FEDERAL-PROVINCIAL-TERRITORIAL
MINISTERS OF AGRICULTURE

PROGRESS REPORT

ON THE PAN-CANADIAN FRAMEWORK ON
CLEAN GROWTH AND **CLIMATE CHANGE**

Federal-Provincial-Territorial Ministers of Agriculture Progress Report on the Pan-Canadian Framework on Clean Growth and Climate Change

Catalogue No. A22-605/2018E-PDF

ISBN 978-0-660-25433-3

AAFC No. 12758E

Paru également en français sous le titre :

Ministres fédéral, provinciaux et territoriaux de l'agriculture - rapport d'étape sur le cadre pancanadien sur la croissance propre et les changements climatiques

For more information reach us at www.agr.gc.ca or call us toll-free 1-855-773-0241.

FEDERAL-PROVINCIAL-TERRITORIAL MINISTERS OF AGRICULTURE

PROGRESS REPORT ON THE PAN-CANADIAN FRAMEWORK ON CLEAN GROWTH AND CLIMATE CHANGE

2017

---

1. INTRODUCTION

In December 2016, First Ministers adopted the Pan-Canadian Framework on Clean Growth and Climate Change (PCF).[1] The PCF builds on the leadership and early actions of provincial and territorial governments to reduce greenhouse gas (GHG) emissions, and identifies further actions to be taken across all regions and sectors of the economy, including the agriculture sector, in order to contribute to meeting Canada's emissions reduction target; and seize the economic opportunities associated with clean growth.

The four pillars of the Pan-Canadian Framework

- Pricing carbon pollution;
- Complementary actions to further reduce emissions across the economy;
- Measures to adapt to the impacts of climate change and build resilience; and,
- Actions to accelerate innovation, support clean technology, and create jobs.

Canadian farmers are responsible stewards of the land, and can be part of the transition to a low carbon, climate resilient economy. They have already taken actions to mitigate agricultural GHG emissions, which account for 10% of Canada's total emissions. For example, adoption of sustainable land management and efficient production practices and technologies have allowed agricultural GHG emissions to remain relatively stable since 2000 and agricultural soils to become a significant carbon sink, all while the sector's total production continued growing.

Further growth of the sector, for example to meet the ambitious goal set in the Federal Budget 2017 to grow Canada's agri-food exports to at least $75 billion annually by 2030, while mitigating impacts on climate change, represents an important challenge for continued GHG reduction. The development and adoption of innovative, clean technologies such as those related to precision agriculture, will help the Canadian agriculture sector tackle this challenge by enhancing carbon storage in soils and lowering GHG emission intensities associated with fertilizer use or with animal production. The agriculture sector can also contribute to GHG emissions reductions in other sectors through the provision of agri-based bioproducts (e.g. bioplastics, renewable fuels) that can displace fossil fuel based inputs.

In parallel, climate change effects on production conditions (e.g., temperatures, precipitation patterns, extreme weather events) are impacting Canadian farmers. Increased risks are anticipated from more frequent and/or intense droughts, floods and wildfires, or from changes in pests, diseases and invasive

[1] At the present time, the provinces of Saskatchewan and Manitoba have not adopted the PCF.

species occurrences. Conversely, longer growing seasons and an increase in temperature could offer opportunities for diversification in the crop mix and the expansion of crops into non-traditional areas, as well as an extended grazing season.

Federal-Provincial-Territorial (FPT) Ministers of Agriculture recognize that governments have an important role to play to support farmers and agri-food producers to reduce GHG emissions and adapt to climate change, and are pleased to provide this progress report on the agriculture-related actions identified under the PCF.

2. COLLABORATIVE PROGRESS ON AGRICULTURE-RELATED PAN-CANADIAN FRAMEWORK ACTIONS

The PCF identifies the following agriculture-related actions:

- 3.5.1: Increasing stored carbon: Federal, provincial, and territorial governments will work together to protect and enhance carbon sinks, including in forests, wetlands, and agricultural lands (e.g. through land-use and conservation measures);

- 3.5.3: Generating bioenergy and bioproducts: Federal, provincial, and territorial governments will work together to identify opportunities to produce renewable fuels and bioproducts, for example, generating renewable fuel from waste; and,

- 3.5.4: Advancing innovation: Federal, provincial, and territorial governments will work together to enhance innovation to advance GHG efficient management practices in forestry and agriculture.

