

COUNTRY FACTSHEET

CANADA

WHAT ARE THE NATIONAL CIRCUMSTANCES THAT INFLUENCE DEEP DECARBONIZATION IN CANADA?

- ▶ A preponderance of energy intense primary extraction and other heavy industry. Canada has lots of relatively inexpensive fossil fuel resources, which has in the past formed a competitive advantage that brought much heavy industry to the country. Just fossil fuel production for exports adds 2.73 tonnes CO₂e per capita of a national average of 20 tonnes per capita.
- ▶ Resources endowment. A large, sparsely populated country with temperature extremes. Compared to other G7 countries, the country's large size and extreme summer and winter temperatures add transportation and heating and cooling emissions equivalent to 1.43 tonne CO₂e per capita.
- ▶ High trade sensitivity. Canada typically exports ~80% of its GDP.
- ▶ Large renewables and carbon storage resources. Besides being large, the country has a large wind, solar and ocean energy potential relatively near load centres. It also has a very large potential CO₂e storage reservoir in deep saline aquifers (~800m) underlying Northeast British Columbia, Alberta and Saskatchewan, large enough to absorb any amount of emissions in a future that eventually transitions to renewables.
- ▶ Large non-food crop biofuel feedstock. Canada has a large previously active agricultural base, especially in Eastern Canada, from which switchgrass can be grown for making liquid cellulosic ethanol.

CONTACT:

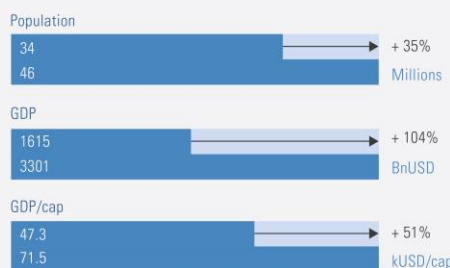
- ▶ Carbon Management Canada
- ▶ Navius Research Inc.

WHAT ARE THE MOST PROMINENT STRATEGIES TO BE IMPLEMENTED FOR DEEP DECARBONIZATION IN CANADA?

- ▶ *Electrification.* The electricity would be made from a mix of expanded hydropower, wind, solar, and natural gas with carbon capture and storage.
- ▶ *Energy efficiency.* The biggest potential is in personal and freight transport, where a gain of at least 50% from today's efficiency levels is eventually possible, but in residential and commercial buildings as well. End-use electrification is typically characterized by a jump in efficiency compared to the direct use of fossil fuels (of course depending on how the electricity is made).
- ▶ *Biofuels and electrification in long- and short-haul personal and freight transport.* As mentioned above, Canada has a large land base from which switchgrass can be grown for making liquid biofuels.

Illustrative pathway: CA - Oil price moderate*

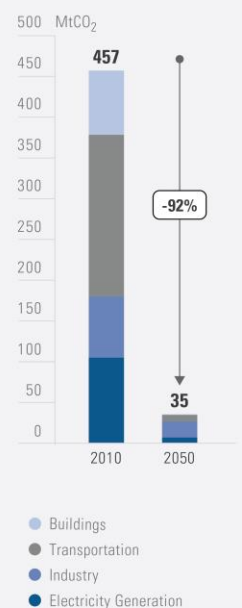
Development indicators from 2010 to 2050



Pillars of decarbonization from 2010 to 2050



Energy-related CO₂ Emissions



*This illustrative pathway is one of the 3 pathways developed in the DDPP country report.