarios were evaluated to examine if increasing the proportion of biofuel crops grown in Canada would change RSN and IROWC-N appreciably.	Canada	Quantitative data modelling and analysis	Canadian Agricultural Nitrogen Budget model (CANB)

Note. All information is cited and sourced from the reference included in the first column. Some studies do not have a theoretical framework listed as it was not explicitly stated within the study itself. The complete table with all findings and literature characteristics can be found in the Appendix.

Summary of Literature

The results were categorized by their central function, either characterising dimensions of the present food system, or discussing food system transformation. Some studies engaged in both objectives; for instance, several studies exploring food system transformation used descriptive case studies as a foundation to expand into potential opportunities for food system change. Despite this, studies were characterized and presented in only one section to avoid overreporting or repeating findings. The studies were almost equally distributed between the descriptive and transformational categories; 17 of the studies were descriptive and 16 were transformational.

Additionally, it is crucial to note that the literature review was designed to support this research project; this was not intended to perfectly mirror the composition of academic literature on Canadian food system studies.

Describing Canadian Food System. The sources included in this section were concerned with critically analyzing and identifying features of the current hegemonic food system in Canada. The following sections are differentiated by their scale and presented from smallest (i.e., individual) to largest (i.e., systemic). A separate section is included for Indigenous food system-related studies for reasons later specified in this section.

Individual Level Analysis. Six studies analyzed food system issues through the lens of the individual. In general, these studies find a willingness and interest of Canadians to engage in sustainable food system actions; however, pervasive issues prevent successful engagement.

Three of these studies explored Canadians' consumption patterns and willingness to engage with sustainable food system actions. This includes research conducted by Lim et al. (2016) that found that Canadians are willing to pay significantly more for home-province products and grass-fed beef, both practices which are considered more sustainable than purchasing non-native food or feeding grain, respectively. Conversely, a study by Valdes et al. (2021) highlights the lack of individual adherence to plant-based dietary practices; they identify an absence of research in understanding this issue and find that 5% of Canadians reported engaging in these practices in 2015. Ominski et al. (2021) explore challenges with individual dietary choices and factors impeding sustainable food consumption. While they find that consumers weigh, among other factors, animal welfare, source, and the environmental sustainability of food choices, there are extreme challenges in effectively communicating sustainability indicators to give consumers the knowledge to act on the importance of these factors (Ominski et al., 2021). Desmarais and Wittman (2014) consider the individual's attitude toward sustainable actions and the challenges of integrating food sovereignty into Canadian policies. They assert that there appears to be a widespread interest in public engagement with the food system and a desire to incorporate ideas of social justice, environmental sustainability, and diversity; however, these desires have yet to be implemented on a transformational, systemic level (Desmarais & Wittman, 2014).

Two studies analyzed the individual's relationship with food waste. Music et al. (2021) study the impact of the COVID-19 pandemic on individual behaviours regarding household food waste and hypothesize that this tumultuous period may result in a shift towards more sustainable actions. However, they find that households report an insignificant decrease in food waste during this period, despite the increased economic stress and increased home time available for households (Music et al., 2021). While Music et al. (2021) are unsure of the cause of this pattern, one interpretation of these findings may be a misalignment of hegemonic consumer food waste discourse and the complex reality of food waste. Li et al. (2021) similarly explored food waste and presented determinants of food waste at an individual level. They found very little correlation between the sociodemographic characteristics and behaviours and the amount of food wasted, excluding household size (Li et al., 2021). They suggest that single households may waste more food as grocery stores sell food in larger quantities than needed or due to a lack of knowledge regarding food preservation techniques (Li et al., 2021). Both studies allude to the causes of food waste being systemic rather than a result of actions entirely within the control of the individual.

Braun et al. (2020) apply a feminist framework to understand the use of motherhood capital to counteract negative narratives around conventional agriculture. While this source deviates from the core motivation of this research paper, Braun et al. (2020) highlight a key issue with the Canadian public's distrust of conventional farming practices.

Farm Level Analysis. Literature at this level focuses on agriculture and agroecosystems. This included studying the impact of standard farm practices and considering potential metrics for measuring farm sustainability.

Main et al. (2014) present the underreported and overlooked impact of widespread neonicotinoid use in the Canadian prairies. They highlight this common canola insecticide's prevalence and persistence in the surrounding environment, particularly in vulnerable ecosystems like wetlands (Main et al., 2014).

Two studies were interested in considering environmental sustainability metrics on farms. This includes a study by Thivierge et al. (2014) that adapted and developed a set of environmental sustainability indicators. The study found that "integrated pest management," "crop diversity," "riparian buffer strip," and "incorporation of manure into the soil" contributed the most to environmental sustainability in cash crop farms (Thivierge et al., 2014). They also stress the importance of creating and distributing tools that aid farmers in implementing sustainable practices (Thivierge et al., 2014). Additionally, Nesbitt and Adl (2014) compare current best management and organic agriculture practices and find no significant difference in soil quality. They assert the importance of farmers' access to multiple bioindicator measurements to adhere to either practice (Nesbitt & Adl, 2014).

Systemic Analysis. The literature identifies Canadian food system issues that include food banks' inadequacy in addressing food insecurity, the current state of food sovereignty implementation, and system fragility during crisis periods.

A 2014 study by Tarasuk et al. analyzes the Canadian food system's overreliance on food banks to address issues of food insecurity. They assert that the scope and size of charitable food banks are insufficient to address the scope and size of food insecurity in Canada (Tarasuk et al., 2014). The rise of food bank reliance corresponds with the dismantling of the welfare state, and the study highlights that 70% of households using social assistance were food insecure (Tarasuk et al., 2014). Tarasuk et al. (2014) lambast the current "charitable model", and asset that the "passive, facilitative" nature of the federal government in addressing this issue ensures no accountability and poor outcomes for the vulnerable.

Wilkes and Perttula (2022) apply critical discourse analysis to understand overarching narratives within federal food system mandates and commitments. In particular, the study identifies an incongruence within AAFC mandate narratives pertaining to addressing systemic inequalities and supporting reconciliation and Indigenous sovereignty (Wilkes & Perttula, 2022).

Weersink et al. (2020) consider how Canada and the United States food systems responded to the COVID-19 pandemic and identified vulnerabilities within the agricultural sector to adapt to external stressors. This includes the food system's "lean manufacturing and just-in-time production, distribution, and storage strategies," which produces system fragility to respond to an unexpected disruption (Weersink et al., 2020). Weersink et al. (2020) present excess perishable food items being discarded, and slaughter weight animals being euthanized as examples of this fragility. Another key finding was a general increase in an understanding and appreciation of applying a holistic approach to the food supply chain in both countries (Weersink et al., 2020).

Indigenous Food System Analysis. While Indigenous food systems fall within any of the previous categories, they are being considered separately to reflect their separation from the broader hegemonic food system in Canada and the unique issues they encounter.

Two studies describe issues within Indigenous food systems due to environmental pollution and disease. Pirkle et al., (2016) review the literature on mercury exposure and management within northern communities and present these findings within the framing of other issues, including food system dysfunctions. A key theme is the prevalence of mercury within wild foods and their impact on nutrient deficiencies and pregnancy (Pirkle et al., 2016). The study highlights the need for health providers to approach the issue with a nuanced and interdisciplinary approach (Pirkle et al., 2016). Parlee et el. (2021)

explore the growing prevalence of chronic wasting disease within wildlife harvested by Indigenous communities in western Canada. The study reports a high level of concern from harvesters and asserts the importance of respecting Indigenous land and natural resource governance when addressing this issue (Parlee et al., 2021).

A study by Kenny et al. (2018) examine food and nutrition security and its relation to wildlife population and management techniques throughout Inuit Nunangat communities. They identify the importance of caribou within regional diets, and the dramatic recent decline of these populations and challenges, including harvest restrictions, which impede the communities' access to this critical species (Kenny et al., 2018). Kenny et al. (2018) also discuss the adaptability and resilience of Inuit Nunangat community diets in responding to these challenges, but assert that further holistic, multi-sectorial research is crucial to understand the sustainability of this food system.

Transforming the Hegemonic Food System towards Sustainability. The sources included in this section discussed alternative food systems and transitions from the hegemonic food system toward sustainable alternatives. The following sections are differentiated by their scale and presented from smallest (i.e., individual) to largest (i.e., systemic). A separate section is included for Indigenous food system-related studies for reasons later specified in this section.

Farm Level Analysis. Woven throughout the literature is the idea that while farmers may be interested in participating in sustainable practices, they are impeded by systemic barriers.

This is directly confronted with a Beingessner and Fletcher study. Beingessner and Fletcher (2020) conduct interviews and focus groups with crucial food system actors, including farmers, to understand the motivations and challenges of producing local food. Interviewed farmers discuss how neoliberal ideals of high production, high exports, and "scaling up" can create a hostile environment for small-scale farmers (Beingessner & Fletcher, 2020). Several quotes from the interviewed farmers poignantly describe this point,

A clear division is found between export-oriented producers and those who go local, with very few farmers mixing the two approaches (see Appendix 1). As one local farmer put it, "Most small producers in Canada right now, we are so marginalized that we are actually outside the mainstream marketplace." One of the few farmers engaged in both direct and corporate marketing still observed that, "we would have an uphill battle to change [the dominant system] and I don't think we can change the existing one. We just have to build our own." Similarly, a local farmer observed that "the alternative system kind of pushes back against [trade agreements and globalization] as a space but it is not of any circumstance of equals. [Local producers] just provide alternatives as best they can." (Beingessner & Fletcher, 2020)

Other literature identifies a lack of data availability as a challenge farmers face when implementing best practices (Turner et al., 2020). As Turner et al. (2020) identify, none of the Canadian agri-food life cycle information data sets are sufficient to support farmers' adoption of sustainable agricultural practices.

Two studies analyze the implementation of agroecology at a farm level and the future of the practice in Canada. Rotz et al. (2019) discuss the unprecedented shifts in farm ownership dynamics and how these impact the implementation of agroecological practices by farms in Ontario. The current system of private farm ownership was established through settler colonialism which is, as Rotz et al. (2019) assert, to the detriment of communities and ecosystems. Furthermore, they highlight the incongruence between promoting intensive, long-term sustainable agricultural practices and renting farmland temporarily (Rotz et al., 2019). Previous research finds that rental land tends to be associated with poor soil quality compared to land with long-term ownership (Rotz et al., 2019). Through interviews, surveys, and soil sample data, Rotz

et al. (2019) find that the corporatization of the agricultural industry impedes access to farmland for smaller operations and detracts attention and funding from crucial agroecological health considerations. Laforge et al. (2018) present the interest in and dissemination of agroecological information within new Canadian farms. They find farmers have a substantial appetite for the horizontal transfer of knowledge and describe the unintentional and natural production of agroecological food systems within these communities (Laforge et al., 2018).

Pelletier et al. (2018) explore the Canadian egg industry's history, present, and potential future. The study presents the trend toward increased production and life cycle resource efficiency driven by regulatory shifts (Pelletier et al., 2018). Pelletier et al. (2018) identify an inability of Canadian egg farmers to meaningfully challenge supply management (i.e., regulatory oversight of productivity driven by market forces). However, there is widespread support for this system due to adequate compensation. While the study emphasizes the importance of a continued transition towards sustainability and improved animal welfare, the industry faces obstacles resulting from food retailer actions, environmental considerations, and societal animal welfare expectations (Pelletier et al., 2018). One example is the increased costs associated with improved hen housing that can be transferred to a consumer who may be deterred from the higher egg cost (Pelletier et al., 2018). Pelletier et al. (2018) argue that it is crucial for industry transformation to be cognisant of these conflicting forces to meaningfully obtain sustainability in the egg food system.