Progress on actions that relate to forestry will be included in the progress report from the Canadian Council of Forest Ministers (CCFM). There is no significant overlap between the measures discussed in this report and those reported by the CCFM.

The PCF indicates that "actions pertaining to the agriculture sector will be developed collaboratively through Canada's next agriculture policy framework". For nearly 15 years, FPT agriculture policy frameworks have enhanced policy and regulatory coherence, and ensured a collaborative approach that encourages investment, adaptation and sustainable growth in the sector. The current five-year framework, *Growing Forward 2*, will expire in March 2018, and FPT Ministers of Agriculture are committed to maintaining this coordinated approach and building on past successes in the development of the new agricultural policy framework – the *Canadian Agricultural Partnership.*

A. Status/accomplishments achieved

Reflecting the key objectives and principles originally identified in the July 2016 *Calgary Statement*, FPT Ministers of Agriculture reached an agreement on the key elements of the *Canadian Agricultural Partnership* in July 2017. The new five-year (2018-2023), $3 billion investment will strengthen the agriculture, agri-food and agri-based products sector, ensuring continued innovation, growth and prosperity. Six priority areas are identified in the Partnership, including the following two which have significant relevance to the PCF:

<u>Environmental Sustainability and Climate Change:</u> Building sector capacity to mitigate agricultural greenhouse gas emissions, protect the environment and adapt to climate change by enhancing sustainable growth, while increasing production.

Support for environmental sustainability initiatives under the Canadian Agricultural Partnership will help the sector to address agriculture's impacts on Canada's natural resources, reduce greenhouse gas emissions, and mitigate and adapt to the anticipated impacts of climate change (for example, changing growing conditions, extreme weather events, reduced water availability/quality, soil degradation and new and increased pests and disease outbreaks).

The Canadian Agricultural Partnership will facilitate clean growth while achieving progress on environmental sustainability and climate change mitigation and adaptation. The Partnership will help address diverse regional, provincial, territorial and national agri-environmental priorities and support efforts to capitalize on possible opportunities including:

- *Enabling the sector's capacity to mitigate greenhouse gas emissions and adapt to climate change;*
- *Encouraging innovative approaches to address agri-environmental issues and knowledge transfer;*
- *Addressing persistent provincial, territorial and regional agri-environmental issues;*
- *Supporting the sector's ability to demonstrate sustainability in a changing domestic and global context; and,*
- *Strengthening information collection, measurement and communication among FPT governments on environmental actions taken by the sector and resulting impacts on sustainability.*

<u>Science, Research, and Innovation</u>: Helping industry adopt practices to improve resiliency and productivity through research and innovation in key areas.

The Canadian Agricultural Partnership will commit to continued support of agriculture, agri-food and agri-based products research and science, research and innovation at all stages of production and processing, including research supporting regulatory systems. These efforts will contribute to continued productivity growth, position the sector for greater domestic and international competitiveness, and support the ability of the sector to adapt to environmental challenges.

The Canadian Agricultural Partnership will focus on accelerating science, research and innovation to support the sector by:

- *Strengthening science, research and innovation capacity to address fundamental challenges such as environmental and market pressures;*
- *Enhancing knowledge and technology transfer activities to help farmers, food processors and agri-businesses commercialize and adopt innovative products and practices;*
- *Supporting research activities in areas that require sustained commitment, while ensuring flexibility for governments to respond to emerging priorities and sectors; and,*

- *Continuing to encourage industry leadership and participation in collaborative research, development and knowledge transfer activities.*

B. <u>Next steps/targets for 2018</u>

Building on the July 2017 agreement reached by FPT Ministers of Agriculture, provincial and territorial (PT) governments have begun designing cost-shared programming to be delivered by their respective jurisdictions. FPT governments will negotiate and establish bilateral agreements by April 1, 2018.

