Agriculture and Climate Change Policy

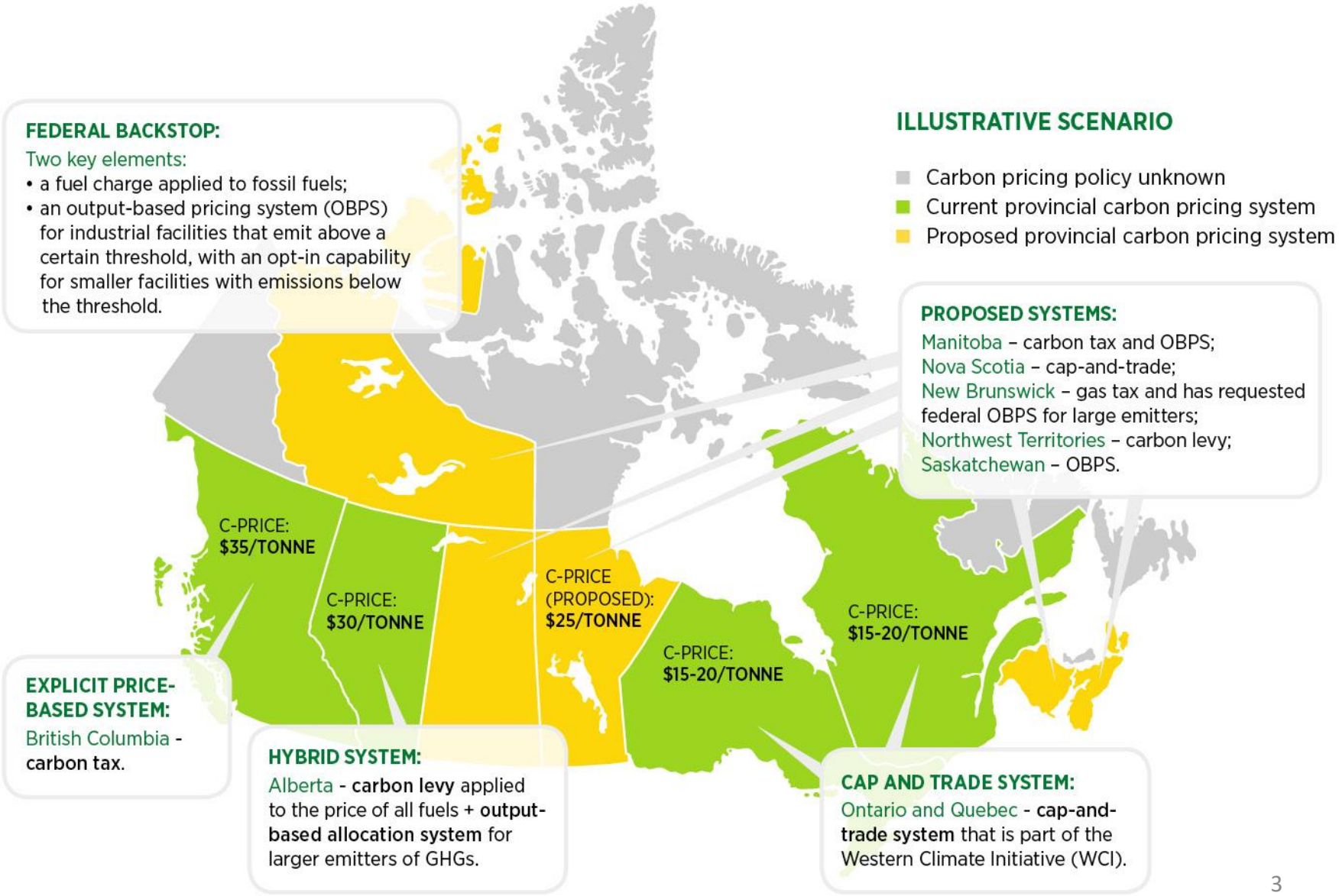
Financial Impacts of Carbon Pricing on Canadian Farms