Desmarais et al. (2017) explore the evolution of farmland ownership in Saskatchewan from 2002 to 2014 and how political, economic, and legal shifts impact these trends. The study discusses the neoliberal restructuring of Canadian agriculture that emerged in the 1980s and the growing financialization of farmland (Desmarais et al., 2017). Desmarais et al. (2017) find that between 2002 and 2014, investor ownership of Saskatchewan farmland increased 16-fold and became increasingly consolidated; in 2014, the largest single farmland owner possessed more land than the four largest single owners combined in 2002. To achieve food sovereignty and food system sustainability, the study argues the region needs social investment and land sovereignty-informed regulations (Desmarais et al., 2017).

A study by Massicotte et al. (2019) applies the work of Antonio Gramsci to analyze permaculture design courses in Canada critically. Massicotte et al. (2019) characterize these courses as fundamentally intertwined with colonial capitalist structures and use a case study within eastern Ontario to highlight the impediments this design produces. Due to this ideological hindrance, permaculture practitioners in this region could not achieve any meaningful agroecological transformation (Massicotte et al., 2019). A key component of the paper is a discussion of sustainable food system transformation. Massicotte et al. (2019) draw upon Brazilian agroecological movements; they assert that it is crucial for these courses to be developed within a counter-hegemonic context, shaped from the ground up with community involvement, and to allow marginalized voices to lead the movement.

Systemic Analysis. The literature analyzed the history and future of food system transformation in Canada. Despite significant, widespread, and varied food system transformation proponents, the sources consistently raise concerns about the relentless permeation of hegemonic ideologies that impede transformative movements.

Previous attempts to implement food sovereignty in Canada to address issues are analyzed by Desmarais and Wittman (2014). This research conducts case studies surrounding discourse and work surrounding the National Farmers Union, Québec's Union Paysanne, Food Secure Canada, and Indigenous food sovereignty movements (Desmarais & Wittman, 2014). Desmarais and Wittman (2014) find a palpable desire for actors nationwide to increase public participation and find a growing consensus around ensuring social justice, environmental sustainability, and diversity within the food system. Despite this sentiment,

the study asserts that transformational food sovereignty implementation is still in its infancy in Canada (Desmarais & Wittman, 2014).

Other literature explores case studies to understand food system transformation. Laforge et al. (2021) analyzed an Agroecology Field School and Research Summit in Ontario in 2018. The study argues that "1) Engagement in food system governance; 2) Building networks of solidarity between academics, activists, and food producers/harvesters; and 3) Realization of Indigenous food sovereignty" are essential to expanding agroecology in Canada. They find that politics continues to be a major barrier to implementing agroecological practices (Laforge et al., 2021). McInnes (2019) applies the case study, *Growing Forward 2* to explore the shortcomings of food policy consultations with civil society organizations. The paper uses sustainability transitions theory and a multilevel perspective to understand these failings (McInnes, 2019). McInnes (2019) asserts the Canadian legislative consultation process contains a bias towards industry and producer groups and limits discussion to focus on goals that support the hegemonic food system. This issue pervades Canadian policy and disrupts any meaningful food system transformation (McInnes, 2019).

Isaac et al. (2018) explore agroecology establishment within Canada, focusing on agroecological practices, social movements, and science. They find that agroecology had emerged due to challenges arising from the current hegemonic-and colonial-founded-food system (Isaac et al., 2018). The study concluded that while there appears to be growing support and incorporation of agroecology across Canada, the approach is small and underdeveloped (Isaac et al., 2018). They assert further action by the Canadian government is needed to support the meaningful integration of this sustainable approach within the food system (Isaac et al., 2018).

Sarkar et al. (2018) identify challenges faced by the Canadian agricultural and agri-food system, including the legislative challenges that emerge from the diversity and vastness of the sector, issues with climate change adaptation and impacts, and demands for increased productivity. The study articulates the need for coordinated transformative actions and investments to achieve food system sustainability (Sarkar et al., 2018). This includes wider adoption of clean technologies, greater collaboration between AAFC and scientists, and expansion upon current legislation like the *Pan-Canadian Framework on Clean Growth and Climate Change* (Sarkar et al., 2018).

McInnes et al. (2017) analyze food system transformation in Canada through a survey analysis of 143 food movement organizations. They compare the alternative vs. oppositional framing of food movements; proponents of alternative food systems support opting out of the hegemonic food system and creating an entirely new system, while proponents of oppositional food systems support the radical change of the hegemonic food system (McInnes et al., 2017). McInnes et al. (2017) find issues with applying both frameworks in food system initiatives across Canada. Alternative initiatives are pervasive but undercut by their support of neoliberal ideologies like localism, consumer choice, entrepreneurialism, and self-help (McInnes et al., 2017). Oppositional initiatives offer potential avenues for systemic change but are repeatedly impeded by the ubiquity of neoliberal ideology (McInnes et al., 2017). The paper proposes a convergence between these movements to support meaningful food system transformation (McInnes et al., 2017).

Harder et al. (2021) present the circular bioeconomy as a viable approach to addressing food system sustainability issues. The study asserts that more tools and models are needed to inform policies and transition to a sustainable food system (Harder et al., 2021). The circular bioeconomy model is applied to the Okanagan bioregion in British Columbia and find that this model internalizes the nutrient transfer inefficiencies with the food system in this region (Harder et al., 2021).

Indigenous Food System Analysis. While Indigenous food systems fall within any of the previous categories, they are being considered separately to reflect their separation from Canada's broader hegemonic

food system and the unique issues they encounter. Both studies were interested in exploring pathways toward food system sustainability and food sovereignty within Indigenous communities.

Ford et al. (2016) analyze and apply the model of Greenland's food system as an option to transform food systems in Nunavut. The benefits of developing country food markets include alleviating financial challenges with harvesting, creating important sociocultural spaces, diversifying local food availability, and strengthening Nunavut food systems (Ford et al., 2016). The study asserts that key regulatory and institutional challenges impede the development of country food markets within Indigenous communities, including poor facilitation of community member involvement, little oversight of wildlife populations, and a lack of price control (Ford et al., 2016). Ford et al. (2016) discuss the importance of self-determination for Nunavut communities and state that while the Greenland model offers a pathway toward food system sustainability, it is ultimately the Indigenous communities themselves who should shape and oversee their own food system transformation.

Domingo et al. (2021) describe different Indigenous communities' understanding of food security and sustainability, relay community priorities related to these issues, and present the obstacles and opportunities to creating Indigenous food sovereignty. Impediments to food security include a loss of traditional knowledge, climate change and environmental degradation, lack of income, and degradation of community connection with the land and traditions (Domingo et al., 2021). Like Ford et al., Domingo et al. (2021) present establishing Indigenous food sovereignty and revitalizing local food systems as potential approaches to transform community food systems.

Content Analysis of *Food Policy for Canada* Programs

Overview

This study reviewed 324 documents in total. While files may have been referenced within multiple agroecological principles, the maximum number of total files referenced was 104. This indicates that less than a third of files adhered to any one principle of sustainability. Additionally, the overall average number of sustainability principles per file (i.e., total number of references per total number of documents) was approximately 4.1. The Canadian Food Advisory Council documents contained 296 references to principles, or approximately 22.5% of the total number of references. This was almost double that of the next highest program, the Arctic and Northern Policy Framework, which contained 184 references. Additionally, documents associated with this program were the only ones to adhere to all thirteen principles.

Sustainable actions included knowledge campaigns targeting the public, funding for local food system initiatives, collaboration with Indigenous communities, economic-based regulatory actions, farm input (ex. Fertilizer, pesticides) regulations, ecosystem monitoring, and farmer insurance programs. Connectivity was most frequently referenced, with references primarily related to government support of local food system initiatives and actions to improve food access.

While agroecology was not used throughout the literature, general concepts of sustainability were repeatedly mentioned. Using NVivo 12's Text Search Query application, sustainability and associated generalizations were referenced 22 638 times. While a specific sustainability framework was not explicitly stated, the documents did reference the United Nations' Sustainable Development Goals frequently; there were 4989 direct references to these Goals throughout the literature.

Tables 3 and 4 include a summary of key statistics for all programs. The following section includes a program-by-program analysis of the documents associated with the respective web searches. This will include a table presenting the frequency and type of references, a brief overview of the program, and a description of the content of the references. More detailed information is included in the Appendix to optimize comprehension and prioritize the importance of different results.

Table 3

Summary Table: Total Number of References to Agroecological Principles Across all Programs Analyzed

Agroecological Principle	Total Number of References	Total Number of Files Referenced	Average Number of References per File (Rounded)
Connectivity	357	104	3.4
Land and Natural Resource Governance	215	88	2.4
Social Values and Diets	165	70	2.4
Participation	153	65	2.4
Co-Creation of Knowledge	104	41	2.5
Soil Health	60	22	2.7
Biodiversity	57	21	2.7
Fairness	44	22	2.0
Animal Health	40	20	2.0
Input Reduction	39	29	1.3
Economic Diversification	37	20	1.9
Recycling	36	21	1.7
Synergy	8	8	1.0

Note: Full table with information for each *Food Policy for Canada* program can be found in the Appendix.

Table 4

Summary Table: Number of References to Agroecological Principles Listed by Each Food Policy for Canada Program Analysed

<i>Food Policy for Canada Program</i>	Total Number of References
Agri Communication Program	44
Arctic Policy Framework	184
Canadian Agricultural Partnership	45
Canadian Food Policy Advisory Council	296
Economic Table on Agri-Food	60
Federal Leadership in Food Waste Reduction	101
Health Eating Strategy	6
Local Food Infrastructure Program	150
National School Food Program	138
Northern Isolated Community Initiatives	105
Nutrition North	68
Pan-Canadian Framework on Clean Growth and Climate Change	97
Poverty Reduction Strategy	9
Safe Food for Canadians Regulations	5
Sustainable Aquaculture Program	5
Tackling Food Fraud	2

Note: A color scale from dark green to white indicates the number of references identified in each program relative to other programs. Dark green indicates the program with the greatest number of references, while white indicates the fewest. The full table with information for each *Food Policy for Canada* program can be found in the Appendix.

Summary of Food Policy of Canada Program Analysis

The following sections present the results of document searches associated with the specified program. The number of sustainability principle references each program possesses should not be interpreted as a metric of how sustainable the program is relative to other programs. Search results for one program frequently included references to the results of other programs. Notable instances of this are specified for each program. The quantity and diversity of references should be considered in conjunction with the content of these references.

Agri Communication Program.

Table 5

Total Number of References to Agroecological Principles of Sustainability within Agri Communication Documents

Agroecological Principle	Total Number of References
Animal Health	1
Biodiversity	
Co-Creation of Knowledge	6
Connectivity	7
Economic Diversification	1
Fairness	
Input Reduction	
Land and Natural Resource Governance	5
Participation	11
Recycling	
Social Values and Diets	6
Soil Health	
Synergy	

Note: A color scale from dark green to white indicates the number of references to one principle relative to the others. Dark green indicates the program with the greatest number of references, while white indicates the fewest. The full table can be found in the Appendix.

The Agri Communication Program is an AAFC initiative designed to financially support “activities which increase appreciation and pride in the contributions of farmers and the food industry and enhance public trust” (AAFC, 2022).

Most sustainability principle references were participation, connectivity, social values and diets, land and natural resource governance, and the co-creation of knowledge. Participation references included supporting engagement by farmers and the general Canadian public with food production systems. The program also included explicit actions and financial support for underrepresented group participation in

agriculture. While most of the program focussed on linear knowledge transfer from industry to the public and positive marketing, there were references to connecting local farmers with the public, facilitating meaningful engagement and support of local food production systems, and the horizontal sharing of sustainable agricultural practices within the industry.