Key areas of programming pertaining to clean growth and climate change will be confirmed in the *Canadian Agricultural Partnership* bilateral agreements. Through these agreements, governments will also identify program targets and performance measures for reporting on progress over the course of the Partnership.

C. <u>Final completion target</u>

The *Canadian Agricultural Partnership* will come into effect on April 1, 2018 and will be in place until March 31, 2023.

3. INDIVIDUAL ACTIONS BY GOVERNMENTS

In addition to the collaborative effort on the *Canadian Agricultural Partnership*, individual governments are undertaking a number of actions in support of clean growth and climate change in the agriculture sector.

Government of British Columbia

British Columbia (B.C.) Government is committed to innovative approaches to mitigating greenhouse gas emissions and adapting to climate change as demonstrated through provincial *Growing Forward 2 (GF2)* programming.

The B.C. *Environmental Farm Plan Program* and *Beneficial Management Practices Program* are developing new guides, web-based decision-support tools, and cost-shares to encourage the adoption of sustainable practices that enhance soil carbon sinks, decrease agricultural GHG emissions, and realize opportunities for generating on-farm renewable energy. Emerging areas of targeted climate funding in 2017/18 include expanding on-farm solar, anaerobic digestion, silvopasture systems, riparian buffers, nutrient management, and enhancing soil carbon management.

The *GF2 Farm Adaptation Innovator Program* (FAIP) has invested $1.8 million in 15 multi-partner applied research and innovation partnerships for farm-level climate adaptation. The FAIP Management Intensive Grazing (MiG) project, completed in spring of 2017, has advanced the understanding of how MiG practices applied on B.C. rangeland can increase soil carbon sequestration and enhance soil function to become more resilient against moisture extremes. This project provides the groundwork for effectively monitoring soil carbon, with the potential of developing carbon offsets for the ranching industry.

The B.C. Government has committed to enhanced nutrient management programming, with a goal of reducing agricultural GHG emissions by up to 100,000 tonnes. The expanded nutrient management program is scaling-up demonstration trials of nutrient management practices, increasing funding for nutrient management planning and beneficial management practices (BMPs), and enhancing monitoring of nutrient management benefits.

In November of 2016, the B.C. Government and BC Innovation Council launched the first Agritech Innovation Challenge. The winner of the nutrient management challenge (1 of 4 challenge areas) – Boost Environmental Systems (BOOST) – has an innovative technology that yields high returns of biogas and high-value struvite fertilizer, recycles waste water, and enhances GHG reductions for the agriculture sector.

In addition to these activities, B.C. is contributing to PCF adaptation actions through the *BC Agriculture & Climate Change Regional Adaptation Strategies*, which have been completed in six major agricultural regions of B.C. The implementation of the *Regional Adaption Strategies* has resulted in over forty collaborative multi-partner projects in areas including decision-support tools for improved water management, improved weather monitoring, and planning tool-kits for extreme weather events such as wildfire and flooding.

B.C.'s investments in innovation and applied climate research in GF2 programming has created a strong foundation for British Columbia to advance environmental sustainability and climate action under the

Canadian Agricultural Partnership as well as contribute to the Pan-Canadian Framework's agriculture and adaptation related actions.

Government of Alberta

Agricultural Offsets: Alberta's emission compliance system (2007) continues under the new Output Based Allocation (OBA) system as a compliance mechanism for large emitters. Several agriculture protocols have been updated to improve their accessibility and usage, and trials completed for new protocols. Opportunities remain for agricultural producers to continue to generate agricultural offsets, and will increase with increasing carbon pricing. Alberta continues to share information with other provinces and countries.

On-Farm Energy Management (*Growing Forward 2*): The On-Farm Energy Management program shares the cost of investments that improve energy efficiency on farms. It enables producers to conserve energy and reduce GHG emissions.

