LCBA
LOW CARBON BUSINESS ACTION
CANADA

Funded by
the European Union

KEY SECTOR OVERVIEW
AGRICULTURE

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AGRICULTURE

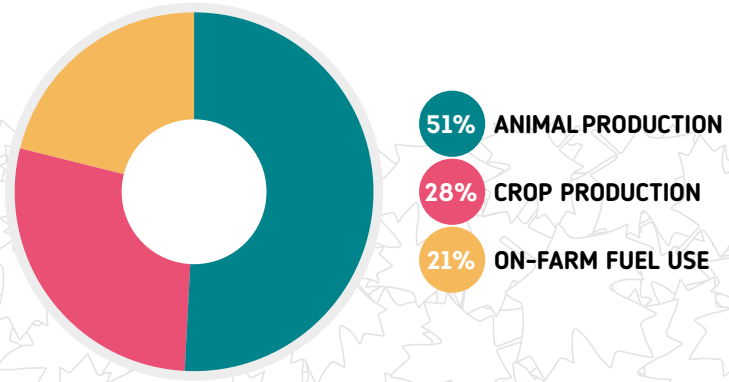
OVERVIEW

Canada's agriculture sector is a vital contributor to the economy and a key player in the transition to sustainable food systems. With vast arable land and a strong export market, Canada is a global leader in agricultural production, particularly in grains, livestock, and oilseeds. With a growing emphasis on reducing emissions, cutting waste, improving water efficiency, and enhancing soil health, the sector is ideal for clean technology solutions. From precision farming and bio-based fertilizer solutions to energy-efficient processing and sustainable irrigation systems, there are abundant opportunities for clean tech providers to help farmers meet sustainability goals and boost productivity. As demand for sustainable agricultural practices rises globally, Canadian farmers and processors are poised to be leaders in sustainable food production and processing, making the sector a prime area for innovation and investment. Canada's agricultural sector includes farming activities, crop and animal production.

AGRICULTURE REPRESENTS

- 10% of Canada's total greenhouse gas emissions, the fifth-largest emitting economic sector.
  - The sector generates a total of 69 million tonnes CO_2 equivalent annually.
  - Agricultural soils store 18 million tonnes CO_2 equivalent annually, offsetting about 26% of the sector's annual emissions.
- Rising water consumption, with agricultural irrigation increasing by 23% from 2020 to 2022 due to climate change-induced drought conditions.
- Significant contributor to Canada's economy, contributing $150 billion in 2023, accounting for about 7% of the country's GDP.
- One of the world's largest exporters of agricultural and food products and one of Canada's sectors with the greatest potential for economic growth.

Emissions from Canada's Agriculture Sector



Source: Environment and Climate Change Canada. (2024). National Inventory Report, 1990-2022: Greenhouse Gas Sources and Sinks in Canada. Available online at: canada.ca/ghg-inventory

DRIVERS & LEADERSHIP

- Policies are driving a shift toward more sustainable and climate-resilient farming practices while aiming to maintain economic competitiveness and food security.
- Targeted incentive programs support adoption of green energy, precision agriculture, and bioeconomy related technology.
- Canada's focus on methane emissions reduction is driving a need for new solutions in livestock and manure management.
- Canada's target of reducing fertilizer emissions by 30% below 2020 levels by 2030 is spurring demand for innovation in nutrient management practices.
- The $3.5 billion Sustainable Canadian Agricultural Partnership is focused on strengthening competitiveness, innovation, and resiliency in the sector.

CLEANTECH CHALLENGE AREAS

Addressing water scarcity and climate-induced drought conditions through improved irrigation efficiency, digital water monitoring, and precision agriculture technologies.

Reducing livestock-related emissions through new solutions such as methane inhibitors, optimized manure management, and improved feed efficiency.

Innovative solutions in fertilizer reduction and substitution that can balance productivity and sustainability in agricultural practices, such as enhanced efficiency fertilizers (EEFs), bio-fertilizers, and nutrient recovery systems to minimize nitrous oxide emissions.

Decarbonizing farm operations by transitioning to electric, hydrogen, and biofuel-powered farm equipment while overcoming cost barriers and infrastructure limitations.

Enhancing resource efficiency through precision agriculture and vertical farming to optimize land use, inputs, and water use.

Managing agricultural waste through solutions such as biodigesters and biofuel production to convert organic waste into renewable energy sources.

OPPORTUNITIES: AREA OF ALIGNMENT WITH EU STRENGTHS & SOLUTIONS PROVIDERS

Fertilizer Reduction & Nutrient Runoff Prevention

EU has innovation in non-synthetic, PFAS-free alternatives and innovation around slow release and encapsulation.

Sensory & Digital Surveillance Technologies

EU has solutions in remote sensing, aerial imaging, and digital surveillance technologies.

Alternative Protein Production

EU is a market leader in plant-based production. The EU is active in alternative protein sectors, particularly in algae and plant-based proteins. Several alternative dairy innovators using advanced fermentation techniques.

Methane Minimization from Livestock Digestion & Manure Management

EU is ahead on innovation and adoption of solutions in methane reduction in livestock, with innovations in improved feed efficiency, better manure management, and methane inhibitors.

Agricultural Waste Management (such as Biodigesters)

Select innovation in this field in the EU that could be applicable to Canada.

Biofuel Production

Some EU innovators in this area, specifically focused on agri-food feedstocks for biofuel, with potential for Canadian application.