2018

Background

- In December, 2016, federal-provincial-territorial First Ministers announced the Pan-Canadian Framework on Clean Growth and Climate Change (PCF). In the PCF, the federal government announced that by 2018 all provinces and territories will be required to implement a system that either prices carbon at $10 per-tonne, rising to $50 per-tonne by 2022, or that meets, under a cap-and-trade system, an emission reduction equivalent to the one achieved with the set carbon price.
- Shortly after the PCF was adopted in January 2017, AAFC conducted a preliminary analysis of financial impacts of carbon pricing on the primary agriculture sector, which presented a worst-case scenario as details of provincial carbon price programs were yet unknown and no cost relief measures were included in the analysis.
- In May 2017, Environment and Climate Change Canada (ECCC) released a *Technical Paper on the Federal Carbon Price Backstop* providing details on the federal carbon pricing system. Subsequently, on January 2018, the federal government released for public comment draft legislative proposals relating to the proposed federal carbon pricing system, and a regulatory framework describing the proposed federal approach to carbon pricing for large industrial facilities.
- AAFC's analysis has been updated to reflect provincial systems currently in place and the details provided in the *Technical Paper* (provincial systems under development and details contained in the new federal draft legislation or regulatory framework are not reflected in the analysis). The impacts of carbon pricing on net operating costs and net operating income are estimated by province and by farm-type, accounting for cost relief measures where applicable.
- AAFC's results reflect an illustrative scenario and constitute a partial and static analysis that did not consider emission reduction strategies and revenue recycling of funds collected through carbon pricing policy.

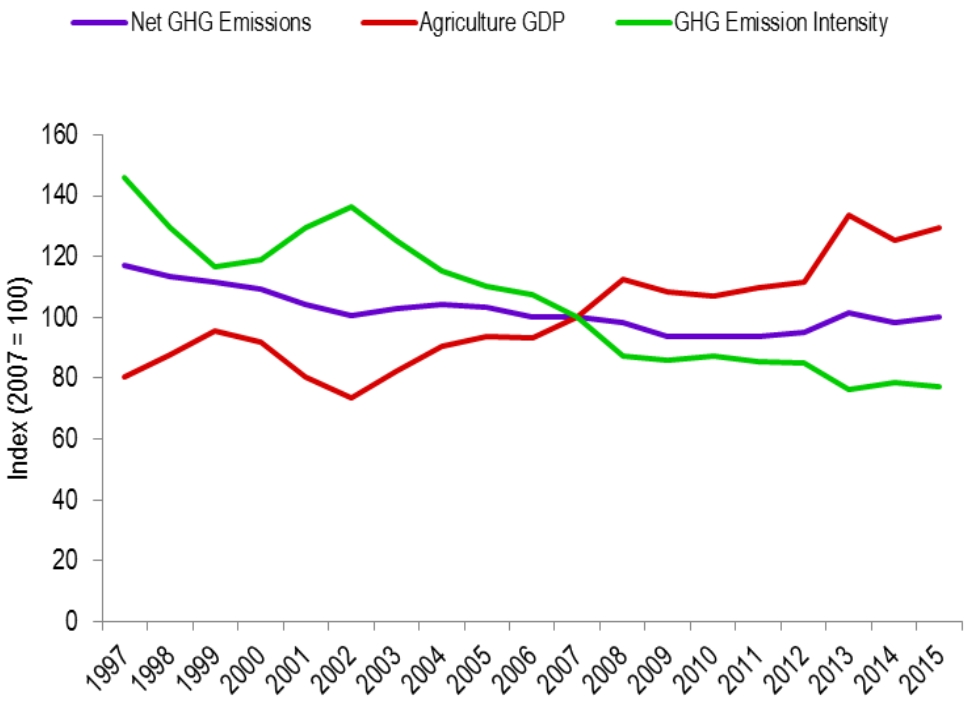
Provinces with existing carbon pricing programs encompass 64% of Canada's cash farm receipts



Canadian farmers have reduced GHG emissions while producing more

- Adopted technologies and management practices that have contributed to reducing GHG emissions per unit of production.
  - Crops: Adoption of field management practices such as precision agriculture and more frequent soil nutrient testing.
  - Livestock: Improved feed composition, manure management, and efficient livestock management practices.
  - Energy management: Use of agricultural feedstocks for the generation of biogas and replacement of fossil fuels with renewables such as solar and wind energy.
  - Soil carbon sequestration: Changes in agricultural land management practices, such as the adoption of conservation tillage and no-till, and the reduced use of summerfallow.
- Earning carbon offset credits in certain provincial carbon pricing systems.