On-Farm Solar Photovoltaics (*Growing Forward 2*): The On-Farm Solar Photovoltaics program recently revised their grant rates to align with the residential and commercial solar program. The program covers grid-tied systems on a cost-shared basis.

Agriculture and Forestry (AF) Research Strategy/Review: AF initiated a review of their internal research capacity in 2017. The Ministry has internal capacity to conduct research and take advantage of climate adaptation and mitigation opportunities. Research projects are in place to determine impacts of new technologies such as slow-release nitrogen fertilizers upon GHG emissions. Producer-led applied research associations have a Soil Health initiative to promote reduced emissions and increased resilience of farm landscapes.

Government of Saskatchewan

The Government of Saskatchewan is enabling the Saskatchewan agriculture sector to reduce greenhouse gas emissions through new and continued investments, programs, and services.

The Government continues to invest in research and development and extension essential for greenhouse gas emission reductions. The Government of Saskatchewan and Fertilizer Canada have made new investments in eight producer-led Agri-ARM (Applied Research Management) sites to demonstrate methods for producers to reduce nitrous oxide emissions through 4R Nutrient Stewardship. In December 2016, the Ministry of Agriculture hosted a Livestock Greenhouse Gas Forum to identify research priorities to reduce emissions in the livestock sector. Since 2000, the Ministry of Agriculture has invested over $13 million in over 90 climate change mitigation research projects. The Government is also funding several research institutes that focus on agricultural research:

- The Global Institute for Food Security is working with producer groups and other organizations to create a new Chair in Carbon Sequestration and Management in Agriculture;
- The Crop Development Centre is researching new crop varieties best suited to our changing climate;
- The new Livestock and Forage Centre of Excellence will allow for methane emission monitoring once completed;

- The Canadian Feed Research Centre is developing high-value feeds from low-value crops; and
- The Prairie Agriculture Machinery Institute is providing innovative research in machine technology.

Ministry of Agriculture programs primarily funded under *Growing Forward 2*, also support producers in adapting to climate change. Surveillance and management programs help producers deal with new and existing diseases, pests, and invasive species. The Farm and Ranch Water Infrastructure Program provides funding for producers to manage agricultural water supplies. Business Risk Management programs such as crop insurance help producers to manage risks to crop yield, including droughts and floods.

While the Government is working to enable the agricultural sector to reduce emissions, our producers are making it happen. Producers are adopting good practices and technologies that support emission reductions. Improved beef and hog production has reduced per unit greenhouse gas emissions. Seeded acres of pulse crops have increased by 25 per cent from 2015 to 2016, which reduces fertilizer use.

Soil carbon storage is increasing as producers move away from summer fallow and adopt zero and minimum till practices. Acres in summer fallow have dropped by 13.3 million acres since 1990. Acres in zero and minimum till have increased from 36 per cent in 1991 to 93 per cent in 2016.

Producers have implemented over 1,300 beneficial management practices which contribute to greenhouse gas reductions, such as conversion of highly erodible saline land from annual grain production to perennial cover, through the Farm Stewardship Program under *Growing Forward 2*. As part of the Agricultural Water Management Strategy, the newly approved Dry Lakes Drainage Project has brought together 73 landowners across 18,000 acres to restore 34 acres of wetland and provide 21 acres of wetland retention on new drainage. This type of natural infrastructure project is important for moderating risks like droughts and floods and reducing greenhouse gas emissions. In the last year, the Saskatchewan agricultural sector continues to demonstrate leadership in reducing emissions and adapting to climate change.

Government of Manitoba

Manitoba Climate and Green Plan: The province is developing a 'Made-in-Manitoba plan', including land-use and conservation measures that sequester carbon and foster adaptation to climate change.

Canadian Agricultural Partnership: Manitoba Agriculture is developing new programming for the Partnership, which includes a major objective to "Reduce GHG emissions, and protect and enhance carbon sinks on agricultural lands".

GRowing Outcomes in Watersheds (GROW): Manitoba will implement ecological goods and services (EG&S) programming that is community-driven and provides sustainable and targeted results on the landscape. GROW will be advanced along with a suite of other policy instruments - regulation, education and direct investment - as part of a comprehensive and coordinated policy framework for watershed-based planning and water resource management, which will include protection of important wetlands.

