

Economic and Emissions Impacts of Fuel Decarbonization



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Canadian Energy Research Institute

Overview

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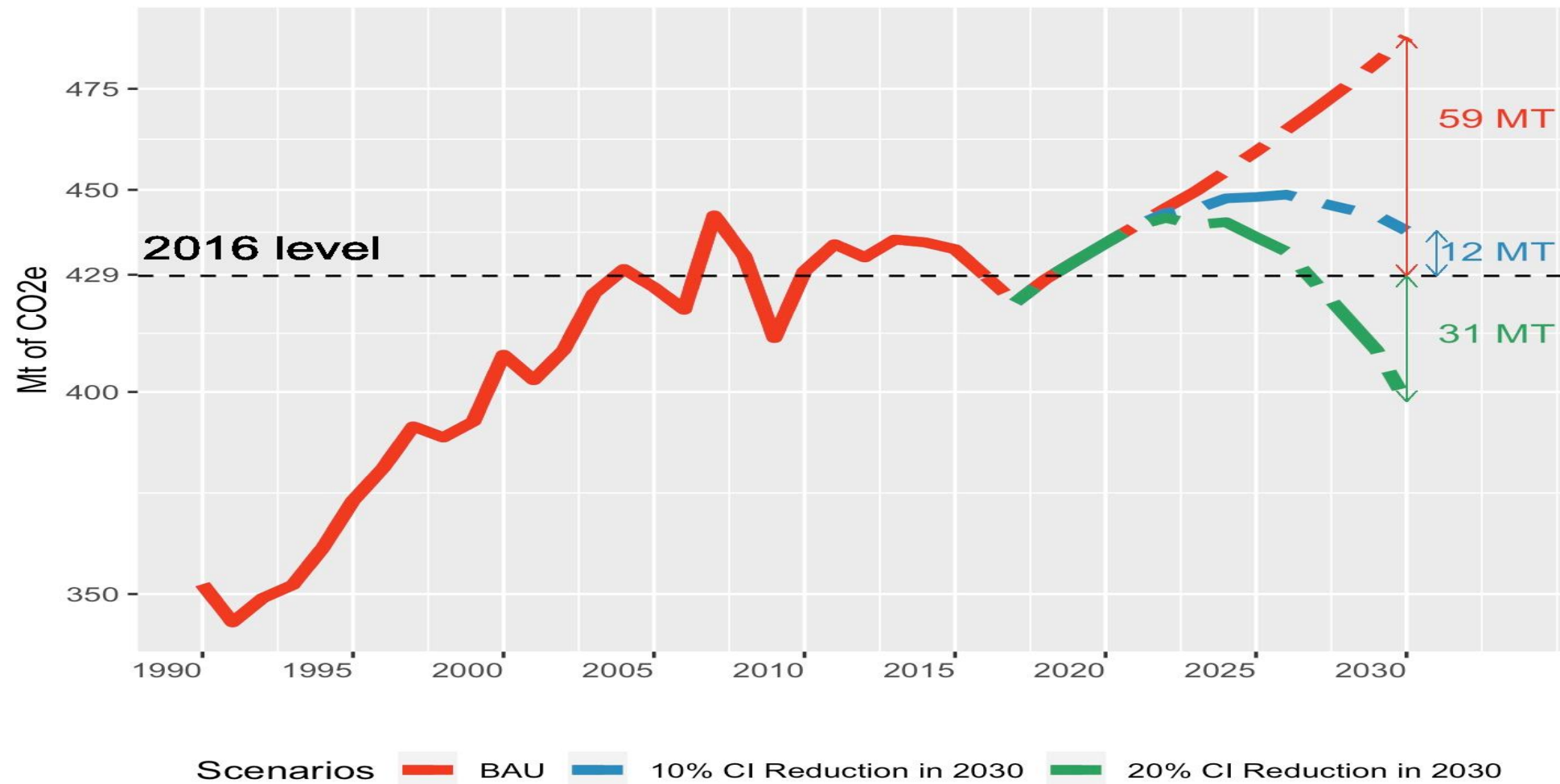
Assumptions

