



KEY
SECTOR
OVERVIEW
**HEAVY INDUSTRY
CHEMICALS &
FERTILIZERS**



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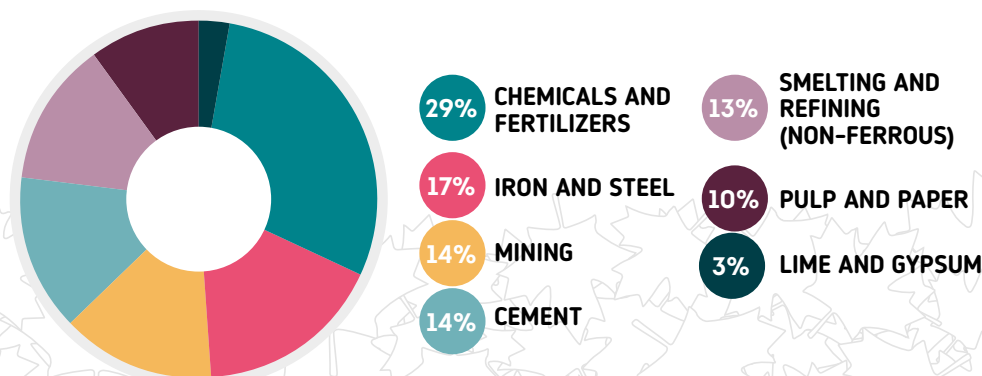
OVERVIEW

Canada's chemical and fertilizer industry is a subsector of Canada's heavy industry sector and includes the production of chemicals and products through chemical processes. The sector provides critical inputs to other economic sectors such as manufacturing, agriculture, pharmaceuticals, and energy. Canada's chemical and fertilizer sector presents significant opportunities for decarbonization, driven by its substantial emissions and export exposure. As the industry works to improve its sustainability performance, there is growing demand for clean technologies that support emissions reductions, energy efficiency, waste recovery, and feedstock diversification. For technology providers, this presents a clear opportunity to support an established sector in its transition toward more sustainable production.

CHEMICALS AND FERTILIZERS REPRESENT

- Chemicals and fertilizers account for 30% of emissions from Canada's heavy industry sector, making it the largest source of emissions within heavy industries.
 - The chemical industry generates a total of 23 million tonnes of direct greenhouse gas emissions annually.
 - Majority of emissions footprint is in Alberta (65% of emissions) and Ontario (20%).
- Significant contributor to Canada's economy: \$22.9 billion annually in GDP (1% of Canada's GDP), shipments totaling \$74.8 billion, exports of \$48 billion, and imports of \$83.8 billion.

Emissions from Canada's Heavy Industry 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

- Canada's industrial carbon pricing systems establish long-term financial incentives for companies to continuously reduce emissions.
- The Chemical Industry Association of Canada, representing over 50 chemical companies, supports Canada's goal of net-zero by 2050.
- Circularity, which emphasizes resource efficiency and the reuse of materials, is reshaping the chemical and plastics industry.
- Regulatory pressures and consumer demand are accelerating a transition toward recyclable or biodegradable alternatives.



CLEANTECH CHALLENGE AREAS



Decarbonizing high-temperature chemical processes and transitioning from traditional fossil fuel energy sources to electricity and low-carbon alternatives (e.g., electrified steam cracking, industrial heat pumps).



Retrofitting facilities with carbon capture, utilization, and storage (CCUS) to capture and store CO₂ from emissions intensive industrial production sites. Operational challenges include high energy use, storage capacity, and costs.



Substituting fossil-fuel based feedstocks used in chemical production processes with renewable and sustainable feedstocks such as biomass and hydrogen. Scalable low carbon hydrogen production methods could replace natural gas for ammonia and methanol production.



Enhancing circularity through improved chemical recycling methods. Advanced chemical recycling could reduce fossil dependency by replacing virgin feedstock with recycled materials.



Reducing energy consumption through heat integration and technologies such as waste heat recovery and low-temperature cracking that can reduce emissions and improve production efficiency.

OPPORTUNITIES: AREA OF ALIGNMENT WITH EU STRENGTHS & SOLUTIONS PROVIDERS

Low-Carbon Ammonia

EU policy leadership and the geopolitical landscape are driving innovation in green ammonia with potential for Canadian adoption.

Energy Efficiency & Management

Broad applicability across the sector and opportunity to leverage EU expertise.

Renewable Feedstocks

Growth in pyrolysis and circular bioeconomy solutions has been observed in the EU.

Electrification of Equipment & Processes

Most technology providers in this space are from the EU, presenting an opportunity for Canadian matchmaking.

Fuel-Switching & Clean Fuels

Hydrogen is a key component of the EU's energy transition strategy and a particular area of opportunity with established solutions providers.

Circularity & Advanced Recycling

The leading corporates investing in technologies and innovation for plastic recycling (specifically textiles and packaging) are EU-based.

CCUS

Increasing focus on fuels production in the EU with expanding market players.