Environmental Farm Plan (EFP): Manitoba's EFP program continues to assist farmers in identifying agri-environmental risks and assets on farms; including a climate change chapter. As of March 31, 2017, 7033 EFPs covering more than 9.7 million acres of Manitoba farmland have been completed. EFPs require updating every 5 years.

Growing Assurance EG&S (GAEGS) Program: As part of Growing Forward 2, GAEGS continues to fund on-farm BMPs that have strong climate change co-benefits, such as carbon storage. In 2017, eight BMP projects were approved for Riparian Area Management, Perennial Cover for Sensitive Land and Shelterbelts, resulting in an estimated 3850 tonnes CO_2equivalent sequestered over 10 years or 385 tonnes/year.

4R Nutrient Stewardship: Manitoba Agriculture continues to be a partner in the 4R (right time, right amount, right place, right form) campaign and has led or participated in more than thirty related extension events since December 2016. Increased utilization of precision agriculture techniques continues to improve efficiencies and reduce GHG emissions.

Generating bioenergy and bioproducts: The province continues to support the bioenergy sector through the Biomass Energy Support Program. Since 2012, projects have reduced the amount of coal used by over 10,000 tonnes and GHG emissions by over 15,000 tonnes annually. The province is also developing a new Bioproduct Roadmap to advance the bioproduct and biomaterial sector across Manitoba.

The Manitoba Beef and Forage Initiative (MBFI) is conducting research projects that focus on forage and grassland management practices, which will improve soil health and sequester carbon.

Government of Ontario

Cap and Trade: Ontario's Cap and Trade program will limit or 'cap' a majority of the province's emission sources, but it does not cover direct, non-fossil fuel emissions from agriculture. As part of cap and trade, Ontario is developing a regulatory proposal to allow the creation of emissions offsets in uncapped sectors such as agriculture and forestry. Offset credits would create financial incentives for companies, people and organizations to implement projects to reduce or avoid emissions, or remove carbon from the atmosphere.

Climate Change Action Plan (2016-2020): Ontario's Climate Change Action Plan (CCAP) is a five year plan that will help Ontario fight climate change over the long term. Program development is continuing on three prospective programs to help agriculture and food and beverage processing businesses transition to a low-carbon economy with expected funding over four years based on estimated proceeds from the cap and trade program, including:

- Up to $115 million to reduce emissions from the food and beverage-processing sector through the use of innovative technologies, and to support the transition to low-carbon, indoor agricultural facilities (e.g. greenhouses, grain dryers) through retrofits to existing structures
- Up to $30 million to develop and implement an Agricultural Soil Health and Conservation Strategy that will maximize long-term carbon storage in soils while protecting their long-term productivity
- Up to $20 million to pilot a program that uses methane obtained from agricultural materials or food wastes as a transportation fuel source, with funding for commercial-scale demonstration projects

In May 2017 Ontario released a discussion paper on a proposed Agri-food Renewable Natural Gas (RNG) for Transportation Demonstration Program under the CCAP.

Climate Change Research: The joint Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)-University of Guelph research partnership continues to support climate change mitigation and adaptation research as it relates to the agri-food sector and rural communities. In addition, the new Quebec-Ontario Cooperation for Agri-Food Research Program aims to improve the competitive position of the agriculture and agri-processing sectors in both provinces by funding collaborative research in two priority areas: climate change impact on soil health and development of best practices, and; climate change impacts on food processing and food safety, together with adaptation and mitigation strategies.

Best Management Practice (BMP) Enhancements: Ontario is continuing to encourage producers to combat climate change by providing support for additional BMPs that will increase energy efficiency on farms and support farmers' transition to a low carbon economy; for example, continued support of Environmental Farm Plans and 4R Nutrient Stewardship for crop production.

Clean Technology: Delivering on a commitment in the 2016 Ontario Fall Economic Statement, the province is currently developing a Clean Technology Strategy.