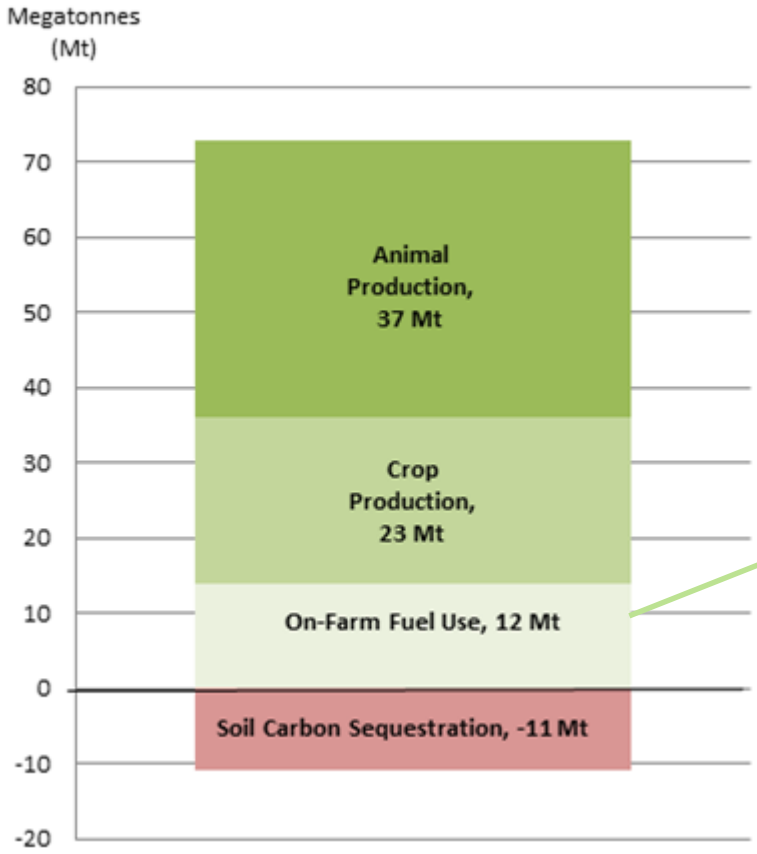
Canada's Agricultural Net GHG Emissions, Gross Domestic Product, and Emission Intensity, 1997 to 2015



Source: Environment and Climate Change Canada, National Inventory Report 2017; Statistics Canada, CANSIM 379-0030

Only a small portion of total agricultural-based emissions will be directly affected by carbon pricing

Canada's Agricultural GHG Emissions by Source in 2016



Source: National Inventory Report 2018, Environment and Climate Change Canada.

- Agricultural activities produce GHG emissions largely from biological processes inherent in animal and crop production, in contrast with most other sectors in which emissions are largely energy related. Biological emissions are exempt from carbon pricing.

- On-farm fuel use may be subject to proposed carbon pricing policies.
  - Exemptions and rebates are available in certain jurisdictions (e.g., BC and AB do not price diesel and gasoline for on-farm purposes).
  - Proposed federal system exempts diesel and gasoline used for on-farm purposes.

- Land-use change represents a net carbon sink from cropland (i.e., carbon sequestration). This is the result of changes in agricultural land management practices, including the adoption of conservation tillage and reduction in summerfallow. These practices offer potential opportunities for generating emission offset credits.