Arctic and Northern Policy Framework.

Table 6

Total Number of References to Agroecological Principles of Sustainability within Arctic and Northern Policy Framework Documents

Agroecological Principle	Total Number of References
Animal Health	4
Biodiversity	28
Co-Creation of Knowledge	24
Connectivity	9
Economic Diversification	16
Fairness	1
Input Reduction	2
Land and Natural Resource Governance	15
Participation	33
Recycling	8
Social Values and Diets	22
Soil Health	2
Synergy	1

Note: A color scale from dark green to white indicates the number of references to one principle relative to the others. Dark green indicates the program with the greatest number of references, while white indicates the fewest. The full table can be found in the Appendix.

The Arctic and Northern Policy Framework is a broad, long-term approach to guide investments, initiatives, and relationships between the Canadian federal government and Arctic and Northern communities (Crown-Indigenous Relations and Northern Affairs Canada, 2022). The Framework priorities include addressing unique climate change threats the region faces, supporting the region's economy, improving Indigenous and non-Indigenous relations, investing in vital infrastructure for communities, and supporting communities in general (Crown-Indigenous Relations and Northern Affairs Canada, 2022).

The most prevalent principle was biodiversity, followed by participation, and the co-creation of knowledge. Biodiversity was frequently discussed in the context of climate change impact mitigation and the inclusion of Indigenous knowledge to protect regional biodiversity and animal health.

Participation was referenced through support of Indigenous perspectives in decision-making processes overseeing local food system governance, Indigenous participation in environmental management projects, and round table discussions of regionally important issues that were held in Inuvik, Iqaluit, Nain, Thompson, Whitehorse, and Yellowknife. It is important to note that during these consultations, participants frequently raised concerns regarding previous government attempts to facilitate participation in other program implementations.

The Framework included numerous references to the co-creation of knowledge. References included stated the inclusion of Indigenous knowledge to address regional issues and shape programs delivered in the region, as well as collaborating with and incorporating Indigenous knowledge into Western knowledge creation projects.

Other agroecological principle references included identifying the need to support the production of country foods and other systems of local Indigenous food production, diversifying the economy of the Arctic region to support community resiliency, improving food security for the region, and supporting Northern communities' capacity for self-determination.

Canadian Agricultural Partnership.

Table 7

Total Number of References to Agroecological Principles of Sustainability within Canadian Agricultural Partnership Documents

Agroecological Principle	Total Number of References
Animal Health	
Biodiversity	
Co-Creation of Knowledge	18
Connectivity	
Economic Diversification	2
Fairness	10
Input Reduction	2
Land and Natural Resource Governance	1
Participation	4
Recycling	
Social Values and Diets	
Soil Health	3
Synergy	

Note: A color scale from dark green to white indicates the number of references to one principle relative to the others. Dark green indicates the program with the greatest number of references, while white indicates the fewest. The full table can be found in the Appendix.

The Canadian Agricultural Partnership is a \$3.5 billion federal, provincial, and territorial government agreement to facilitate innovation and sustainable growth, expand market and trade activities, and oversee evolving challenges and opportunities within the agriculture sector (AAFC, 2022). Programs with the Partnership include Agri Insurance, Agri Invest, Agri Recovery, Agri Risk, and Agri Stability programs that aim to support farmers in managing environmental, agricultural, and economic adversities (AAFC, 2022).

Most references to agroecological sustainability principles can be characterized as either the co-creation of knowledge or fairness. The program emphasized knowledge transfer between farmers and included funding for events, like farmer-led seminars and conferences, which facilitated horizontal knowledge transfer. Additionally, these programs included references to supporting farmers' livelihoods, creating opportunities, and providing financial support for smaller agricultural operations. The program also supported the inclusion and participation of underrepresented groups within agriculture and actions to understand better barriers that prevent these groups from meaningfully participating in the agricultural sector.

Canadian Food Policy Advisory Council.

Table 8

Total Number of References to Agroecological Principles of Sustainability within Canadian Food Policy Advisory Council Documents

Agroecological Principle	Total Number of References
Animal Health	13
Biodiversity	6
Co-Creation of Knowledge	8
Connectivity	77
Economic Diversification	3
Fairness	4
Input Reduction	9
Land and Natural Resource Governance	74
Participation	15
Recycling	4
Social Values and Diets	55
Soil Health	14
Synergy	1

Note: A color scale from dark green to white indicates the number of references to one principle relative to the others. Dark green indicates the program with the greatest number of references, while white indicates the fewest. The full table can be found in the Appendix.

The Canadian Food Policy Advisory Council is a multidisciplinary group designed to advise and report to the Minister of AAFC to improve key challenges within the Canadian food system (AAFC, 2023). The grey literature related to this Council contained the greatest number of references to agroecological sustainability principles compared to other programs. This was partly a result of the Council providing commentary, support, and ideas for other *Food Policy for Canada* initiatives.

This initiative was the only one to reference every agroecological sustainability principle. The greatest number of references was for connectivity; this included support for local food production systems and facilitating better access to local food systems using other *Food Policy for Canada* initiatives. The grey literature supported previously existing systems and the results from other initiatives that facilitated the connectivity of communities to their local food production systems; it was unclear if any of the connections were developed as a direct result of the Council.

References to land and natural resource governance primarily included discussion and support for the Canadian government to recognize and support community-led food governance. In particular, the Council discussed the importance of supporting the production and distribution of country foods in Northern communities, supporting Indigenous self-determination in general, and strengthening farmers' presence in decision-making across Canada, as well as supporting other *Food Policy for Canada* initiatives that incorporated land and natural resource governance principles. Initiatives and funds of note include the Harvesters Support Grant and the *Nutrition North* program. Similarly, to connectivity, it was unclear what tangible results would arise from the Council directly.

Social values and diets references centered broadly around supporting Indigenous food traditions and ensuring that the Canadian government facilitated culturally relevant food production meaningfully. Some of these references overlapped with participation; the Council literature highlighted other initiatives, including the Agri Diversity Program and Canadian Agricultural Youth Council, which facilitated the inclusion of marginalized perspectives in food production systems. Furthermore, there were commitments for the Council to include marginalized perspectives within the program itself.

Other notable references to agroecological sustainability principles include support for a holistic food system approach, presenting the importance of supporting farmers enduring economic and climate stressors, and explicit references to creating food sovereignty.

While the Canadian Food Policy Advisory Council's role is primarily consultative, the literature depicts this initiative as broadly supportive of numerous agroecological principles.

Economic Strategy Table on Agri-Food.**Table 9**

Total Number of References to Agroecological Principles of Sustainability within Economic Strategy Table on Agri-Food Documents

Agroecological Principle	Total Number of References
Animal Health	3
Biodiversity	2
Co-Creation of Knowledge	2
Connectivity	5
Economic Diversification	4
Fairness	6
Input Reduction	7
Land and Natural Resource Governance	
Participation	12
Recycling	8
Social Values and Diets	
Soil Health	
Synergy	

Note: A color scale from dark green to white indicates the number of references to one principle relative to the others. Dark green indicates the program with the greatest number of references, while white indicates the fewest. The full table can be found in the Appendix.

The Economic Strategy Table on Agri-Food is one of several industry-led initiatives facilitated by Innovation, Science, and Economic Development Canada to stimulate economic growth in the agri-food industry (Innovation, Science, and Economic Development Canada, 2018).

Participation had the most significant references, followed by recycling, fairness, and land and natural resource governance. The program invited and supported feedback from Canadian farmers and other agri-food-related actors on several legislative actions, including amendments to the *Canada Grain Act* and food labelling regulations. Recycling was referenced numerous times, primarily focusing on minimizing negative environmental actions caused by the agricultural sector. This included modernizing fertilizer and pesticide regulations and mitigating farm input environmental pollution. In addition, the initiative outlined actions to support farmers' livelihoods and called to improve the immigration system and support immigrants at all skill levels within the agricultural sector.

Federal Leadership in Food Waste Reduction.**Table 10**

Total Number of References to Agroecological Principles of Sustainability within Federal Leadership in Food Waste Reduction Documents

Agroecological Principle	Total Number of References
Animal Health	6
Biodiversity	7
Co-Creation of Knowledge	9
Connectivity	14
Economic Diversification	6
Fairness	14
Input Reduction	12
Land and Natural Resource Governance	8
Participation	2
Recycling	3
Social Values and Diets	4
Soil Health	7
Synergy	

Note: A color scale from dark green to white indicates the number of references to one principle relative to the others. Dark green indicates the program with the greatest number of references, while white indicates the fewest. The full table can be found in the Appendix.

The Federal Leadership in Food Waste Reduction is an initiative designed to reduce food waste within the federal government itself (AAFC, 2017). There were few pieces of grey literature explicitly related or solely to this initiative. More than half of the sources analyzed included references to the Federal Leadership in Food Waste Reduction in conjunction with a myriad of other AAFC policies and approaches. The remaining documents were frequently asked questions pertaining to the Food Waste Reduction Challenge, a separate, but similar program.

The initiative itself adhered to very few sustainability principles as most references were in relation to other programs. The most prominent agroecological principle directly related to this program was found to be input reduction, as reducing food waste increases food production efficiency and contributes broadly to sustainable agriculture.

While not associated with the Federal Leadership in Food Waste Reduction program, the literature analyzed in this category contained substantial references to agroecological principles in other initiatives and legislation. The primary interest of these documents was related to agricultural productivity and climate change mitigation and adaptation within the agricultural sector. This includes actions by AAFC to minimize the environmental impact and use of agricultural inputs like fertilizers and pesticides and increase land and

resource use efficiency. Additionally, these documents include most of the references to soil health and discuss actions by AAFC to mitigate desertification, soil erosion, and soil quality loss through research and sustainable agricultural practices. Finally, supporting sustainable agricultural practice enactment was a recurring theme; this included programs like the Agri Science and Agri Innovate Program, which provided funding for research in agriculture sustainability innovations and adopting practices like precision agriculture.

Healthy Eating Strategy.

Table 11

Total Number of References to Agroecological Principles of Sustainability within Healthy Eating Strategy Documents

Agroecological Principle	Total Number of References
Animal Health	
Biodiversity	
Co-Creation of Knowledge	
Connectivity	3
Economic Diversification	
Fairness	
Input Reduction	
Land and Natural Resource Governance	2
Participation	
Recycling	
Social Values and Diets	2
Soil Health	
Synergy	

Note: A color scale from dark green to white indicates the number of references to one principle relative to the others. Dark green indicates the program with the greatest number of references, while white indicates the fewest. The full table can be found in the Appendix.

The Healthy Eating Strategy is a collection of regulations and initiatives overseen by Health Canada that aim to improve the nutritional quality of food, improve healthy food-related information, and protect vulnerable groups against deceptive food advertising (Health Canada, 2022).

Grey literature on the strategy called for public participation and emphasized the importance of culturally relevant food. It discusses the government's collaboration with Northern communities to improve food access for this region.

Local Food Infrastructure Fund.**Table 12**

Total Number of References to Agroecological Principles of Sustainability within Local Food Infrastructure Fund Documents

Agroecological Principle	Total Number of References
Animal Health	
Biodiversity	
Co-Creation of Knowledge	1
Connectivity	104
Economic Diversification	
Fairness	
Input Reduction	
Land and Natural Resource Governance	24
Participation	3
Recycling	
Social Values and Diets	14
Soil Health	2
Synergy	

Note: A color scale from dark green to white indicates the number of references to one principle relative to the others. Dark green indicates the program with the greatest number of references, while white indicates the fewest. The full table can be found in the Appendix.

The Local Food Infrastructure Fund is a 5-year initiative by AAFC to provide \$60 million in financial support for community-based, non-profit organizations that improve local food system infrastructure and reduce food insecurity (AAFC, 2022).