Government of Quebec

Initiative to reduce greenhouse gas emissions: In Quebec, the 2013-2020 Climate Change Action Plan provides for the investment of $10 million (over the 2013–2020 period) in measures to reduce GHG emissions. The focus is on gas-tight coverings for manure-storage structures and the treatment of biogas, updates to nitrogen fertilization recommendations for crops, and projects to improve knowledge about tools for reducing GHG emissions in the agriculture industry.

Initiative to improve the climate change resilience of agricultural systems: In Quebec, the 2013-2020 Climate Change Action Plan provides for the investment of $5.2 million (over the 2013–2020 period) in actions to foster innovative plant health surveillance approaches, crop pest diagnosis and intervention strategies, support for the adoption of good agroforestry practices, and the development of strategies for water conservation and management in agricultural areas. The goal of developing these projects is to improve knowledge so that the Quebec agricultural sector is better equipped to deal with climate change.

Agricultural investment assistance program: The agricultural investment assistance program is expected to be implemented in fall 2017. Its goals include improving the energy efficiency of agricultural buildings, which will help reduce GHG emissions. Financial assistance for investments to support the construction and renovation of agricultural buildings will be available subject to an energy-efficiency or GHG-reduction assessment.

Quebec agri-food policy: The Quebec food summit will take place in November 2017. A consultation document released in preparation for the summit identified climate change as an environmental issue that must be taken into consideration for the conservation of natural resources. The goal of the summit is to bring partners together in a dynamic forum in order to establish an agri-food policy for Quebec. The policy is expected to be released in spring 2018.

Government of New Brunswick

The New Brunswick Department of Agriculture, Aquaculture and Fisheries (DAAF) supports both mitigative and adaptive solutions to the challenges of climate change. In December 2016, the Government of New Brunswick introduced its new climate change action plan, entitled Transitioning to a Low-Carbon Economy. A number of measures contained within this plan target the agricultural sector.

With respect to carbon sequestration actions under PCF, the NB Environmental Trust Fund has approved a project to prepare of a report called Carbon Farming which investigates carbon sequestration in agriculture, specifically: annual cropping systems, biochar, agroforestry, livestock, carbon credits, and looks at a couple case studies. Through contributions under *Growing Forward 2*, DAAF has assisted with several research projects targeting improved soil health, including increasing soil carbon levels. Also through GF2, DAAF has funded several projects to evaluate various biomass crops and biomass processing technologies.

On the advancing innovation front, DAAF, through contributions under GF2, has assisted on projects in a number of areas:

- Dairy genomics projects and genetic selection of beef sires based on feed efficiency should result in reductions in enteric methane production per unit of production.
- Use of legumes in forage mixtures and rotation crops should result in decreased use of nitrogen fertilizers.
- Use of energy-efficient technologies on-farm will reduce energy demands.

In addition to the use of these production technologies, New Brunswick agricultural producers have made extensive use of GF2 funds to make environmental improvements such as adopting soil conservation systems (which help resist the increasing frequency and intensity of climate change related rainfall events).

Also, agricultural indices have been modeled under several emission scenarios providing climate projections for the province for the future periods of 2020, 2050 and 2080. These products will contribute to adaptation planning of agriculture, as will improvements to mapping and understanding land vulnerability to flooding.

Government of Nova Scotia

Nova Scotia (NS) is committed to increasing the climate resilience of our communities, businesses and people, and has implemented various initiatives that support the Pan-Canadian Framework. Some examples of these initiatives include the following.

Through a partnership with the Nova Scotia Federation of Agriculture and Nova Scotia Environment, the Nova Scotia Department of Agriculture (NSDA) under the AgriRisk Project – Risk Proofing NS Agriculture is exploring the impact of climate change on agriculture with a focus on the wine/grape sector and agricultural marshlands.

