Simon Langlois-Bertrand, Research Associate, IET
Normand Mousseau, Professor of Physics, Université de Montréal
and Scientific Director, IET
With contributions from Louis Beaumier, Executive Director, IET

March 2nd, 2022

WEBINAR

Canada's 2030 Emissions Reduction Plan

the IET Proposal

IET Mission

- The **academic training** of a new generation of engineers, scientists and innovators with a *systemic* and *trans-disciplinary* understanding of energy issues;
- The **research** for sustainable solutions for our energy future, while supporting knowledge generation and innovation in the energy sector to help face the coming decades challenges;
- The **dissemination** of knowledge on energy related topics, contributing to the *societal dialogue* on energy issues.

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Why this plan?

The *Canadian Net-Zero Emissions Accountability Act,* adopted on June 29, 2021, requires the Minister of Environment and Climate Change to publish a description of the key greenhouse gas emissions reduction measures the Government of Canada intends to take to achieve that target

The *2030 Emissions Reduction Plan*, detailing actions to 2030 along with a midpoint greenhouse gas objective for 2026, **must be submitted by the Minister at the end of March 2022 at the latest**.

To support this plan, the Institut de l'énergie Trottier *offers its own analysis of what must be done on a sector-by-sector basis on the 2026 and 2030 horizons.*

This report builds upon considerable work

Pathways to net zero

A decision support tool

The Transition Accelerator

WITH THE SUPPORT OF Smart Prosperity Institute

Canadian Energy Outlook – Horizon 2060

HORIZON 2060

Canadian Energy Outlook – 2021 –

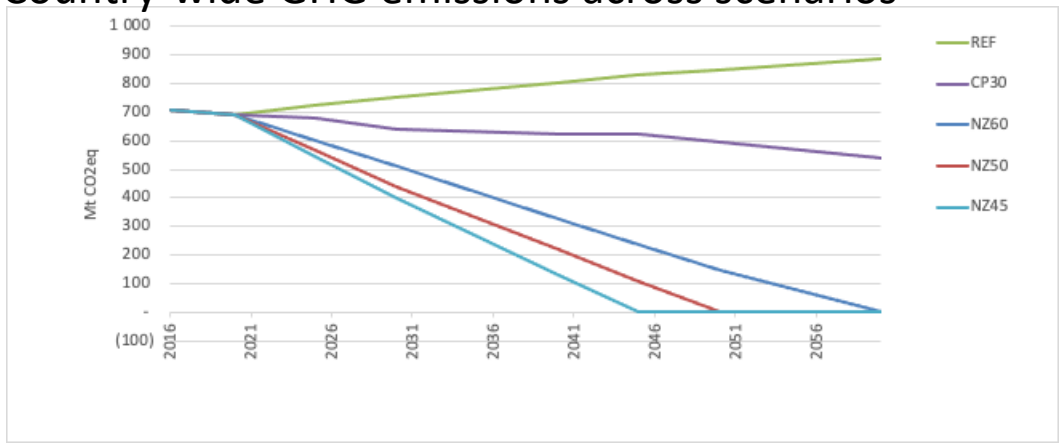
INSTITUT DE L'ÉNERGIE TROTTIER

e3cHub HEC MONTRÉAL Environment, energy and circular economy

Modelling: ESMIA

Financial support: TROTTIER FAMILY FOUNDATION

Country-wide GHG emissions across scenarios



Evolution of Canada's GHG emissions by sector

A bit of context

1. All preliminary data point to a rebound in emissions after the pandemic year 2020 – failure to start reducing emissions
2. Main actors are not moving at the right speed
    1. Provinces
        1. Land-use (especially linked to pandemic)
        2. Vehicles
        3. Buildings
        4. Subsidies
    2. Utilities
        1. Upgrades
        2. Decarbonization
        3. Production
    3. Industries

2030 target : 443 Mt.CO_2e	Canadian GHG Inventory			CEO2021 (2030)		
Mt.CO_2e	2014	2019	2030 (Trend)	REF	CP30	Wrt 2019
Public electricity and heat prod.	84	69	36	75	33	-52%
Energy prod. (O&G)	111	120	140	131	115	-4%
Industrial comb.	55	54	50	66	56	+4%
Buildings (C&I)	31	34	41	33	30	-12%
Buildings (Res.)	41	42	44	31	30	-29%
Transport	199	217	257	230	213	-2%
Fugitive sources	63	54	34	64	57	+6%
Industrial proc.	54	54	54	42	34	-27%
Agriculture	58	59	61	65	65	+10%
Waste	27	28	30	18	8	-71%
TOTAL	723	731	747	755	641	-12%
WRT to target	98%	99%	101%	102%	87%	

Guiding principles for the 2030 plan

The plan must follow key guiding principles:

1. **All measures and policies must be compatible with net-zero at the 2050 horizon**
2. **Lesser reductions in some sectors and higher expectations in others, does not mean that transformation should not occur across the board**
3. **Effectiveness is contingent on measuring progress and adjusting**

The IET Plan

1. Focuses on critical steps to be taken
2. Takes into account the short time to 2030 and the historical inertia across Canada
3. Tries to set-up motion across sectors
4. Does not include behavioral effects
5. Takes account of the fact that energy efficiency has always underdelivered