This fund contained many references to the connectivity agroecological principle. The program recognizes the importance of local food production, facilitates the creation of connections between food production systems and the local community and economy, and supports alternative means of food production. Supporting alternative food production and distribution systems includes funding urban gardens, community kitchens, food banks, farmers' markets, and greenhouses.

Additionally, land and natural resource governance and social values and diets are repeatedly referenced. These references include financially supporting projects facilitating community self-determination in local food production decisions and adopting sustainable diets.

National School Food Program.**Table 13**

Total Number of References to Agroecological Principles of Sustainability within National School Food Program Documents

Agroecological Principle	Total Number of References
Animal Health	
Biodiversity	1
Co-Creation of Knowledge	2
Connectivity	60
Economic Diversification	
Fairness	1
Input Reduction	1
Land and Natural Resource Governance	37
Participation	5
Recycling	
Social Values and Diets	24
Soil Health	
Synergy	

Note: A color scale from dark green to white indicates the number of references to one principle relative to the others. Dark green indicates the program with the greatest number of references, while white indicates the fewest. The full table can be found in the Appendix.

The National School Food Program is an initiative to ensure children have access to healthy food during school (Department of Finance, 2019).

Analysed documents related to this initiative primarily contained references to other programs; this can be attributed to the lack of publicly available information regarding the design and costs of this initiative (Aziz, 2023). Most grey literature included the Program as one of many future and current initiatives related to the *Food Policy for Canada*. As such, the agroecological references do not meaningfully reflect the National School Food Program itself. However, the central concept of providing sufficient, healthy, culturally appropriate food to all school children relates to the principles of land and natural resource governance, connectivity, and social values and diets.

Northern Isolated Community Initiatives Fund.**Table 14**

Total Number of References to Agroecological Principles of Sustainability within Northern Isolated Community Initiatives Fund Documents

Agroecological Principle	Total Number of References
Animal Health	1
Biodiversity	1
Co-Creation of Knowledge	2
Connectivity	37
Economic Diversification	4
Fairness	1
Input Reduction	2
Land and Natural Resource Governance	35
Participation	3
Recycling	2
Social Values and Diets	14
Soil Health	
Synergy	2

Note: A color scale from dark green to white indicates the number of references to one principle relative to the others. Dark green indicates the program with the greatest number of references, while white indicates the fewest. The full table can be found in the Appendix.

The Northern Isolated Community Initiatives Fund is a \$15 million investment implemented by the Canadian Northern Economic Development Agency to finance community-led programs that strengthen local and Indigenous food production systems (Canadian Northern Economic Development Agency, 2020).

References to connectivity, land and natural resource governance and social values and diets comprised most of the grey literature references to agroecological principles. The literature referenced supporting food sovereignty within Indigenous and remote community food production systems, including investments in the Qikiqtani Food Sovereignty Implementation Solution. In addition, there were several programs and discussions about supporting alternative food system models within Northern communities, such as country food-based systems. The Fund repeatedly acknowledged the importance of self-determination and facilitating communities' ability to design and implement food insecurity solutions. Other notable references to agroecological principles included supporting the knowledge transfer between Elders and younger members of Indigenous communities and supporting the self-sufficiency of Indigenous food production systems.

*Nutrition North.***Table 15**

Total Number of References to Agroecological Principles of Sustainability within Nutrition North Documents

Agroecological Principle	Total Number of References
Animal Health	
Biodiversity	
Co-Creation of Knowledge	
Connectivity	29
Economic Diversification	
Fairness	
Input Reduction	
Land and Natural Resource Governance	23
Participation	7
Recycling	
Social Values and Diets	8
Soil Health	
Synergy	

Note: A color scale from dark green to white indicates the number of references to one principle relative to the others. Dark green indicates the program with the greatest number of references, while white indicates the fewest. The full table can be found in the Appendix.

Nutrition North is a federal government program designed to improve access to food and other essential items for Northern communities; this support takes the form of subsidies, education initiatives, the Harvesters Support Grant and Community Food Programs Fund, and the Food Security Research Grant (Government of Canada, 2022).

Connectivity and land and natural resource governance were the most frequently referenced agroecological sustainability principles. These references primarily included discussions of tailoring the program to strengthen local food system infrastructure, incorporate participant feedback, ensure relevancy to local diets, and support the self-determination of Northern communities in the program implementation.

As this program has been operating since 2012, the grey literature contained several documents providing feedback and a review of its implementation. This included numerous criticisms by participants, including a lack of awareness regarding initiative components, a lack of regionally relevant support for community food systems, and low positive impacts on food processing and shipping.

Pan-Canadian Framework on Clean Growth and Climate Change.**Table 16**

Total Number of References to Agroecological Principles of Sustainability within Pan-Canadian Framework on Clean Growth and Climate Change Documents

Agroecological Principle	Total Number of References
Animal Health	
Biodiversity	
Co-Creation of Knowledge	16
Connectivity	1
Economic Diversification	3
Fairness	3
Input Reduction	8
Land and Natural Resource Governance	2
Participation	15
Recycling	8
Social Values and Diets	1
Soil Health	23
Synergy	1

Note: A color scale from dark green to white indicates the number of references to one principle relative to the others. Dark green indicates the program with the greatest number of references, while white indicates the fewest. The full table can be found in the Appendix.

The *Pan-Canadian Framework on Clean Growth and Climate Change* is a federal strategy to mitigate emissions, support the Canadian economy, and develop climate change resiliency and adaptation (Environment and Climate Change Canada, 2022). The Framework addresses all major areas of the Canadian economy, including the agricultural sector (Environment and Climate Change Canada, 2022).

Literature related to the Framework contained the greatest number of references to soil health. The plan frequently discussed the importance of soil health, soil carbon sequestration and increasing soil carbon concentrations, and sustainable agricultural practices that support and protect soil quality. Practices discussed included cover cropping, intercropping, improving grazing, nitrogen soil concentration management, zero-tillage, and manure management.

Other key principles referenced include the co-creation of knowledge, participation, input reduction, and recycling. These principles were employed in the context of climate change. Discussions of using and supporting the creation of local and Indigenous knowledge, farmer, and Indigenous engagement with climate change adaptation methods, and reducing the use of natural resources and increased usage of

renewable energy sources were included within the literature. In addition, precision agriculture was frequently mentioned as a method requiring further development and support for farmers' adoption.

Poverty Reduction Strategy.

Table 17

Total Number of References to Agroecological Principles of Sustainability within Poverty Reduction Strategy Documents

Agroecological Principle	Total Number of References
Animal Health	
Biodiversity	
Co-Creation of Knowledge	
Connectivity	
Economic Diversification	
Fairness	
Input Reduction	
Land and Natural Resource Governance	3
Participation	4
Recycling	
Social Values and Diets	2
Soil Health	
Synergy	

Note: A color scale from dark green to white indicates the number of references to one principle relative to the others. Dark green indicates the program with the greatest number of references, while white indicates the fewest. The full table can be found in the Appendix.

The Poverty Reduction Strategy is a collection of financial initiatives, social programs, legislation, federal targets, and approaches implemented in 2018 to reduce poverty based on the pillars of dignity, opportunity, inclusion, resilience, and security (Employment and Social Development Canada, 2022).

While the program does not directly address the Canadian food system, broad agroecological concepts related to food security are included. These include using a Market Basket Measure that is sensitive to region-specific costs and supports the right to food for Canadians, an emphasis on self-determination within Indigenous communities, and facilitating participation in food insecurity programs.

Safe Food for Canadians Regulations.**Table 18**

Total Number of References to Agroecological Principles of Sustainability within Safe Food for Canadians Regulations Documents

Agroecological Principle	Total Number of References
Animal Health	5
Biodiversity	
Co-Creation of Knowledge	
Connectivity	
Economic Diversification	
Fairness	
Input Reduction	
Land and Natural Resource Governance	
Participation	
Recycling	
Social Values and Diets	
Soil Health	
Synergy	

Note. There was only one document, as all the results referenced the *Safe Food for Canadians Regulations*; the analysis was conducted on the entire *Safe Food for Canadians Regulations* document. A color scale from dark green to white indicates the number of references to one principle relative to the others. Dark green indicates the program with the greatest number of references, while white indicates the fewest. The full table can be found in the Appendix.

The *Safe Food for Canadians Regulations* were designed to update and consolidate existing food processing standards and align with internationally recognized food safety standards (Canadian Food Inspection Agency, 2023).

Agroecological sustainability principle references are sparse and primarily focus on regulating how animals are handled. This includes specifying when electric prods are to be used, how sick animals will be treated, and how to slaughter animals for consumption safely.

Sustainable Aquaculture Program.**Table 19**

Total Number of References to Agroecological Principles of Sustainability within Sustainable Aquaculture Program Documents

Agroecological Principle	Total Number of References
Animal Health	1
Biodiversity	
Co-Creation of Knowledge	
Connectivity	
Economic Diversification	
Fairness	
Input Reduction	1
Land and Natural Resource Governance	
Participation	
Recycling	
Social Values and Diets	
Soil Health	
Synergy	3

Note: A color scale from dark green to white indicates the number of references to one principle relative to the others. Dark green indicates the program with the greatest number of references, while white indicates the fewest. The full table can be found in the Appendix.

The Sustainable Aquaculture Program was an initiative by Fisheries and Oceans Canada to improve legislation, research, reporting, and certifications within the Canadian aquaculture industry (Fisheries and Oceans Canada Communication Branch, 2019).

This program and the Artic Policy Framework contained the most references to the principle of synergy, but one of the lowest numbers of total references. References to synergy include conducting research designed to explore, support, and mitigate damages to the ecological interactions within ecosystems in the aquaculture industry. Furthermore, there are references to monitoring and minimizing pesticides, drugs, and chemicals used by the aquaculture industry and supporting aquatic animal health.

Tackling Food Fraud.**Table 20**

Total Number of References to Agroecological Principles of Sustainability within Tackling Food Fraud Documents

Agroecological Principle	Total Number of References
Animal Health	
Biodiversity	
Co-Creation of Knowledge	
Connectivity	
Economic Diversification	
Fairness	
Input Reduction	
Land and Natural Resource Governance	
Participation	2
Recycling	
Social Values and Diets	
Soil Health	
Synergy	

Note: A color scale from dark green to white indicates the number of references to one principle relative to the others. Dark green indicates the program with the greatest number of references, while white indicates the fewest. The full table can be found in the Appendix.

The Canadian Food Inspection Agency (CFIA) implements this program to address misrepresented food products (CFIA, 2020).

Tackling Food Fraud contained the fewest agroecological sustainability principles of all *Food Policy for Canada* initiatives. Agroecological principles included participation as the analysed sources called for broader public participation in implementing this program.

Chapter 5: Discussion and Conclusion

Analysis of Results

Agroecological Principle Alignment

The number and variety of references suggest that the *Food Policy for Canada* (the *Policy*) was constructed with awareness and support for agroecological sustainability principles. All thirteen principles were referenced throughout the literature. However, some principles like synergy, recycling, economic diversification, and input reduction were less prevalent; overall, there was an average of 4.1 references per document analyzed. The Canadian Food Policy Advisory Council, Federal Leadership in Food Waste Reduction, National School Food Program, and Local Food Infrastructure Program contained the most substantial quantity of references to agroecological sustainability principles; however, this is partly due to these initiatives' documents, including references to other *Policy* programs. As this project is interested in analyzing the *Policy*'s initiatives in the aggregate, this issue has minimal impact on result analysis.