Multiple initiatives will be occurring under the National Disaster Mitigation Program (NDMP). Digitized flood maps are being developed with consideration of the impact of climate change on agricultural marshlands (i.e. sea-level rise). A Dyke Guidance Document is being developed in partnership with New Brunswick, to assess the structural limitations (rainfall intensity overwhelming the drainage system, storm surge causing dyke overtopping) of the provincial dyke system. As well, a pilot project for Salt

Marsh Restoration will increase capacity of the floodplain to store water, mitigating flood water damage on agricultural land and communities surrounding the floodplain during periods of extreme weather. These dyke realignment projects will assist in reducing economic and environmental damage during extreme weather events to agricultural and public infrastructure.

Environmental best management practices are being streamlined to target programming with a focus on climate change and meeting the outcomes of the Canadian Agriculture Partnership.

Through a partnership with Energy NS, an on-farm energy auditor is being hired by Efficiency NS. This partnership will help reduce agriculture's electricity and carbon fuel foot print on the climate.

Climate change adaptation (preparedness and response to disasters) are supported by the Emergency Management Framework and the Plant and Animal Health Strategy. By strengthening programs such as biosecurity and traceability under the Canadian Agriculture Partnership, the province will assist in disaster preparedness, and adaptation including situations created from effects of climate change.

Provincial agricultural programming is supporting project applications based on best management practices. An Environmental Management Advisory Committee ranks applications under five themes: soil management, water management, product management, manure management and energy management. These themes support initiatives such as: energy efficiency assessment, energy efficiency implementation, alternative energy, and water management for constructed wetlands. This helps ensure that supported projects are targeted where they will make the most impact.

Government of Prince Edward Island

The Government of Prince Edward Island is undertaking the following clean growth and climate change activities:

<u>Beneficial Management Practices:</u>

- Soil erosion control structures
- Residue management
- Improved crop rotations, cover crops, winter catch crops
- On-farm water use efficiency and sustainable agriculture water supply
- On-farm energy management based on farm energy audits

<u>Climate Resilient Infrastructure:</u>

- Storage Management (on-farm pesticide, on-farm fuel, on-farm silage storage, improved manure storages, covered feedlots)
- Improved stream crossings
- Energy efficient power sources for remote watering sites

<u>Knowledge Transfer / Analysis:</u>

- Weather stations (data collection, forecasting and reporting)
- Crop Insurance data collection / interpretation
- Soil Quality Monitoring Program (analysis of long term effect on soil parameters based on rotations, climate and management practices)
- Rotation studies (effects of rotations and use of perennial forages)

- Industry/ watershed organization partnerships conducting applied research to support the development and adoption of BMPs that support climate adaptation (rotations, nitrogen filters, soil health, water quality, residue tillage)

Potential Focus:

- Longer rotations and different cropping option
- Slow release fertilizers and timing of nutrient applications
- On farm energy production

Government of Newfoundland and Labrador

In November 2016 the Government of Newfoundland and Labrador released The Way Forward a vision document that outlined policy decisions and commitments to create a strong and diversified province with a high standard of living. As part of The Way Forward, the Newfoundland and Labrador Government committed to increase food self-sufficiency to at least 20 per cent by 2022. This economic growth potential will be realized in a responsible manner ensuring sustainable agricultural land management practices supported by an enhanced Crown Lands process, and investments in clean growth and innovation.

Investments will continue to be made under the Canadian Agricultural Partnership and other provincial programming in support of environmental farm planning and environmentally sustainable beneficial management practices. This will include priority areas for water resource management and efficiency, soil conservation, nutrient management, climate change, and environmental stewardship practices (e.g. improved storage and handling of agricultural by-products).

Progress will continue on implementation of on-farm energy audits and the implementation of energy efficiency measures such as improved heating, lighting and ventilation systems; as well as implementation of clean energy projects such as on-farm installation of solar, geothermal, and wind energy generation in support of agricultural growth opportunities.

Less than 1 per cent of Newfoundland and Labrador's land mass is suitable for agricultural production and the Government of Newfoundland and Labrador is committed to protection of this natural resource. Agriculture leased land legislation and policies will continue to support rigorous environmental management practices and public interest to ensure protection of sensitive areas, watersheds, riparian areas and buffer zones. Such legislation and policies ensure sustainable development of agricultural land resources.