- Scenario-based approach for all affected fuels and sectors

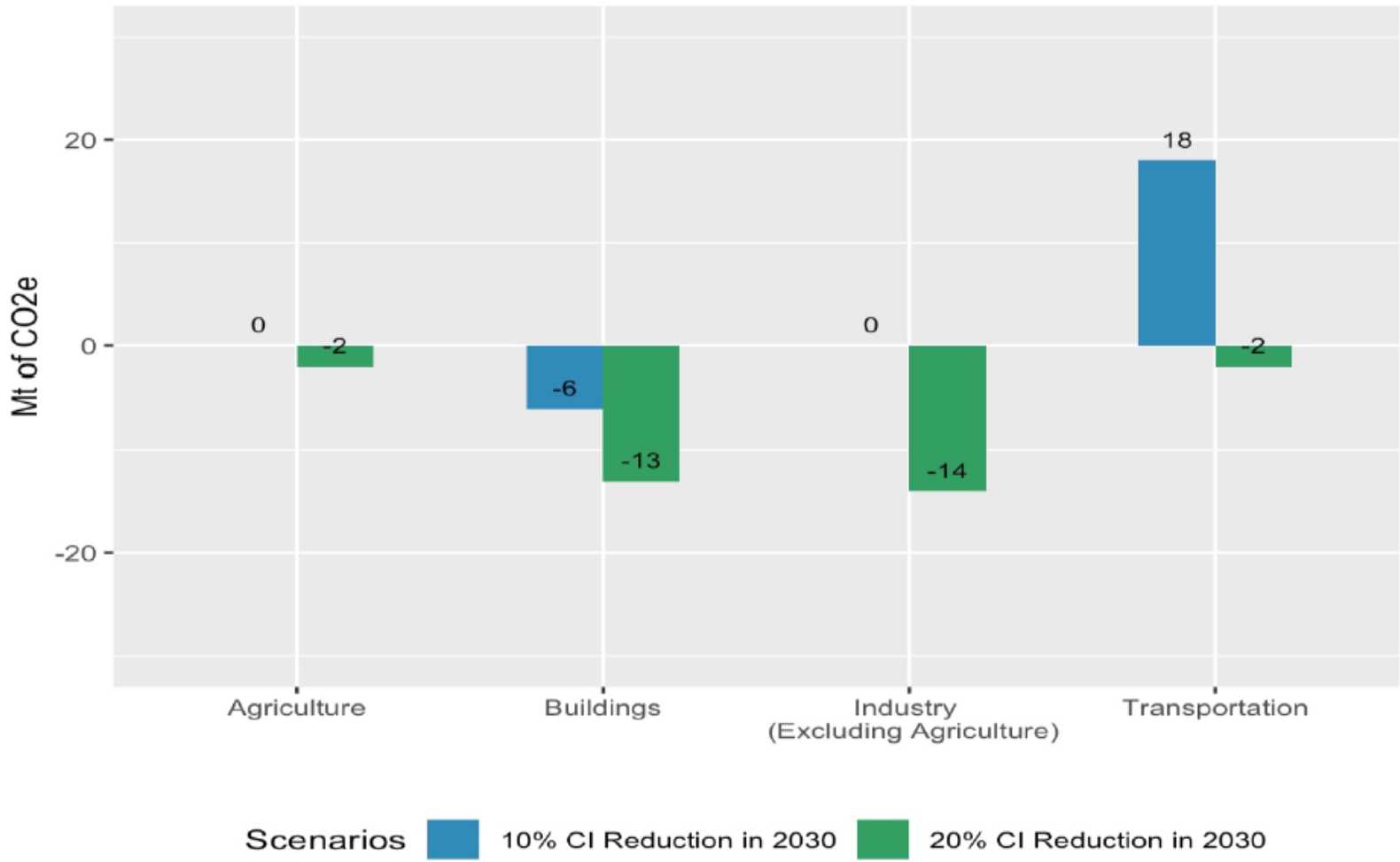
Parameter	BAU	10% CI Reduction	20% CI Reduction
Base Year	2016	2016	2016
CI starting values	Renewable Fuel content only	As reported by ECCC	As reported by ECCC
CI Base Year		2018	2018
CI Reduction enforced		2022 – liquids/2023 – gaseous, solids	

- Gradual CI reduction schedules to reach 10% and 20% CI reduction scenarios in year 2030
- Energy demand for buildings and transportation sectors – CERI's proprietary Stock-rollover models for houses/eq. stock and vehicle stock
- Industrial energy demand – I/O takes for the year 2015
- Energy demand in BAU scenario is increasing
- \$200 credit price is assumed

Emissions Reductions vs Avoided Emissions



Where Emission Reductions Come From?



Cost Impacts, \$200 Credit Price



Household



Industry



Oil and Gas



Agriculture



Electricity



Passenger



Freight



Rail, Avia,
Marine



	Household	Industry	Oil and Gas	Agriculture	Electricity	Passenger	Freight	Rail, Avia, Marine	Total
10%	\$1,395	\$3,322	\$1,007	\$389	\$868	\$1,149	\$1,237	\$553	\$7.6B
20%	\$2,791	\$6,645	\$2,014	\$780	\$1,737	\$2,299	\$2,475	\$1,109	\$15.3B
10%	+\$42	6% ↑				+\$31	+\$150/vehicle		
20%	+\$84	13% ↑				+\$62	+\$300/vehicle		

Conclusions

- The largest emission reductions can be realized in the very energy-intensive transportation sector, followed by the industrial sector.
- In the case studies of higher penetration of electric vehicles and/or stricter CAFE standards, emission reductions are achieved with a smaller carbon intensity reduction
- Fuel standard would cost more than carbon pricing on a per-tonne basis.
- Although fuel standards are less cost-effective than carbon pricing, these standards are complimentary to carbon pricing to reduce emissions, since carbon pricing does not cover all sources of emissions.

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