The Food and Agriculture Organization of the United Nations discusses transformative versus incremental food system transitional actions and their relation to agroecological sustainability principles (HLPE, 2019). Interestingly, the literature contained significant references to transformative transitional activities, including connectivity, land and natural resource governance, social values and diets, and the co-creation of knowledge. The programs consistently discussed the importance of self-determination, inclusion, and support of local communities and their local food systems.

Moreover, with programs like the Local Infrastructure Initiative Program, there were deliberate and tangible actions to support local, community-led food systems financially and logistically. Additionally, the *Policy* explicitly and frequently discussed the importance of supporting regionally relevant diets and even included actions and proposals to support food sovereignty in particular regions.

Impediments to Food System Sustainability

While the *Policy* appears to contribute to food system sustainability, further analysis of these findings provides evidence of structural design issues and underdeveloped sustainability concepts; if left unaddressed, these issues may impede this framework from the reform needed to achieve a sustainable food system in Canada. These issues include focusing on appearance rather than actual change, underfunding and underutilizing programs with counter-hegemonic ideas, and excluding some key sustainable actions.

Appearing Sustainable and Actual Sustainability. The *Policy* repeatedly focused on the food system optics and adhering to market principles rather than meaningful transformation. One example is the core motivation for the Agri Communication program; this program is explicitly designed to improve Canadian public perceptions of agriculture and awareness of "sustainable" farming practices with a notable vagueness regarding what constitutes sustainable farming. While the program also included good faith attempts to increase public participation in local food systems, it was undercut by the initiative's frequent requirement for participants to facilitate positive recognition and appreciation for the current agricultural sector. This sentiment is unsustainable when judged against the pillars of agroecology.

Another example was the smaller-scale marketing campaign, 'Buy Canadian', which aimed to increase "pride and consumer confidence" in supporting local food, but did not include measures to improve accessibility or systemic barriers to local food production or consumption. This aligns with the findings by Braun et al. (2020), who identify a general sense of distrust towards the food system by the Canadian public.

There were also concerns of "greenwashing" raised in the *Arctic Policy Framework* round table sessions. Greenwashing is a term used to describe "the act or practice of making a product, policy, activity, etc. appear to be more environmentally friendly or less environmentally damaging than it really is" (Merriam-Webster, n.d.). Participants of the Yellowknife roundtable expressed concerns over framing non-renewable resource development as sustainable and urged the government to partner with Indigenous rights-holders. While the criticism highlights an incongruency with agroecological principles, the facilitation and inclusion of criticism should be applauded; hopefully, these concerns will be accompanied by appropriate legislative actions.

Resource Allocation. Additionally, while some programs were designed with agroecological sustainability principles, they receive less financial support than those supporting the current hegemonic food system. One notable example is the co-creation of knowledge references. The Agri Communication Program, *Arctic Policy Framework*, and Local Food Infrastructure Program included farmer-led groups that facilitate horizontal knowledge transfer, funding for higher education opportunities for Indigenous research, and recognition of "Two-eyed seeing," which is defined by the *Policy* as "[ensuring] Indigenous knowledge and practices are considered alongside other forms of knowledge and evidence" (AAFC, 2017). This can be contrasted with the Canadian Agricultural Partnership, where much of this initiative includes programs reinforcing the hegemonic food system; the Partnership was driven explicitly by the goals of expanding economic growth via international food export and trade and included fewer counter-hegemonic actions. The Agri Communication Program and Local Food Infrastructure Fund have been allocated \$8 million and \$60 million over 3 years. The *Arctic Policy Framework* has received \$700 million at the time of this report. In comparison, the Canadian Agricultural Partnership received \$3.5 billion over the same period; the three programs that apply sustainability principles combined receive less than a quarter of the Partnership's allocated funding.

The underdevelopment and underfunding of transformative food system actions echo themes found throughout the academic literature review, particularly by Isaac et al. (2018) and Desmarais and Wittman (2014) studies. While the latter study explores food sovereignty, Isaac et al. (2018) focus on agroecology implementation in Canada and found that agroecological principles were consistently underdeveloped in the Canadian food system design.

Underutilization of Sustainable Resources. An additional concern with the *Policy* was the underutilization of agroecologically-informed actions. This is particularly evident with the Canadian Food Policy Advisory Council. The Council was designed to advise and report to the Minister of AAFC to improve key challenges and includes a variety of food system actors that wish to contribute to establishing a sustainable food system. However, in a record of proceedings from November 21st and 22nd, 2022, members report wanting to contribute more, finding that one in-person was insufficient for their goals, and desiring to see clear results from the Council's input. Moreover, the Council repeatedly raised concerns regarding the absence of food insecurity, particularly Indigenous food insecurity, within the forward work plan. These issues echo the sentiment of Wilkes and Perttula (2022), who identify a disconnect between narratives within AAFC mandates and actions toward reconciliation and realizing Indigenous food sovereignty.

Absence of Particular Sustainable Practices. As previously highlighted, there were remarkably few references to synergy throughout the literature. The program with the most substantial number of references, the Sustainable Aquaculture Program, primarily detailed the importance of ecology in managing

aquaculture ecosystems. The academic literature offers potential opportunities to incorporate this principle. This includes work by Harder et al. (2021) that presents the feasibility of applying a circular bioeconomy model to minimize nutrient transfer inefficiencies. Additionally, Rotz et al. (2019) discuss how the increased corporatization of the agricultural industry can limit farmers from engaging in ecologically sustainable stewardship. This report suggests creating a policy that disincentivizes on-farm capitalization and corporatization, supporting small farm owners, and breaking up land ownership monopolies (Rotz et al., 2019).

Limitations and Future Research

There are several limitations associated with this research project. By design, the number of references found using NVivo 12 will be equal or undercounted compared to the actual number of agroecological principle references. However, this limitation was reduced by conducting an additional separate search of key terms. Moreover, the analysis is more interested in the quality and content of the references to sustainability principles rather than the absolute number of references.

As the *Food Policy for Canada* is still in its infancy, further research must be conducted on the outcomes and design of initiatives associated with this framework. While an in-depth agroecological approach to individual initiatives' design and outcomes would be an important and exciting area for further study, other sustainability frameworks must inform future critical analysis of this policy. Additionally, further critical food systems research could analyze how the policy uniquely impacts vulnerable groups, such as Indigenous, low-income, immigrant, and racialized communities, and identify challenges and concerns these groups may have with the policy.

Conclusion

While the design of the *Food Policy for Canada* creates opportunities for food system transformation towards agroecological sustainability, there are still fundamental issues that are highlighted by my analysis. This includes issues with initiatives appearing preoccupied with appearing sustainable rather than creating sustainability, greater funding allocated to initiatives that support hegemonic food system perpetuation, an underutilization of food system actors, and the lack of references to some agroecological principles.

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Appendix

Research-Related Tables

Table 21

Additional Search Terms Used to Identify References to Sustainability Principles

Term
Agroecology
Chemical
Criticism
Democratic
Diversity
Ecology
Economic diversification
Environmental damage
Erosion
Farm input
Farmer
Fertilizer
Food justice
Food sovereignty
Fungicide
Livestock
Mitigation
Organic
Pesticide
Precision agriculture
Resilience
Self determination
Soil
Synergy

Table 22*Agroecological Principle and Classification*

Category/Objective	Agroecological Principles	Scale	Definition
Improve resource efficiency	Input reduction	Farm, food system	Reduce or eliminate dependency on purchased inputs and increase self-sufficiency
Improve resource efficiency	Recycling	Field, farm	Preferentially use local renewable resources and close as far as possible resource cycles of nutrients and biomass.
Secure social equity/responsibility	Co-creation of knowledge	Farm, food system	Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation, especially through farmer-to-farmer exchange.
Secure social equity/responsibility	Social values and diets	Farm, food system	Build food systems based on the culture, identity, tradition, social and gender equity of local communities that provide healthy, diversified, seasonally and culturally appropriate diets.
Secure social equity/responsibility	Connectivity	Farm	Ensure proximity and confidence between producers and consumers through promotion of fair and short distribution networks and by re-embedding food systems into local economies.

Secure social equity/responsibility	Fairness	Farm, food system	Support dignified and robust livelihoods for all actors engaged in food systems, especially small-scale food producers, based on fair trade, fair employment and fair treatment of intellectual property rights.
Secure social equity/responsibility	Land and natural resource governance	Farm, food system	Strengthen institutional arrangements to improve, including the recognition and support of family farmers, smallholders, and peasant food producers as sustainable managers of natural and genetic resources.
Secure social equity/responsibility	Participation	Food system	Encourage social organization and greater participation in decision-making by food producers and consumers to support decentralized governance and local adaptive management of agricultural and food systems.
Strengthen resilience	Biodiversity	Field, farm	Maintain and enhance diversity of species, functional diversity and genetic resources and thereby maintain overall agroecosystem biodiversity in time and space at field, farm, and landscape scales.

Strengthen resilience	Economic diversification	Farm, food system	Diversify on-farm incomes by ensuring that small-scale farmers have greater financial independence and value addition opportunities while enabling them to respond to demand from consumers.
Strengthen resilience	Soil health	Field	Secure and enhance soil health and functioning for improved plant growth, particularly by managing organic matter and enhancing soil biological activity.
Strengthen resilience	Synergy	Field, farm	Enhance positive ecological interaction, synergy, integration, and complementarity among the elements of agroecosystems (animals, crops, trees, soil and water).
Strengthen resilience	Animal health	Field, farm	Ensure animal health and welfare.

Note. All information in the table is quoted directly from (HLPE. 2019. Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition. A report by the High-Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome.)

Table 23*Agroecological Principles and Associated Actions to Achieving Food System Sustainability*

Principle	Rights-based	Sustainable intensification + Climate-smart agriculture	Organic agriculture	Agroforestry	Permaculture
Input reduction		Increase resource use efficiency and optimizing application of external inputs. Close yield gaps on underperforming existing agricultural lands. Improve the utilization of crop varieties and livestock breeds	Restriction of the use of chemical inputs. Strict limitation on the use of chemically synthesized inputs to exceptional cases.		
Recycling		Minimize direct negative environmental impacts of food production. Increase production with little additional land conversion as possible and increased use of renewable resources such as labour, light and knowledge.	Appropriate design and management of biological processes based on ecological systems using natural resources that are internal to the system.	Trees in agricultural systems often fix nitrogen and tighten nutrient and water cycles.	Prioritizes recycling of nutrients, water, and energy within systems.
Co-creation of Knowledge				Local agroecological knowledge is generally detailed, explanatory and largely complementary to scientific knowledge so that combined knowledge is richer than either alone.	

Principle	Rights-based	Sustainable intensification + Climate-smart agriculture	Organic agriculture	Agroforestry	Permaculture
Social Values and Diets	Food justice. Focus on the proliferation of ultra processed foods.	Change diets to be more sustainable.		Use and control of tree resources are often gender specific and gender inequality can be a major constraint to agroforestry development. Tree fruits can increase dietary diversity.	
Connectivity	Food sovereignty. Reorganization of food trade to support local food production. Food justice. Recognize the importance of local food production.	Supporting alternative production and consumption models.			
Fairness			Fairness (with regard to the common environment and life opportunities.)		Care for the people.
Land and Natural Resource Governance	Food sovereignty. Food as a basic human right. Reduction of multinational concentration of power. Increase democratic control of the food system. The need for agrarian reform. Food justice. Criticizing the hegemonic model of food.			Agroforestry policies that join up policy formulation and implementation across sectors and scales result in more rational and integrated land-use decision-making.	
Participation	Food justice. Value marginalized groups' practices and knowledge.				