Climate change mitigation and adaptation investment will continue to support a resilient and responsive agriculture and agrifoods sector. In order to seize these opportunities for clean growth and meet food self-sufficiency targets, investments to address more variable and extreme weather patterns will be made, including high tunnels, greenhouses, irrigation, frost protection, integrated pest management, and drainage systems. GHG emissions will be lowered with soil conservation measures such as no-till seeding, continued investment in perennial forage land production, and clean energy investments.

Newfoundland and Labrador is committed to increase food self-sufficiency to promote better nutrition and healthy lifestyles, while realizing economic growth potential in the province in an environmentally sustainable manner.

Government of Yukon

Local Food Strategy: The new five year *Local Food Strategy for Yukon* continues to be actively implemented and is contributing to the increase in production, use and consumption of Yukon-grown food.

Traditional and Local Foods: Yukon has launched a new collaborative project with INAC in 2017-18 to explore the relationship between climate change, traditional foods, and local food production in Yukon communities. The Yukon Agriculture Branch is also providing ongoing support to a growing interest in First Nation farming projects.

Agricultural Research: Yukon's research and demonstration farm continues trials on northern soil development, effectiveness of natural soil amendments and performance trials of new varieties under our northern growing conditions.

Government of Northwest Territories

The Government of Northwest Territories (GNWT) recently released its first ever Agriculture Strategy in the spring of 2017. The five year plan will act as a road map to advance Northwest Territories agriculture sector. It outlines actions, investments and legislative tools that are needed to be put in place.

The GNWT has identified agricultural research as an area that required investment. Recent work in the areas of developing soils and storage are ongoing. Further work is being investigated with the goal of partnering with various post-secondary educational institutions to advance the file.

The GNWT is working with a post-secondary institution to develop high resolution climate maps of temperature and precipitation using the PRISM (Parameter elevation Regression on Independent Slopes Model) methodology. The maps will allow the climatic range of agricultural crops and country foods to be assessed under both the current climate and future climate change conditions. The climatic mapping will allow the Northwest Territories to plan for both the new opportunities in agriculture that climate change will bring and assist in determining resiliency in existing country foods.

Government of Nunavut

No input provided.

Government of Canada

Low Carbon Economy Fund: The $2 billion Low Carbon Economy Fund (LCEF) announced in the Government of Canada's Budgets 2016 and 2017 supports new and expanded provincial and territorial actions to reduce GHG emissions, including through enhanced carbon storage in agricultural soils.

Agriculture Research: Announced in Budget 2017, the Government of Canada will invest $70 million over six years to further support agricultural discovery science and innovation, with a focus on addressing emerging priorities, such as climate change and soil and water conservation.

Clean Technology in the Agriculture Sector: Announced in Budget 2017, the Government of Canada will invest $200 million for Clean Technology in the Natural Resource Sectors, $25 million of which is dedicated to support the adoption of clean technology by Canadian agricultural producers.

Food Policy: The Government of Canada is currently consulting with the public and stakeholders on the development of *A Food Policy for Canada* that will establish a long-term vision for the health, environmental, social, and economic goals related to food, as well as near-term actions. The policy will be launched in 2018.

Agricultural Greenhouse Gases Program: The Government of Canada is investing $27 million over five years (2016 – 2021) to support innovative research projects that develop technologies, practices and processes that can be adopted by farmers to mitigate GHG emissions.

AgriRisk Initiatives: The Government of Canada is supporting projects that enable the agriculture sector to evaluate the potential impacts of climate change on regional agricultural production to inform the development of risk mitigation tools as well as regional climate change adaptation plans and strategies.

Agricultural Youth Green Jobs Initiative: Launched in 2016-2017, this $1.25 million initiative aims to attract youth to green jobs within the agriculture and agri-food sector. In 2016-17, 147 internships were funded, 21% of which were for projects to reduce greenhouse gas emissions. In April 2017, the Initiative was extended for two additional years with an annual budget of $2.35 million.