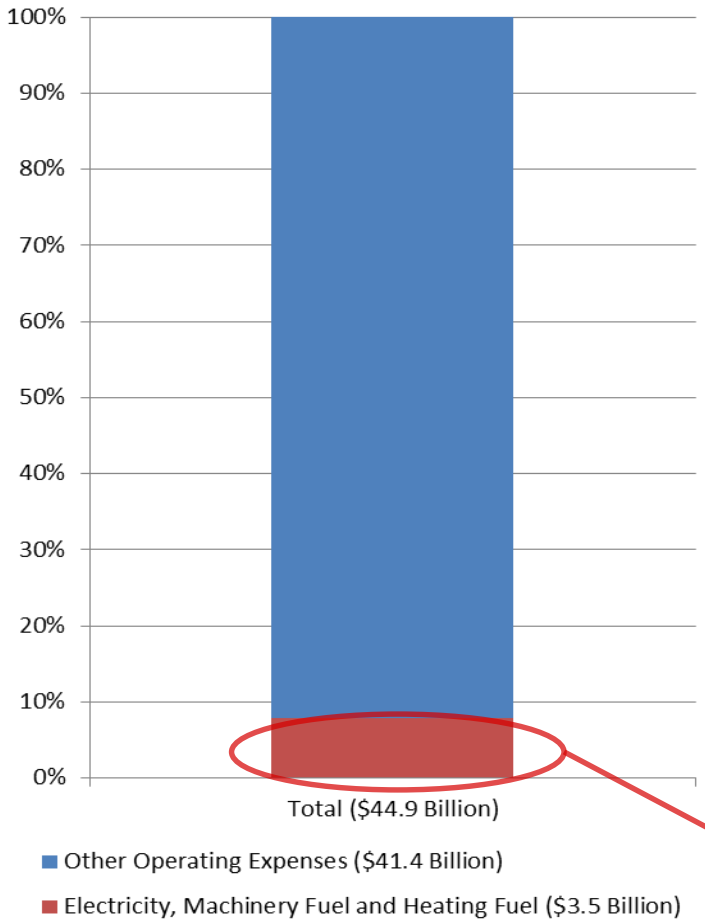
The updated analysis evaluates the direct financial impacts of a carbon price; it does not include revenue recycling, behavioural changes nor other benefits of carbon pricing

- Level of carbon pricing used in quantitative analysis:
  - $50 per-tonne by 2022, based on federal benchmark, except for Ontario (ON) and Quebec (QC).
  - ON and QC: $20 per tonne, based on Western Climate Initiative (cap and trade) price projections for 2022[1].
- The analysis includes:
  - Exemptions from carbon pricing for gasoline and diesel fuel used in farming activities (federal backstop, current systems in British Columbia (BC) and Alberta (AB)). ON and QC do not provide equivalent exemptions.
  - Other cost relief measures, including carbon tax rebates provided by BC and AB to greenhouses.
  - Output-based pricing systems for large emitters, such as electricity generators where applicable.
- Limitations of the analysis:
  - The potential indirect impacts of carbon pricing through inputs and services such as transportation, fertilizer, and commercial feed;
  - The potential indirect financial benefits from provincial fee reductions or program expenditures related to the use of carbon pricing revenues (i.e. revenue recycling);
  - Behavioural changes by primary producers in response to carbon pricing, such as the adoption of more energy efficient technologies or farm management practices;
  - Any potential for revenue generation by the agriculture sector from emission offsets credits.

[1] Source: Canada's Ecofiscal Comission: Comparing Stringency of Carbon Pricing Policies, 2017; Sawyer et al.: Overview of Macroeconomic and Household Impacts of Ontario's Cap and Trade Program, 2016

Carbon pricing is expected to directly impact a relatively small subset of farm operating expenses

Farm Gross Operating Expenses, 2016



Source: Statistics Canada, CANSIM 002-0005, and AAFC calculations

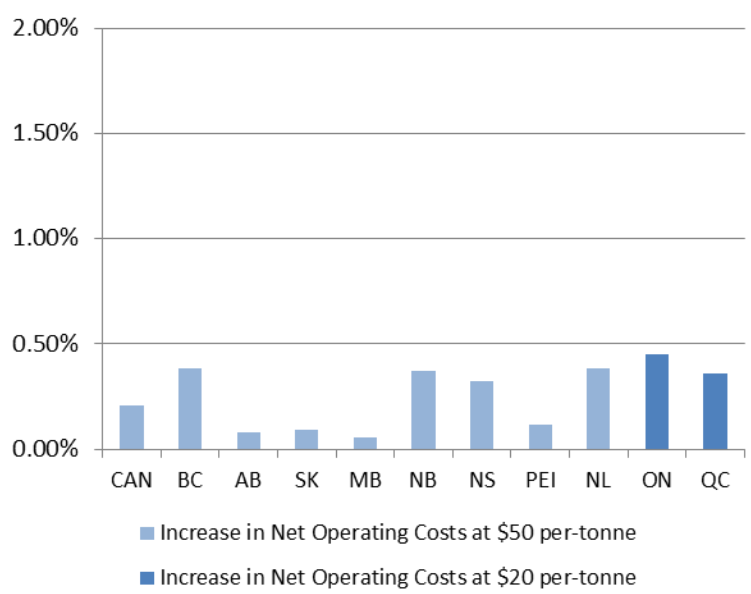
- The analysis takes into account energy inputs that are relevant to the agriculture sector: machinery fuel (diesel and gasoline), electricity, and heating fuel (natural gas, light oil and propane).
  - Fuel: The carbon content of each fuel (per unit of fuel) is multiplied by the carbon tax rate to calculate the additional fuel cost (per unit). Then, the percentage increase in price is calculated by considering the average fuel price in 2016 as the base.
  - Electricity: The impact on electricity prices was based on the carbon content of all energy sources used in generating electricity and taking into account the share each source contributes to each province's electricity grid, as well as on the specifics of output-based pricing systems for large emitters within each province[2].