Principle	Rights-based	Sustainable intensification + Climate-smart agriculture	Organic agriculture	Agroforestry	Permaculture
Biodiversity	Food sovereignty. Protection of natural resources	Release land for wildlife conservation through producing more on agricultural land		Trees in agricultural systems increase both functional agrobiodiversity and niches for wildlife conservation.	Care for the Earth.
Economic Diversification				Products from trees on agricultural land can diversify farm income.	
Soil Health			Enhance soil health.	Trees in agricultural systems can increase the abundance and activity of beneficial soil organisms	Enhance soil health.
Synergy			Ecology (be based on living ecological systems and cycles, work with them, emulate them and help sustain them).	Niche differentiation between trees and crops provides huge scope to manage tree–crop combinations to exploit differences in resource capture in space and time.	Increase synergies between different parts of the system including plants, soil, water.
Animal Health			Guarantee animal health and welfare.	Tree shade can reduce heat stress in animals in hot conditions, reduce wind-chill in cold conditions and provide nutritious fodder at times when herbaceous plants cannot.	

Note. All information in the table is quoted directly from (HLPE. 2019. Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition. A report by the High-Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome.)

Results-Related Tables

Table 24

Total Number of References to Agroecological Sustainability Principles by Food Policy for Canada Initiatives

	Agri Communication	Arctic Policy Framework	Canadian Agricultural Partnership	Canadian Food Policy Advisory	Economic Table on Agri-Food	Federal Leadership in Food Waste Reduction	Health Eating Strategy	Local Food Infrastructure Program	National School Food Program	Northern Isolated Community Initiatives	Nutrition North	Pan-Canadian Framework on Clean Growth and Poverty Reduction Strategy	Safe Food for Canadians Regulations	Sustainable Aquaculture Program	Tackling Food Fraud	Total	
Animal Health	1	6	0	13	3	6	0	0	0	1	0	0	0	5	1	0	40
Biodiversity	0	36	0	7	2	10	0	0	1	1	0	0	0	0	0	0	57
Co-Creation of Knowledge	6	31	23	8	2	11	0	1	2	2	0	18	0	0	0	0	104
Connectivity	8	10	0	78	5	16	3	105	64	38	29	1	0	0	0	0	357
Economic Diversification	1	16	2	3	4	6	0	0	0	4	0	3	0	0	0	0	37
Fairness	0	1	10	4	6	14	0	0	1	1	0	0	0	0	0	0	44
Input Reduction	7	2	2	9	7	12	0	0	1	2	0	8	0	0	1	0	39
Land and Natural Resource Governance	0	14	0	73	0	9	1	25	38	35	8	2	3	0	0	2	215
Participation	11	35	5	21	23	2	0	3	6	3	22	16	4	0	0	0	153
Recycling	0	8	0	5	8	3	0	0	0	2	0	14	0	0	0	0	36
Social Values and Diets	10	22	0	59	0	4	2	14	25	14	9	4	2	0	0	0	165
Soil Health	0	2	3	15	0	8	0	2	0	0	0	30	0	0	0	0	60
Synergy	1	1	0	1	3	6	0	0	0	2	0	1	0	0	3	0	8
Total	44	184	45	296	60	101	6	150	138	105	68	97	9	5	5	2	

Table 25*Number of Agroecological Principle References within Agri Communication Program Documents*

Agroecological Principle	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	Total
Animal Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Biodiversity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-Creation of Knowledge	0	2	1	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	6
Connectivity	0	1	0	0	0	0	0	0	0	0	0	1	2	0	2	0	1	0	0	0	7
Economic Diversification	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Fairness	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Input Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Land and Natural Resource Governance	0	0	0	0	0	0	0	0	0	0	0	1	2	0	1	0	1	0	0	0	5
Participation	0	1	0	4	0	0	0	0	0	1	1	0	0	0	0	0	1	1	1	1	11
Recycling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Values and Diets	0	0	0	0	0	0	0	0	0	0	0	1	3	0	1	0	1	0	0	0	6
Soil Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Synergy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

- A- AgPal Program and Service Finder
 B- AgriCommunication Initiative connects farmers and Canadians - Canada.ca
 C- AgriCommunication Program_ Annex A_ How to complete the application form - agriculture.canada.ca
 D- AgriCommunication Program_ Applicant guide - agriculture.canada.ca
 E- AgriCommunication Program_ Contact information - agriculture.canada.ca
 F- AgriCommunication Program_ Step 1. What this program offers - agriculture.canada.ca
 G- AgriCommunication Program_ Step 2. Who is eligible - agriculture.canada.ca
 H- AgriCommunication Program_ Step 3. How to apply - agriculture.canada.ca
 I- AgriCommunication Program_ Step 4. After you apply - agriculture.canada.ca
 J- Canadian Agricultural Youth Council - agriculture.canada.ca
 K- Canadian Agricultural Youth Council drives action on food security, sustainability and labour challenges - Canada.ca
 L- Connecting Canadians with Canada's farmers - agriculture.canada.ca
 M- Everyone at the table! Investing in The Food Policy for Canada - agriculture.canada.ca
 N- Find the right support - agriculture.canada.ca
 O- Government of Canada announces investment to strengthen public trust with Farm & Food Care Ontario - Canada.ca
 P- Learn more about food policy in Canada - agriculture.canada.ca
 Q- Minister Bibeau announces AgriCommunication Initiative to connect farmers and Canadians - Canada.ca
 R- Minister Bibeau Announces the Composition of the 2nd Cohort of the Canadian Agricultural Youth Council - Canada.ca
 S- Minister Bibeau marks Canadian Agriculture Literacy Month with support for Canada's next generation of farmers - Canada.ca
 T- Minister launches second intake of members for Canadian Agricultural Youth Council - Canada.ca

Table 26*Number of Agroecological Principle References within Arctic and Northern Policy Framework Documents*

Agroecological Principle	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Total
Animal Health	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4
Biodiversity	1	6	3	0	1	1	2	1	0	6	0	0	0	0	0	0	1	0	0	0	0	5	1	0	0	28
Co-Creation of Knowledge	0	2	3	0	1	0	1	1	0	8	0	1	1	1	0	0	0	0	0	0	0	5	0	0	0	24
Connectivity	0	3	0	0	0	0	2	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	9
Economic Diversification	2	6	1	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	16
Fairness	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Input Reduction	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
Land and Natural Resource Governance	1	7	1	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1	0	1	0	1	0	0	0	15
Participation	0	1 1	3	0	0	0	0	0	0	4	1	1	0	1	1	1	0	0	1	2	1	3	0	3	0	33
Recycling	0	1	3	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	8
Social Values and Diets	0	8	3	0	0	0	0	0	0	2	1	0	0	0	1	1	0	0	1	2	1	0	0	2	0	22
Soil Health	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
Synergy	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

- A- Investments supporting the Arctic and Northern Policy Framework
 B- Toward a new Arctic Policy Framework
 C- The Government of Canada Launches Co-Developed Arctic and Northern Policy Framework - Canada.ca
 D- Strategic Environmental Assessment_ International Dimension of the Arctic and Northern Policy Framework
 E- R74-37-2017-eng
 F- R5-746-2019-eng
 G- Northern and Indigenous partners gather for the 3rd annual Arctic and Northern Policy Framework Leadership Committee meeting - Canada.ca
 H- Minister Vandal, partners to the Arctic and Northern Policy Framework meet to discuss priorities for the North and Arctic - Canada.ca
 I- Minister Vandal hosts meeting of the Arctic and Northern Policy Framework Leadership Committee - Canada.ca
 J- Joint Ministerial Statement_ Toward a New Arctic Policy Framework - Canada.ca
 K- Indigenous and Northern Affairs Canada - Canada.ca
 L- Horizontal initiative_ Arctic and Northern Policy Framework
 M- Horizontal Initiative – Arctic and Northern Policy Framework
 N- Horizontal initiative - Arctic and Northern Policy Framework
 O- Highlights of Canada's Arctic and Northern Policy Framework
 P- Canada's Arctic Policy Framework_ Discussion guide
 Q- Canada's Arctic and Northern Policy Framework
 R- Arctic Policy Framework Regional Roundtable Session_ Yellowknife, January 17, 2018
 S- Arctic Policy Framework regional roundtable session_ Nain, October 11, 2017
 T- Arctic Policy Framework regional roundtable session_ Iqaluit, November 2, 2017
 U- Arctic Policy Framework regional roundtable session_ Inuvik, November 9, 2017
 V- Arctic Policy Framework investment roundtable session_ Toronto
 W- Arctic and Northern Policy Framework_ Safety, security, and defence chapter
 X- Arctic and Northern Policy Framework International chapter
 Y- Arctic and Northern Policy Framework

Table 27*Number of Agroecological Principle References within Canadian Agricultural Partnership Documents*

Agroecological Principle	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	Total	
Animal Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Biodiversity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-Creation of Knowledge	0	5	0	0	1	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	18
Connectivity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Economic Diversification	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Fairness	0	1	1	1	1	1	1	0	0	0	0	1	0	0	0	2	1	0	0	0	0	0	0	0	10
Input Reduction	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2
Land and Natural Resource Governance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Participation	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Recycling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Values and Diets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Soil Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3
Synergy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

A- A120-15-2018-eng
 B- A115-17-2018-eng
 C- A115-18-2018-eng
 D- A115-20-2018-eng
 E- A115-21-2018-eng
 F- A115-22-2018-eng
 G- A118-25-2019-eng
 H- A118-27-2019-eng
 I- A118-59-2-2019-eng
 J- A120-15-2020-eng
 K- A120-16-2018-eng
 L- A120-16-2019-eng
 M- A120-16-2020-eng
 N- A120-17-2018-eng
 O- A22-600-2017-eng
 P- A22-601-2017-eng
 Q- A22-604-2018-eng
 R- A22-608-2018
 S- A22-610-2018-1-eng
 T- A22-610-2018-2-eng
 U- A22-610-2018-3-eng
 V- A22-616-2018-eng
 W- A72-148-2018-eng

Table 28*Number of Agroecological Principle References within Canadian Food Policy Advisory Council Documents*

Agroecological Principle	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Total
Animal Health	1	0	0	0	0	1	2	2	2	2	1	0	0	0	0	0	1	0	1	0	0	0	0	0	13
Biodiversity	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0	1	0	0	0	0	0	6
Co-Creation of Knowledge	0	0	1	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	8
Connectivity	2	4	5	5	0	1	1	0	1	1	2	4	2	4	0	2	9	0	3	11	5	7	3	3	77
Economic Diversification	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3
Fairness	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	4
Input Reduction	0	2	1	0	0	0	1	1	1	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	9
Land and Natural Resource Governance	1	6	8	4	1	0	0	0	0	0	3	3	2	4	0	2	13	0	3	6	4	4	4	4	74
Participation	0	3	3	0	0	1	0	0	0	0	0	0	0	0	0	0	4	0	3	0	0	0	0	0	15
Recycling	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	4
Social Values and Diets	0	8	11	4	0	0	0	0	0	0	0	2	1	1	0	1	14	0	2	1	3	1	2	2	55
Soil Health	0	0	0	0	0	0	3	3	3	3	0	0	0	0	0	0	1	0	1	0	0	0	0	0	14
Synergy	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