Our analysis is therefore based both on our extensive modelling, with ESMIA, and in-depth analysis of sectoral challenges and trends

Electricity

To be achieved:	Measures proposed
By 2026: Investments plans to decarbonize through electrification toward 2030 GHG reduction targets	**1. Finance infrastructure upgrades to allow for the expected changing patterns in demand** **2. Incentivize increased interprovincial trade** **3. Avoid allowing remaining emissions from electricity production in provinces where other options are economically viable**
By 2030: 75% overall reduction with respect to 2019 in emissions from electricity sector achieved Grid upgrade achieved to meet the country-wide 2030 GHG reduction target Investments plans compatible with 2035 and 2040 targets, including significant increase in production	

Buildings

To be achieved:	Measures proposed
By 2026: Net-zero, high-efficiency building codes defined and adopted across Canada No new buildings using fossil fuels from 2024 Peak demand management code developed and adopted for all buildings across Canada Emissions from the building sector down 15% from 2020 levels.	**1. Regulate and finance commercial building transformations toward low emissions and high energy efficiency** **2. Ban high-emission energy options like natural gas for space heating, both those for new buildings and those requiring an expansion of gas distribution networks for existing buildings, starting January 1, 2024** **3. Impose zero-carbon winter peak demand management for upgraded buildings** **4. Determine the precise role that district heating could play in some regions of the country where it is applicable**
By 2030: 45% GHG emission reduction in buildings achieved National roadmap developed to fully decarbonize buildings by 2040.	

Industry (outside of oil and gas)

To be achieved:	Measures proposed
By 2026: Zero-emission heat code for low and medium heat Deployment of low-carbon solutions in 10% of industries Clearly targeted roadmap for the decarbonization of all major industrial processes with defined reductions horizons 10% GHG emission reduction achieved (for heat)	For heat production: **1. Increase the stringency of the output-based pricing system currently in place.** **2. Assess the potential for waste heat recovery in heavy industry** **3. Design and implement programs for assembly/building of industrial heat pumps.** For industrial processes: **4. Develop roadmaps for technological transformations in key industrial processes,** **5. Identify industrial processes where carbon capture and storage solutions are unavoidable**
By 2030: No new fossil fuel industrial use in low/medium heat context from 2030 40% GHG emissions reduction (heat) and 30% (achieved (industrial processes)	

Transport

To be achieved:	Measures proposed
By 2026: Investment plans for heavy transport adopted Electricity infrastructure able to accommodate new EVs everywhere across Canada ZEV mandate designed for all vehicles Plateau in GHG emissions in the transport sector First-generation biofuels are banned.	**1. Finance and incentivize the rapid installation of EV charging infrastructure** **2. Regulate the expansion of natural gas distribution networks for heavy or medium commercial transport to avoid locking in its use for several decades** **3. Revision of the clean-fuel standard to protect the agri-food sector and negative emissions technologies.**
By 2030: First commercial-scale infrastructures in place for heavy transport 10% GHG emissions reduction achieved in the transport sector.	

Oil and gas

To be achieved:	Measures proposed
By 2026: Third auction for cap-and-trade system concluded or in progress 30% GHG emissions reduction achieved for the sector.	1. **Implement the hard cap on emissions from the sector announced by the federal government last fall through a cap-and-trade mechanism specific to the oil and gas sector**. 2. **Provide support to offset any negative economic impacts from decarbonization on communities and workers, proportional to the economic disruption caused by meeting specific targets**.
By 2030: 60% emission reduction achieved for the sector.	

LULUCF, biomass, CCS

To be achieved:	Measures proposed
By 2026: National plan for biomass allocation and resource management in place Pilot deployment of CCS infrastructures for negative emissions electricity production and where direct GHG reduction solutions are not available	**1. Design and implement a national plan including guiding principles for managing biomass allocation and use** **2. Support research on LULUCF in a changing climate**. **3. Support CCS development for negative emission activities and where direct GHG reduction solutions are not available**
By 2030: Commercially viable negative emission CCS plants contributing to 10-25 MtCO2e in operation outside the oil and gas sector.	

Governance objectives necessary to success

Governance gaps must be closed to ensure that measures are effective:

1. **Provide up-to-date information on national and provincial GHG emissions**

2. **Fill the expertise gap for the development of efficient measures targeting GHG emissions**

To be achieved by 2023:

- National and provincial GHG emissions available every six months to follow impact of measures
- Mechanism of a yearly independent assessment of progress and projected impact of measures in place
- Creation of a federal agency supporting GHG reductions and adaptation across departments.

Conclusions

- The main goal of the first Federal Emission Reduction Plan must be to send a clear signal to all stakeholders that the **objectives are to be taken seriously and acted upon on a very short time scale.**
  - This is not happening today in any major sector including electricity, buildings, industry, transport
  - Yet, the Federal government cannot get moving without all other stakeholders getting on board
- Since Canada has never managed to reduce its emissions, in spite of billions $ in GHG-reduction related expenditure, it is more than likely that all the reductions underlined in the IET plan will not occur by 2030. **Our estimate is that, with serious efforts at all levels, Canada can reduce its emissions by 25 % on the 2030 horizon**
- **Focus today should be on changing the trend and engaging seriously on the path to net-zero, not on more aggressive targets**. These can be revised once motion is in place.

Thank you

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