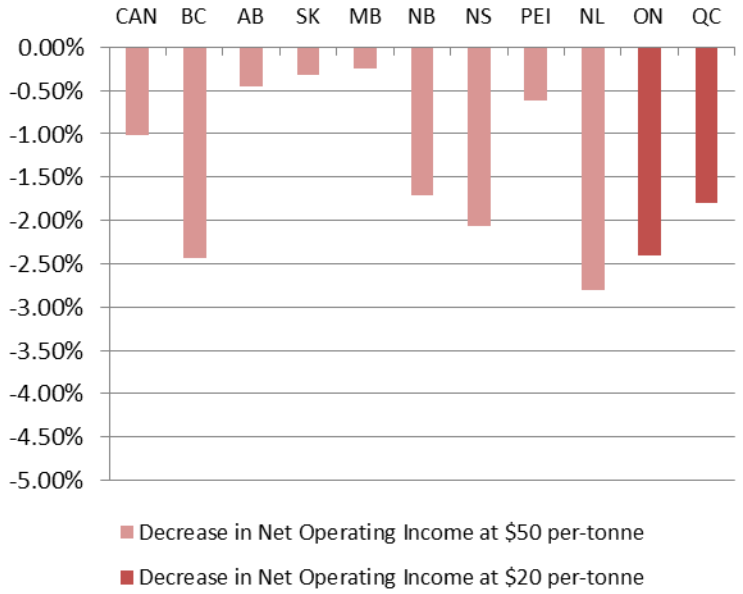
- In 2016, electricity, machinery fuel and heating fuel accounted for an average of 7.8% of operating expenses in Canadian farms.

[2] Based on modeling results provided by the Economic Analysis Directorate of Environment and Climate Change Canada in July 2017.

Financial Impacts are expected to be modest for the average Canadian farm

Estimated Financial Impact of Carbon Pricing on Average Net Operating Expenses and Average Net Operating Income





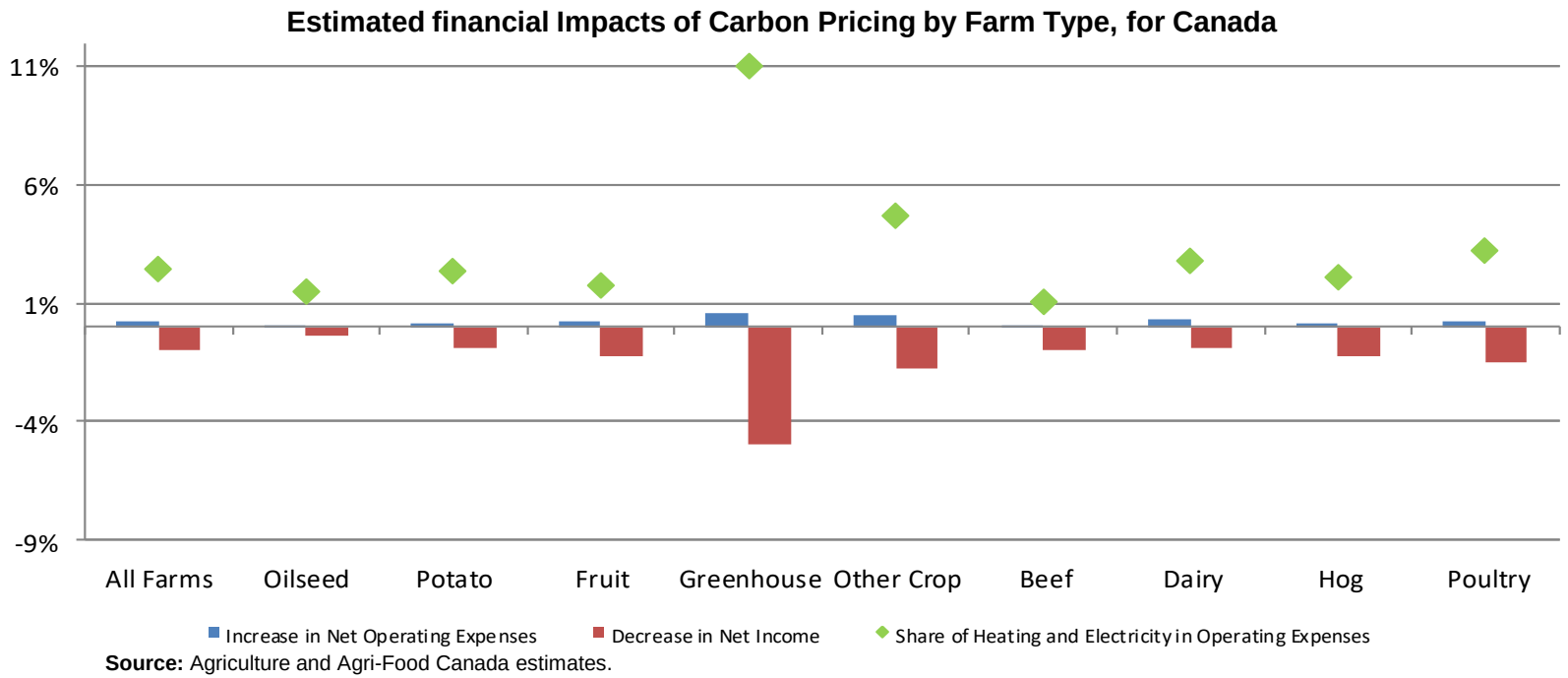
Source: Agriculture and Agri-Food Canada estimates.