- A- 2019-2020 Departmental Results Report - agriculture.canada.ca
 B- _Everyone at the Table!_ Minister Bibeau highlights actions on food fraud through the Food Policy for Canada - Canada.ca
 C- “Everyone at the Table!” Government of Canada announces the first-ever Food Policy for Canada - Canada.ca II
 D- “Everyone at the Table!” Minister Bibeau highlights actions for Northern food security through the Food Policy for Canada - Canada.ca
 E- “Everyone at the Table!” Minister Bibeau highlights actions on food waste through the Food Policy for Canada - Canada.ca
 F- “Everyone at the Table!” Minister Bibeau highlights investments to improve access to local food as part of the Food Policy for Canada - Canada.ca
 G- Agriculture and Agri-Food Canada - Canada.ca
 H- Canada’s National Pathways document – consultation draft - agriculture.canada.ca
 I- Everyone at the Table_ Canadian Food Policy Advisory Council convenes first meeting - agriculture.canada.ca
 J- Food Policy - agriculture.canada.ca
 K- Food Policy for Canada
 L- Food Policy for Canada - Canada.ca
 M- Food Policy for Canada_ Everyone at the Table - Canada.ca
 N- Minister’s briefing book, March 11, 2021 - agriculture.canada.ca
 O- Minister’s briefing book, April 28, 2020 - agriculture.canada.ca
 P- Minister’s briefing book_ April 29, 2020 - agriculture.canada.ca
 Q- Minister’s briefing book_ May 6, 2020 - agriculture.canada.ca
 R- Minister’s briefing book_ May 7, 2020 - agriculture.canada.ca
 S- Minister’s briefing notes_ Compensation, December 10, 2020 - agriculture.canada.ca
 T- Minister’s briefing notes_ Main Estimates, November 26, 2020 - agriculture.canada.ca
 U- Record of proceedings_ Nutrition Science Advisory Committee, February 26, 2021 - Canada.ca
 V- Sustainable Development Goal 2_ Zero hunger - Canada.ca
 W- The Food Policy - Canada.ca
 X- The Food Policy for Canada - agriculture.canada.ca

Table 29*Number of Agroecological Principle References within Economic Strategy Table on Agri-Food Documents*

Agroecological Principle	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Total
Animal Health	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3
Biodiversity	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Co-Creation of Knowledge	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Connectivity	1	0	0	0	1	0	0	0	0	0	0	0	0	1	2	5
Economic Diversification	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	4
Fairness	0	0	0	0	0	0	0	1	0	1	0	1	0	0	3	6
Input Reduction	0	0	0	1	0	0	0	0	0	0	0	0	2	2	2	7
Land and Natural Resource Governance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Participation	0	0	0	2	0	0	0	0	0	0	0	4	2	2	2	12
Recycling	0	1	0	0	0	0	0	0	0	0	0	0	2	4	1	8
Social Values and Diets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Soil Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Synergy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

- A- Learn more about food policy in Canada - agriculture.canada.ca
- B- 2.6 – Top People to Meet
- C- 2018-2019 Departmental Results Report - Up-front multi-year funding - agriculture.canada.ca
- D- Agri-food and aquaculture_ Targeted regulatory review - Regulatory roadmap - Canadian Food Inspection Agency
- E- Engagement with Food Industry Stakeholders on Revisions to _Product of Canada_ and _Made in Canada_ Labelling - What We Heard Report - agriculture.canada.ca
- F- FedDev Ontario supports food processor in Mississauga - Canada.ca
- G- FedDev Ontario supports new network to help agri-food businesses scale up - Canada.ca
- H- FedDev Ontario Supports Scale Up of Cambridge Agri-Food Manufacturer - Canada.ca
- I- Financial issues – Main Estimates 2020–21
- J- Growing Canada’s agriculture and agri-food sector - agriculture.canada.ca
- K- Learn more - A Food Policy for Canada - Canada.ca
- L- Minister Bibeau announces launch of consultation on the Canada Grain Act review - Canada.ca
- M- Prairie Prosperity_ A Vision for the Management of Water Resources across Saskatchewan and the Prairies
- N- Prairie Prosperity_ A Vision for the Management of Water Resources across Saskatchewan and the Prairies - Canada.ca
- O- Report of Canada’s Economic Strategy Tables_ Agri-food

Table 30

Number of Agroecological Principle References within Federal Leadership in Food Waste Reduction Documents

Agroecological Principle	A	B	C	D	E	Total
Animal Health	3	2	0	0	1	6
Biodiversity	2	2	0	0	3	7
Co-Creation of Knowledge	0	3	0	0	6	9
Connectivity	5	4	0	0	5	14
Economic Diversification	0	6	0	0	0	6
Fairness	9	2	0	0	3	14
Input Reduction	6	1	0	0	5	12
Land and Natural Resource Governance	1	3	0	0	4	8
Participation	1	1	0	0	0	2
Recycling	1	0	0	1	1	3
Social Values and Diets	2	1	0	0	1	4
Soil Health	1	2	0	0	4	7
Synergy	0	0	0	0	0	0

A- 2020-2023 Departmental Sustainable Development Strategy - agriculture.canada.ca

B- 2020-21 Departmental Plan - agriculture.canada.ca

C- Frequently Asked Questions _ Impact Canada

D- Frequently Asked Questions _ Impact Canada II

E- Ministerial transition book_ key files - agriculture.canada.ca

Table 31*Number of Agroecological Principle References within Healthy Eating Strategy Documents*

Agroecological Principle	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Total	
Animal Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Biodiversity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-Creation of Knowledge	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Connectivity	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	3
Economic Diversification	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fairness	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Input Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Land and Natural Resource Governance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	
Participation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Recycling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Values and Diets	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
Soil Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Synergy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

- A- Food labelling changes - Canada.ca
 B- Call for Information on Sodium Reduction Initiatives in the Canadian Foodservices Sector - Canada.ca
 C- Consultation on front-of-package nutrition labelling - Canada.ca
 D- Consultation Summary – Food and Nutrition Stakeholder Engagement Session November 2017 - Canada.ca
 E- COVID-19 Food labelling support measures - Canada.ca
 F- Food and nutrition - Canada.ca
 G- Government Launches Food Consultations to Help Canadians Make Healthy Choices - Canada.ca
 H- Government of Canada finalizes changes to the Nutrition Facts table and list of ingredients on packaged foods - Canada.ca
 I- Government of Canada takes next step to make healthy eating easier for kids - Canada.ca
 J- H14-320-2019-1-eng
 K- H14-320-2019-eng
 L- H164-196-2016-eng
 M- Health Canada - Working for Canadians - Canada.ca
 N- Health Canada's healthy eating strategy - Canada.ca
 O- Healthy Eating Strategy - Backgrounder - Canada.ca
 P- Healthy Eating Strategy - Challenges of Healthy Eating - Canada.ca
 Q- Information and privacy notice for healthy eating strategy initiatives - Canada.ca
 R- Meetings and correspondence on healthy eating - Canada.ca
 S- Minister Petitpas Taylor to mark the one-year anniversary of the Healthy Eating Strategy
 T- Publications – Food and nutrition - Canada.ca
 U- Regulatory Initiative_ Amendments to the Food and Drug Regulations Restricting the Marketing of Unhealthy Foods to Children - Forward Regulatory Plan 2017-2019 - Canada.ca
 V- Restricting unhealthy food and beverage marketing to children - Canada.ca
 W- Speaking Notes for The Honourable Ginette Petitpas Taylor, Minister of Health — The Easier Choice_ Canada's Healthy Eating Strategy - Canada.ca
 X- The Honourable Ginette Petitpas Taylor will make an announcement about significant steps
 Y- Transparency of stakeholder communications for healthy eating initiatives - Canada.ca

Table 32*Number of Agroecological Principle References within Local Food Infrastructure Fund Documents*

Agroecological Principle	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Total	
Animal Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Biodiversity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-Creation of Knowledge	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Connectivity	6	3	3	5	5	0	0	0	4	0	0	13	7	7	4	5	2	6	8	4	1	3	5	3	10		104
Economic Diversification	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fairness	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Input Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Land and Natural Resource Governance	2	1	1	3	0	0	0	0	0	0	1	2	1	1	1	1	4	0	1	1	0	0	1	0	3		24
Participation	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
Recycling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Values and Diets	2	0	0	0	0	0	0	0	0	0	1	6	0	1	0	0	1	0	1	0	0	0	0	0	1	1	14
Soil Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Synergy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

- A- Maison Francine Leroux receives federal boost to make food more accessible in
 B- Seven organizations receive federal support to improve food security in Eastern Ontario - Canada.ca
 C- Minister Bibeau re-opens the Local Food Infrastructure Fund with over double
 D- Minister Bibeau announces over \$2.5 million to help improve food security in Montreal
 E- Minister Bibeau and MP Lauzon announce support to improve food security in
 F- Local Food Infrastructure Fund_ Step 4. After you apply - agriculture.canada.ca
 G- Local Food Infrastructure Fund_ Step 3. How to apply - agriculture.canada.ca
 H- Local Food Infrastructure Fund_ Step 2. Who is eligible - agriculture.canada.ca
 I- Local Food Infrastructure Fund_ Step 1. What this program offers - agriculture.canada.ca
 J- Local Food Infrastructure Fund_ Contact information - agriculture.canada.ca
 K- Local Food Infrastructure Fund_ Applicant guide annexes - agriculture.canada.ca
 L- Local Food Infrastructure Fund_ Applicant guide - agriculture.canada.ca
 M- Local Food Infrastructure Fund projects in the Montreal area - Canada.ca
 N- Local Food Infrastructure Fund Consultations What we heard report
 O- Local Food Infrastructure Fund Consultations - What we heard report
 P- Hope Blooms Receives Federal Funding to Make Local Food More Accessible in Halifax
 Q- Government of Canada strengthens food security in Indigenous, remote and
 R- Government of Canada launches second call for proposals under the Local Food
 S- Government of Canada launches new phase of Local Food Infrastructure Fund - Canada.ca
 T- Government of Canada invests in food security for communities in British Columbia - Canada.ca
 U- Database_ List of Local Food Infrastructure Fund projects (third intake) - Canada.ca
 V- Database_ List of Local Food Infrastructure Fund projects (fourth intake) - Canada.ca
 W- A118-58-2019-eng
 X- A118-54-2019-eng
 Y- "Everyone at the Table!" Minister Bibeau highlights investments to improve access

Table 33*Number of Agroecological Principle References within National School Food Program Documents*

Agroecological Principle	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	Total
Animal Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Biodiversity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Co-Creation of Knowledge	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	2
Connectivity	7	3	9	4	6	4	11	0	3	1	0	2	3	1	2	1	3	0	0	0	60
Economic Diversification	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fairness	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Input Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Land and Natural Resource Governance	4	1	1	4	4	4	3	1	2	2	0	2	3	0	1	0	5	0	0	0	37
Participation	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	5
Recycling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Values and Diets	1	1	2	2	1	3	1	0	2	1	0	1	2	0	1	0	6	0	0	0	24
Soil Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Synergy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

- A- Food Policy for Canada - Canada.ca
 B- Everyone at the Table! Minister Bibeau highlights actions on food fraud through the Food Policy for Canada - Canada.ca
 C- Everyone at the Table! MP Julie Dabrusin highlights actions for a better food system with the Food Policy for Canada - Canada.ca
 D- “Everyone at the Table!” Government of Canada announces the first-ever Food Policy for Canada - Canada.ca
 E- “Everyone at the Table!” Minister Bibeau highlights actions for Northern food security through the Food Policy for Canada - Canada.ca
 F- “Everyone at the Table!” Minister Bibeau highlights actions on food waste through the Food Policy for Canada - Canada.ca
 G- “Everyone at the Table!” Minister Bibeau highlights investments to improve access to local food as part of the Food Policy for Canada - Canada.ca
 H- Canadian Agricultural Youth Council - agriculture.canada.ca
 I- Everyone at the Table_ Canadian Food Policy Advisory Council convenes first meeting - agriculture.canada.ca
 J- Everyone at the table_ Launch of the Food Policy for Canada - agriculture.canada.ca
 K- Federal, provincial and territorial ministers work together to improve outcomes for Canadians - Canada.ca
 L- Food Policy for Canada Backgrounder- Canada.ca
 M- Food Policy for Canada_ Everyone at the Table - Canada.ca
 N- Government of Canada launches consultations on a pan-Canadian school food policy - Canada.ca
 O- Government of Canada opens consultations with Canadians on a national school food policy - Canada.ca
 P- Government of Canada supports improving healthy living behaviours for priority populations in Saskatchewan and Alberta - Canada.ca
 Q- The Food Policy - Canada.ca
 R- XB421-446-1
 S- XB431-201-1
 T- XB441-212-1

