



NATURAL RESOURCES CANADA - INVENTIVE BY NATURE

Country Report- Canada: Biofuels policies, production and use

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15-16 May 2019

Joint Research Center, Ispra, Italy

In Canada, Energy is a Shared Responsibility

FEDERAL

- International engagement and negotiations
- Trade and investment
- Interprovincial and international energy (pipelines, power lines)
- Nuclear energy, waste and uranium
- Offshore, Nunavut and federal lands

SHARED

- Environmental regulation of new energy projects
- Scientific R&D
- Offshore petroleum in Atlantic Accord Areas
- Interprovincial energy (transmission lines)
- Infrastructure security and resiliency
- Energy efficiency

PROVINCES, TERRITORIES

- Electricity generation, transmission and distribution, including rates
- Regulation of natural resources development within the province
- Land-use and project planning
- Royalty design and collection
- Intra-provincial energy resources infrastructure, distribution, and storage

INDIGENOUS

- Role in energy project assessment and review, as well as decision-making, monitoring and active participation in projects
- Ownership and management of energy systems
- Self-determination of communities

The Pan-Canadian Framework (PCF) is our collective plan to grow the economy while reducing emissions

Ambitious targets of 30% reduction in GHG's by 2030 and 80% by 2050 below 2005 levels.



Pricing on carbon pollution

- At least \$10/tonne in 2018, rising to \$50/tonne in 2020; [How it works](#)



Complementary actions to reduce emissions

- Such as improving energy efficiency, and developing new codes and standards for vehicles and buildings



Adaptation and resilience

- Actions, like new infrastructure to improve resilience and help Canadian's adapt to climate change



Clean technology, innovation, and jobs

- Investing in clean technology innovation to build on Canada's clean tech leadership and provide high quality jobs.

Biofuels policies in Canada

Currently, there are several policies in Canada that target emissions reduction from transportation fuels:

- Federal and Provincial Renewable Fuels Regulations, which mandate minimum renewable fuel blending
- Low Carbon Fuel Requirements Regulation (British Columbia), which requires the average lifecycle carbon intensity (CI) of fuel sold within the province to decline over time.
- Carbon Tax (British Columbia)- increased from \$30/tCO₂e in 2012 to \$40/tCO₂e in April 2019. The tax rate will increase by \$5/tCO₂e each year until it reaches \$50/tCO₂e in 2021.
- Carbon levy (Alberta)- Alberta implemented a \$20/tCO₂e carbon levy, essentially a carbon tax, in 2017, which rose to \$30/tCO₂e in 2018.

Biofuels policies in Canada

- GHG emissions cap and trade (Quebec)- began in 2014 and suppliers of transportation fuels were included as of 2015, The Québec system is linked with the California cap and trade program.
- GHG emissions Cap and Trade (Ontario)- came into force January 1st, 2017, linked with the cap and trade in California and Québec occurring in January 2018. However, the program was cancelled later that year by the newly elected provincial government
- Federal carbon pricing backstop- applies to provinces that do not have in place a carbon pricing system of their own (Saskatchewan, Manitoba, Ontario and New Brunswick)- A carbon price applies to fossil fuels sold in those provinces starting April 1st , 2019. The price starts at \$20/tonne price in 2019 rising by \$10 annually to \$50/tonne by 2022.

Biofuels policies in Canada

Federal Clean Fuel Standard *Proposed* 10-15% CI reduction by 2030 Transportation & Industry/Buildings

