LOW CARBON BUSINESS ACTION
CANADA

Funded by
the European Union

KEY SECTOR OVERVIEW
TRANSPORTATION

LCBA LOW CARBON BUSINESS ACTION CANADA

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TRANSPORTATION

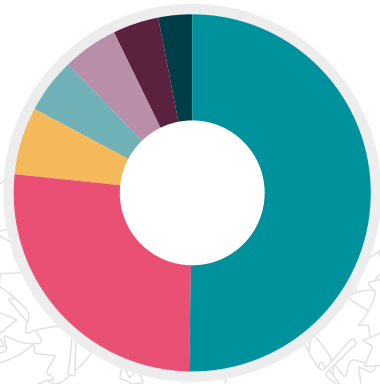
OVERVIEW

Canada's transportation sector is a vital part of the economy, facilitating the movement of goods and people across vast distances through roads, rail, aviation, and marine. As one of the largest countries in the world, Canada's transportation infrastructure is key to connecting cities, provinces, and international markets. The transportation sector is undergoing a significant transformation with a focus on reducing emissions and enhancing efficiency through the adoption of clean technologies. With a strong emphasis on electric vehicles (EVs), hydrogen fuel cells, sustainable biofuels, and intelligent transportation systems, Canada is advancing towards a low-carbon future. Supported by federal and provincial policies aimed at achieving net-zero emissions, the sector presents substantial opportunities for clean technology providers to contribute to the development and deployment of innovative solutions across road, rail, marine, and aviation. The transition to sustainable transportation is a critical area of focus, offering a promising landscape for technology-driven solutions.

TRANSPORTATION REPRESENT

- Canada's 2nd largest source of emissions, 22% of total emissions.
  - 156 million tonnes of CO_2 equivalent annually.
  - Passenger transport accounts for the largest share at 58% of emissions, while freight accounts for 33% of emissions.
- $81.4 billion annual GDP contribution (3.9% of Canada's GDP).

Emissions from Canada's Transportation Sector



- 50% ROAD, LIGHT-DUTY
- 26% ROAD, HEAVY-DUTY
- 6% PIPELINE
- 5% OFF-ROAD
- 5% AVIATION
- 4% RAIL
- 3% MARINE

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

- Transportation is a key focus for climate mitigation, and fuels must be low carbon or non-emitting to reach Canada's net zero targets.
- Policies are centered around a shift from fossil-based fuels to alternative fuel and propulsion technologies such as biofuels, hydrogen, and electric vehicles.
- A suite of complementary policies (Canada's clean fuel standard, carbon pricing, electric vehicle mandates, and targeted funding for biofuels production) is increasing the cost of fossil-based fuel production, incentivizing the shift to decarbonized transportation.
- The Emissions Reduction Plan mandates 100% zero-emission vehicles for light-duty vehicle sales by 2035 and 35% zero-emission medium/heavy-duty vehicle sales by 2030.

CLEANTECH CHALLENGE AREAS

Battery technology to enhance the range and efficiency of long-haul and heavy-duty electric trucks.

Hydrogen-powered fuel cell electric vehicles for long-haul and heavy-duty transport, along with advancements in electrolysis, alternative hydrogen production methods, and fueling infrastructure.

Innovations in engine compatibility and performance to facilitate greater integration of biofuels such as renewable diesel into fuel streams.

Feedstock processing and production methods for Sustainable Aviation Fuel (SAF) derived from renewable feedstocks.

E-methanol, produced using renewable hydroelectric resources, is a key area of interest for maritime decarbonization. Scaling production involves reducing electrolysis and DAC costs, alongside integration of renewable energy use.

Low carbon ammonia for zero-emission vessels. Scaling CCS-enabled ammonia requires efficient systems, renewable energy integration, and secure CO_2 sequestration.

OPPORTUNITIES: AREA OF ALIGNMENT WITH EU STRENGTHS & SOLUTIONS PROVIDERS

Decarbonization of Heavy-duty Fleets

EU policy leadership in ICE phase-outs and vehicle mandates is driving innovation in electric heavy-duty vehicles. Most major HDV OEMs have released electric alternatives with potential for Canadian adoption.

Engine Tech to Accommodate High % of Alternative Fuels

There has been notable progress in the EU, especially in the maritime sector, with EU OEMs developing engines capable of using alternative fuels. Additionally, off-road HDVs could be a market for EU technology.

Transportation Infrastructure and Vehicle Electrification

Countries like Germany, the Netherlands, and France have made progress in building electric vehicle infrastructure, including expanding HDV charging networks, with expertise to be leveraged.

Fleet Advanced Logistics and Data Analytics

Urban areas in Europe are increasingly integrating fleet analytics, particularly in waste management.