Table 34

Number of Agroecological Principle References within Northern Isolated Community Initiatives Fund Documents

Agroecological Principle	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Total	
Animal Health	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Biodiversity	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Co-Creation of Knowledge	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
Connectivity	1	4	1	2	1	2	1	3	1	2	0	0	1	0	4	0	2	1	2	1	5	1	0	2	0	0	37
Economic Diversification	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	4
Fairness	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Input Reduction	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Land and Natural Resource Governance	1	4	1	1	1	1	2	3	1	2	0	0	1	0	2	0	3	1	1	1	4	4	0	1	0	0	35
Participation	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3
Recycling	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
Social Values and Diets	0	2	0	0	0	1	1	1	0	1	0	0	0	0	1	0	0	0	2	2	3	0	0	0	0	0	14
Soil Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Synergy	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2

- A- Details on Transfer Payment Programs
 B- “Everyone at the Table!” Minister Bibeau highlights actions for Northern
 C- 2020 to 2023 Short-form Departmental Sustainable Development Strategy
 D- 2022-2023 Departmental Plan
 E- Budget 2019 Invests in Canada's First University in the North - Canada.ca
 F- CanNor announces successful applicants for Phase 1 of the Northern
 G- CanNor is investing over \$383,000 to help revitalize the Mackenzie Delta
 H- Departmental Results Report 2021-22
 I- Details on Transfer Payment Programs II
 J- Food Policy for Canada Backgrounder- Canada.ca
 K- Gender-based analysis plus 2020-21
 L- Gender-based analysis plus 2021-22
 M- Government of Canada launches Northern Food Innovation Challenge
 N- Government of Canada makes key investment of more than \$550,000
 O- Minister Bibeau joins food security symposium to discuss A Food Policy
 P- Minister Bibeau to highlight actions for Northern food security through
 Q- Minister Vandal announces support for Indigenous-led efforts to improve
 R- Northern economic development - overview presentation
 S- Northern Food Businesses Stream
 T- Northern Food Innovation Challenge
 U- Northern Food Innovation Challenge projects announced - Canada.ca
 V- Northern Isolated Community Initiatives (NICI) Fund
 W- Northern Territorial Food Systems Stream
 X- Results at a Glance – Horizontal Evaluation of Nutrition North Canada
 Y- Sustainable development goals

Table 35*Number of Agroecological Principle References within Nutrition North Documents*

Agroecological Principle	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	Total
Animal Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Biodiversity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-Creation of Knowledge	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Connectivity	0	3	2	0	10	1	2	2	2	3	3	0	0	0	0	1	0	0	0	29
Economic Diversification	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fairness	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Input Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Land and Natural Resource Governance	0	1	13	0	4	0	0	0	0	0	2	0	2	0	0	0	1	0	0	23
Participation	0	1	0	0	5	0	0	0	0	0	0	1	0	0	0	0	0	0	0	7
Recycling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Values and Diets	0	0	0	0	2	0	0	0	1	0	3	1	0	0	1	0	0	0	0	8
Soil Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Synergy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

- A- Nutrition North Canada Engagement 2016
- B- An Introduction to Nutrition North Canada
- C- Audit of Nutrition North Canada
- D- Changes and updates to Nutrition North Canada - Canada.ca
- E- Horizontal Evaluation of Nutrition North Canada
- F- Horizontal initiative Nutrition North Canada General Information
- G- Horizontal initiative Nutrition North Canada On This Page
- H- Horizontal initiative Nutrition North Canada Performance Highlights
- I- Horizontal initiative Nutrition North Canada Planning Highlights
- J- Horizontal initiative Nutrition North Canada Table of Contents
- K- How Nutrition North Canada works
- L- Indigenous and Northern Affairs Canada - Canada.ca
- M- Nutrition North Canada - Canada.ca
- N- Nutrition North Canada General Information
- O- Nutrition North Canada Program Expansion
- P- Nutrition North Canada programs results
- Q- Nutrition North Canada Table of Contents
- R- Nutrition North Canada_ Subsidized Foods
- S- Video_ Nutrition North Canada's point-of-sale system

Table 36

Number of Agroecological Principle References within Pan-Canadian Framework on Clean Growth and Climate Change Documents

Agroecological Principle	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Total	
Animal Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Biodiversity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-Creation of Knowledge	4	0	2	1	2	3	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
Connectivity	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Economic Diversification	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Fairness	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Input Reduction	1	0	2	1	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Land and Natural Resource Governance	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Participation	1	0	0	0	3	1	4	4	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	15
Recycling	5	2	0	0	0	3	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Social Values and Diets	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Soil Health	3	3	5	0	1	4	1	5	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	23
Synergy	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

- A- Complete text pcfegcc second annual report - Canada.ca
 B- pcfegcc second annual report_ section 4 - Canada.ca
 C- En1-77-2019-eng
 D- pcfegcc second annual report_ section 9 - Canada.ca
 E- En1-77-2020-eng
 F- En1-77-2018-eng
 G- PCF-FirstSynthesis_ENG
 H- En1-77-2017-eng
 I- pcfegcc second annual report_ section 5 - Canada.ca
 J- Annex- progress report - Canada.ca
 K- pcfegcc second annual report_ section 1 - Canada.ca
 L- pcfegcc second annual report_ section 6 - Canada.ca
 M- pcfegcc second annual report_ section 7 - Canada.ca
 N- pcfegcc second annual report_ section 3 - Canada.ca
 O- pcfegcc_ strategic environmental assessment - Canada.ca
 P- pcfegcc_ First Year Progress Snapshot - Canada.ca
 Q- pcfegcc_ expert engagement, discussion paper - Canada.ca
 R- Prime Minister Trudeau presents the pcfegcc
 S- pcfegcc second annual report_ section 8 - Canada.ca
 T- Pan-Canadian Framework on Clean Growth and Climate Change - Canada.ca
 U- pcfegcc second annual report_ section 2 - Canada.ca
 V- Pan-Canadian Framework on Clean Growth and Climate Change
 W- pcfegcc first annual report_ introduction - Canada.ca
 X- pcfegcc second annual report - Canada.ca
 Y- Minister McKenna to make important announcement related to pcfegcc

Table 37*Number of Agroecological Principle References within Poverty Reduction Strategy Documents*

Agroecological Principle	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	Total
Animal Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Biodiversity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-Creation of Knowledge	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Connectivity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Economic Diversification	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fairness	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Input Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Land and Natural Resource Governance	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3
Participation	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	4
Recycling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Values and Diets	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
Soil Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Synergy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

- A- Canadians will have their say on the country's Poverty Reduction Strategy - Canada.ca
 B- 2050-Layout-EN
 C- Backgrounder_ Opportunity for All – Canada's First Poverty Reduction Strategy - Canada.ca
 D- Backgrounder_ Poverty Reduction Strategy Engagement Process - Canada.ca
 E- Canada's First Poverty Reduction Strategy_ visual representations - Canada.ca
 F- Canada's Poverty Reduction Strategy_ Growing the Middle Class - Canada.ca
 G- Canada's First Poverty Reduction Strategy - Canada.ca
 H- Canadian Poverty Reduction Strategy - Canada.ca
 I- Canadians will have their say on the country's Poverty Reduction Strategy News Release
 J- Government of Canada launches first Poverty Reduction Strategy - Canada.ca
 K- Infographic_ Poverty Reduction Strategy – Engaging with Canadians - Canada.ca
 L- Launch_ Poverty Reduction Strategy - Canada.ca
 M- Minister Duclos takes another step in developing the Canadian Poverty Reduction Strategy - Canada.ca
 N- Minister Duclos will announce the launch of initiatives to support the development of CPRS
 O- Minister Duclos will make an announcement in Quebec City on CPRS
 P- Towards a Poverty Reduction Strategy - Canada.ca
 Q- towards-poverty-reduction-EN

Table 38*Number of Agroecological Principle References within Safe Food for Canadians Regulations Documents*

Agroecological Principle	A
Animal Health	5
Biodiversity	0
Co-Creation of Knowledge	0
Connectivity	0
Economic Diversification	0
Fairness	0
Input Reduction	0
Land and Natural Resource Governance	0
Participation	0
Recycling	0
Social Values and Diets	0
Soil Health	0
Synergy	0

A- SOR-2018-108

Table 39*Number of Agroecological Principle References within Sustainable Aquaculture Program Documents*

Agroecological Principle	A	B	C	D	E	F	G	H	I	J	K	L	M	Total
Animal Health	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Biodiversity	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-Creation of Knowledge	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Connectivity	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Economic Diversification	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fairness	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Input Reduction	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Land and Natural Resource Governance	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Participation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Recycling	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Values and Diets	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Soil Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Synergy	0	0	0	1	0	0	0	0	0	1	1	0	0	3

- A- Certifying sustainability and tracing fish and seafood
 B- 2017-18 Departmental Results Report
 C- Aquaculture management decision-making
 D- Canada's Sustainable Aquaculture Program - Increasing our Scientific Knowledge - Canada.ca
 E- Canada's Sustainable Aquaculture Program A Renewed Investment
 F- Canada's Sustainable Aquaculture Program Regulatory Science
 G- Federal oversight of aquaculture activities
 H- Fisheries and Aquaculture Clean Technology Adoption Program – PIA
 I- Fs23-651-2018-eng
 J- Harper Government takes further steps to ensure a sustainable and prosperous aquaculture sector in Canada - Canada.ca
 K- Renewal of the Sustainable Aquaculture Program 2013-2018
 L- Seafood health and safety in Canada
 M- Sustainable Aquaculture Program, 2008-2013

Table 40*Number of Agroecological Principle References within Tackling Food Fraud Documents*

Agroecological Principle	A	B	C	D	E	F	G	H	I	J	K	Total
Animal Health	0	0	0	0	0	0	0	0	0	0	0	0
Biodiversity	0	0	0	0	0	0	0	0	0	0	0	0
Co-Creation of Knowledge	0	0	0	0	0	0	0	0	0	0	0	0
Connectivity	0	0	0	0	0	0	0	0	0	0	0	0
Economic Diversification	0	0	0	0	0	0	0	0	0	0	0	0
Fairness	0	0	0	0	0	0	0	0	0	0	0	0
Input Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Land and Natural Resource Governance	0	0	0	0	0	0	0	0	0	0	0	2
Participation	0	0	0	0	0	0	0	1	1	0	0	2
Recycling	0	0	0	0	0	0	0	0	0	0	0	0
Social Values and Diets	0	0	0	0	0	0	0	0	0	0	0	0
Soil Health	0	0	0	0	0	0	0	0	0	0	0	0
Synergy	0	0	0	0	0	0	0	0	0	0	0	0

- A- Food safety - Canadian Food Inspection Agency
 B- CFIA's role in combatting food fraud - Canadian Food Inspection Agency
 C- Food fraud - Canadian Food Inspection Agency
 D- Government of Canada continues to tackle food fraud - Canada.ca
 E- Government of Canada launches consultation on boat-to-plate traceability for fish and seafood products - Canada.ca
 F- Government of Canada protects Canadians against food fraud in honey and other products - Canada.ca
 G- How food fraud impacts consumers - Canadian Food Inspection Agency
 H- Putting fish DNA to the test - Canadian Food Inspection Agency
 I- Tackling food fraud - Canadian Food Inspection Agency
 J- Videos - Canadian Food Inspection Agency
 K- What are those white spots on your chocolate_ - Canadian Food Inspection Agency