BC Low Carbon Fuel Standards

10% CI reduction by 2020

Proposed 15-20% CI by 2030

BRITISH COLUMBIA

RENEWABLE FUEL
IN GASOLINE

5%

RENEWABLE FUEL
IN DIESEL

4%

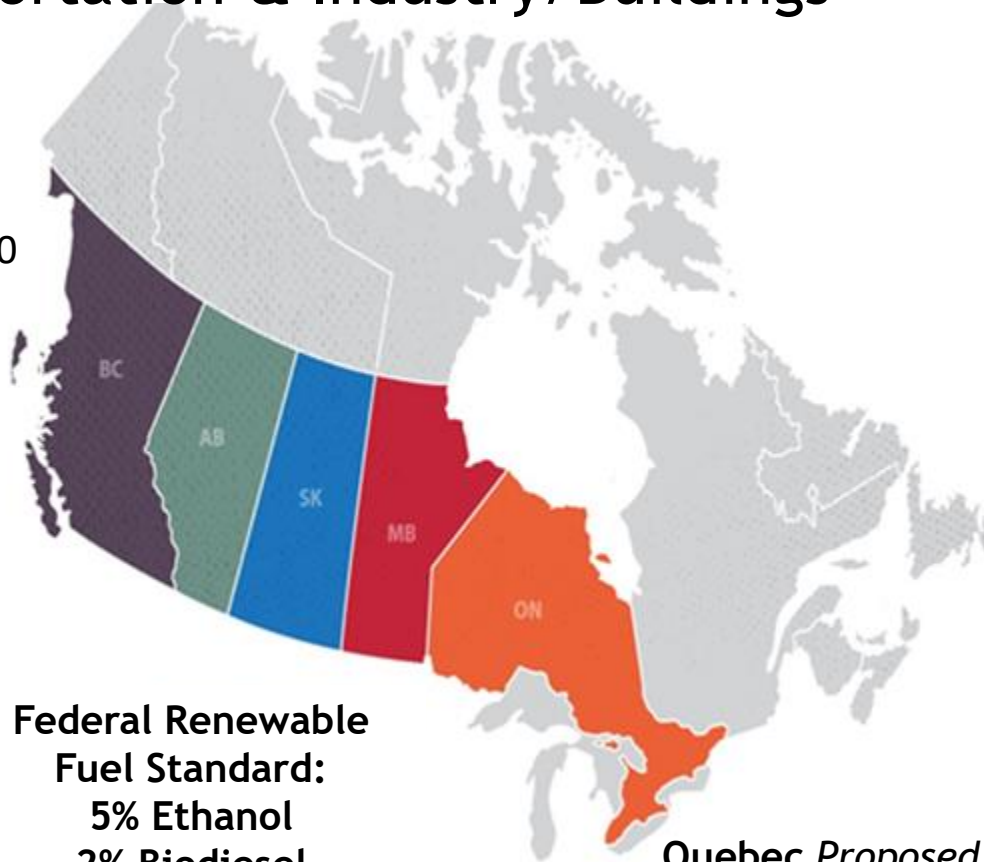
ALBERTA

RENEWABLE FUEL
IN GASOLINE

5%

RENEWABLE FUEL
IN DIESEL

2%



Federal Renewable
Fuel Standard:
5% Ethanol
2% Biodiesel

Quebec Proposed
Ethanol 5%, Biodiesel
2% by 2020

SASKATCHEWAN

ETHANOL

7.5%

RENEWABLE FUEL
IN DIESEL

2%

MANITOBA

ETHANOL

8.5%

BIODIESEL

2%

ONTARIO

ETHANOL

5%

BIODIESEL

2-4%

Federal Clean Fuel Standard (CFS)

- Under the Pan-Canadian Framework on Clean Growth and Climate Change, the Government of Canada is developing the Clean Fuel Standard (CFS).
- The objective of CFS is to achieve 30 megatonnes of annual reductions in GHG emissions by 2030.
- The CFS will apply to a broad suite of fuels used across transportation, industry and buildings, creating demand for bio-based fuels.
- Similar to California and BC LCFS, the CFS will require a reduction in the life-cycle CI of transportation fuels. Unlike these policies, the CFS extends to other liquid fuels outside of the transportation sector, though transportation represents approximately 77% of liquid fuel.
- The final CFS regulation for the liquid fuel stream is expected to be published in 2020, with the policy coming into force in 2022.