Net Operating Expenses : 0.1% (MB, SK, AB) to 0.45% (ON)

Net Operating Income: -0.2% (MB) to -2.8% (NL)

- Farms in Canada would see an average increase of $718, or 0.2% to their net operating costs, and a decrease of 1.0% to their net operating income.
- Provincial level impacts will vary depending on a multiplicity of factors, including the mix of farm types in the province and the provincial carbon pricing system.

The magnitude of impacts of carbon pricing will vary by farm type



Source: Agriculture and Agri-Food Canada estimates.

- Impacts will vary across farm types due to different input and cost structures.
  - Increases in net operating expenses range from 0.08% for beef to 0.6% for greenhouses.
  - Decreases in net operating income range from 0.3% for oilseed and dairy farms to 5.0% for greenhouses.
- Greenhouses require significant amounts of heating and electricity to operate and would therefore see disproportionate impacts when compared to other farm types.
  - BC and AB provide cost relief to greenhouse operations in the form of an 80% rebate on the carbon tax or levy paid for natural gas and propane used for heating and carbon dioxide production.

Potential opportunities exist for farmers to benefit from climate change policies

- Revenues remain in the jurisdiction of origin:
  - Revenue recycling: Each jurisdiction can use carbon pricing revenues according to their needs, including to address impacts on vulnerable populations and sectors and to support climate change and clean growth goals. For example, British Columbia has used carbon pricing revenues to lower corporate and personal income taxes, which will benefit the agriculture sector.
- Under carbon pricing policies, farmers could earn offset credits by taking on projects to reduce GHG emissions and then generate revenue by selling the offsets.
  - Alberta currently has eight agriculture-related offset protocols in its output-based pricing system, and Quebec has one.
  - In Alberta, farmers and intermediaries have earned up to an estimated $170 million from the sale of emission offset credits[2].
- Through the Low Carbon Economy Leadership Fund, the Government of Canada is investing in the agricultural sector.
  - Alberta: nearly $150 million to help Albertans, including farmers and ranchers, use less energy and save money.
  - Ontario: almost $420 million to support Ontario's Climate Change Action Plan, including to help farmers reduce emissions from their operations.
  - Quebec: over $260 million to help expand actions under the province's 2013-2020 Climate Change Action Plan, including new investments to allow farmers to adopt best practices.

[2] Source: https://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/cl16248

Agriculture and Agri-Food Canada/Agriculture et Agroalimentaire Canada

English: http://www.agr.gc.ca/eng/home/?id=1395690825741

Français: http://www.agr.gc.ca/fra/accueil/?id=1395690825741