Fiscal incentives and investment support

Various types of government support have been provided in Canada for biofuels, spanning across all stages of biofuel supply chain:

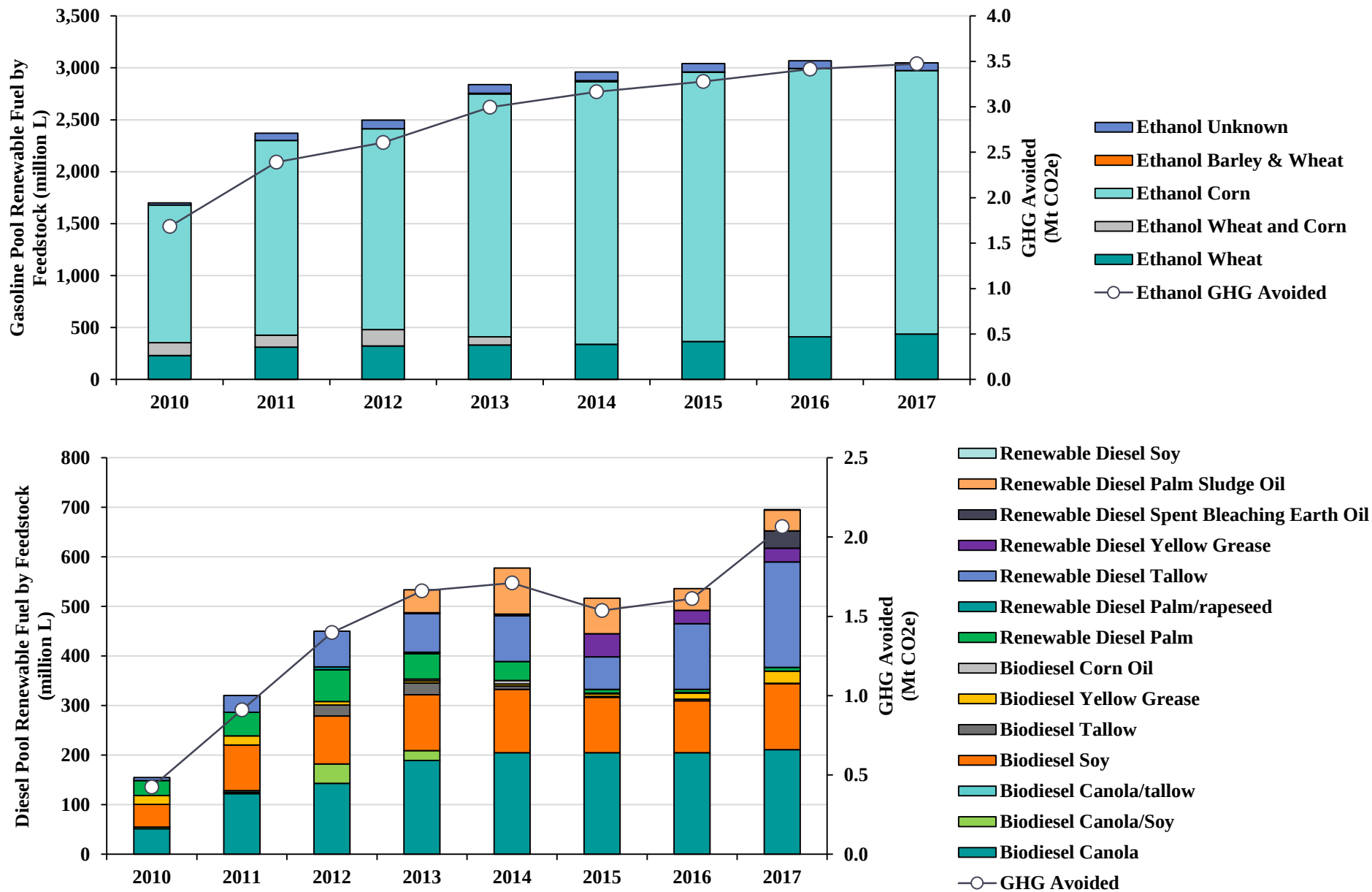
- AgrilInnovation program of Agriculture and Agri-Food Canada
- Agricultural Bioproducts Innovation Program
- EcoEnergy for Biofuels
- The ecoAgriculture Biofuels Capital Initiative
- Program of Energy Research and Development
- NRCan's Clean growth program
- Sustainable Development Technology Canada
- The Sky's the Limit Challenge



International Engagement

- Canada is playing a leadership role in the implementation of Mission Innovation, as a member of the Steering Committee, as co-lead of the Joint Research & Capacity Building and Business and Investor Engagement subgroups, and its participation in the Information Sharing and Communications sub-group
- Canada is also co-leading the Sustainable Biofuels Innovation Challenge - 16 countries looking to make progress towards implementing affordable, advanced biofuels for transportation and industrial applications.
- Canada is one of 20 countries participating in the Biofuture Platform, a government-led international effort to promote accelerated development of advanced low carbon fuels, biochemicals and biomaterials

Biofuels use in Canada, 2010-2017

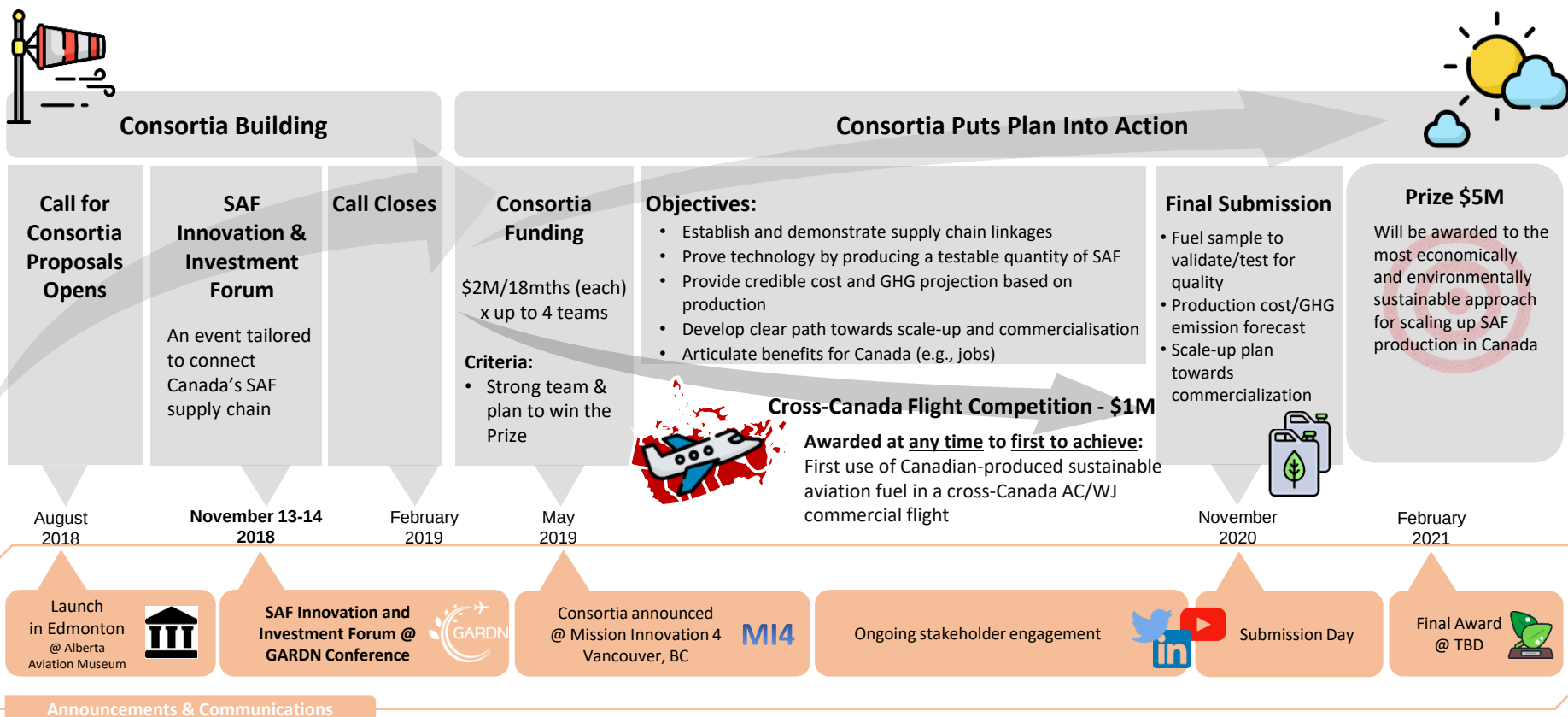


Biofuels Production in Canada

- Given the availability of agricultural feedstocks and an interest to support rural development, a large portion of Canada's ethanol demand is met through domestic production.
- There are currently 11 operating ethanol plants in Canada with an estimated 1.8 billion liters of annual production capacity, which represents about 60% of total ethanol demand.
- On average, the United States supplies 98% of Canada's ethanol imports. As Canada imports ethanol to meet the federal blend mandate, there are generally no ethanol exports.
- Canadian biodiesel production capacity has remained well below domestic demand since 2011, and in 2017 there was no commercial production of renewable diesel in Canada.
- In 2017, there were nine commercial FAME biodiesel production facilities in operation with total national biodiesel production capacity of 591 million liters per year.

The Sky's the Limit Challenge

Seeking a Canadian breakthrough in green aviation fuels



Green Aviation Fuels Innovation Competition

Round 1: Finalists

Up to \$2M in project support per finalist

Aug 17, 2018: Call for proposals is open

Nov 13, 2018: Sky's the Limit session
@GARDN Conference in Ottawa

Feb 2019: Deadline to submit your plan

May 2019: Top 4 teams announced

Submit a Plan that includes

- Consortium-building capacity
- Technological innovation
- Business innovation
- Supply chain integration
- Resource commitment and approach to developing Canadian SAF by 2021

Round 2: Winner

\$5M prize

Nov 2020: Submit 10L sample of SAF with

- Demonstrated SAF content
- Best SAF (lowest cost with the highest potential for GHG emissions reduction)
- Best scale-up potential
- Best economic benefits to Canada

March 31, 2021: Grand Prize winner announced

Cross-Canada Flight Competition

March 2019: the Competition begins

January 2021: the Competition closes

By March 31, 2021: 1 Million \$ announced to the First Canadian SAF producer to supply Canadian-produced SAF for use in a commercial flight:

- 2500 L of SAF meeting CGSB/ASTM standards, with GHG emissions that are a minimum of 10% lower than that of conventional aviation fuel, delivered to a Canadian airport
- Air Canada/WestJet Cross-Canada flight of approx. 3000 km at a minimum of 10% blend
- Achieves a Canadian first, establishes proof of concept for a SAF supply chain in Canada, and increases awareness of SAF as part of the climate change solution



- 1 Outlines B.C.'s plan to reach our 2030 climate targets
- 2 Lays out actions that credibly reduce our emissions, with sector-by-sector approach to transportation, buildings, and industry
- 3 Is fully funded, with program specific details in the 2019/2020 Budget

WHAT'S IN CLEANBC



- Moving from fossil fuels to lower carbon substitutes including clean electricity
- Partnering with business to create a low-carbon industrial strategy
- CleanBC is a clear path to our 2030 targets – describing specific GHG reductions for first 75%, with the remaining 25% to be identified over the next 18-24 months
- **18.9 Mt of GHG reductions:**
 - 6.0 Mt reduced from cleaner transportation initiatives
 - 2.0 Mt reduced from improving where we live and work
 - 8.4 Mt reduced from cleaner industry initiatives
 - 0.7 Mt reduced from waste
 - 1.8 Mt reduced from carbon pricing

WHAT'S IN CLEANBC



Government is committed to:

- Meeting our GHG reduction targets
- Growing a prosperous low-carbon economy
- Making sure cleaner options are affordable
- Working towards reconciliation with Indigenous peoples
- Creating more opportunities for businesses
- Helping workers get the skills they need



REACHING OUR 2030 TARGETS



Pathway to meeting our climate goals

