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Durham's Greenhouse Gas Emissions – For Good Measure

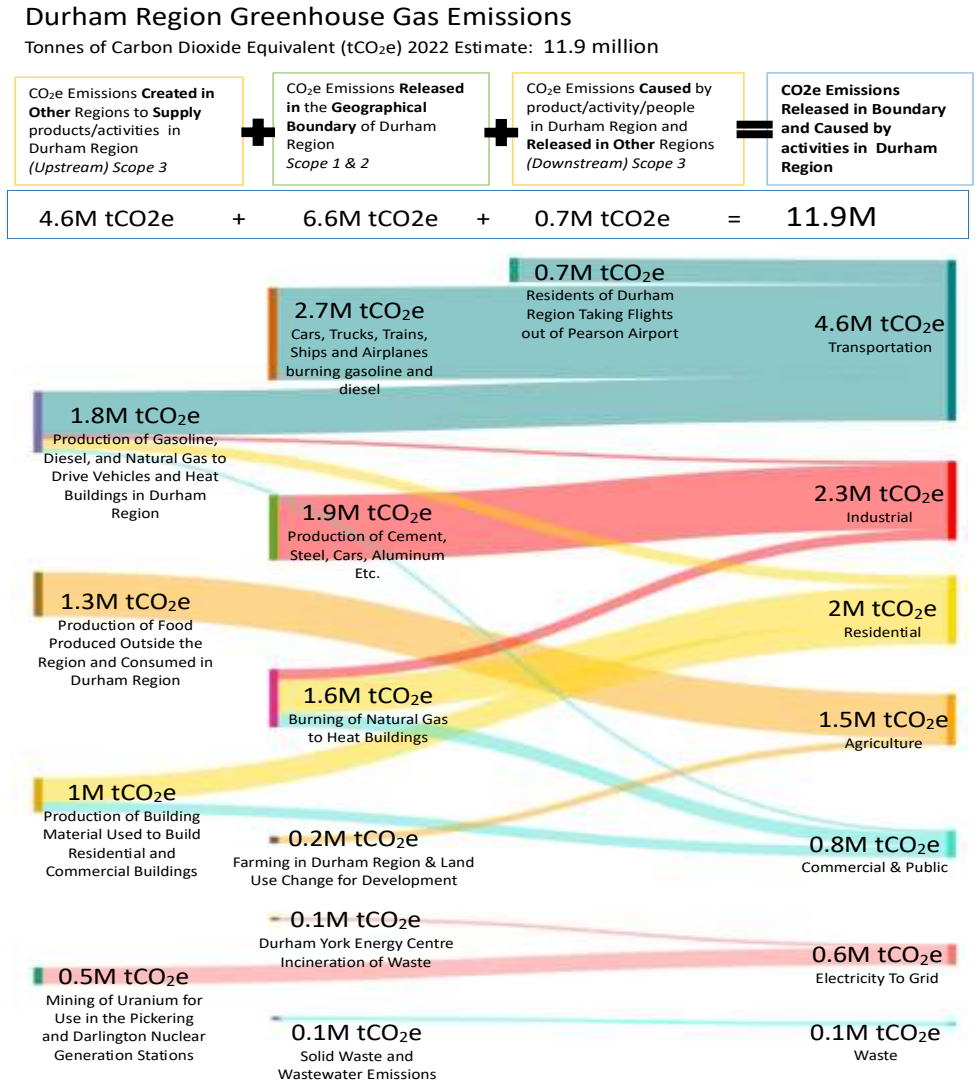
Region of Durham, November 2023

Durham Region Greenhouse Gas (GHG) emissions Scopes 1, 2, & 3, 2022

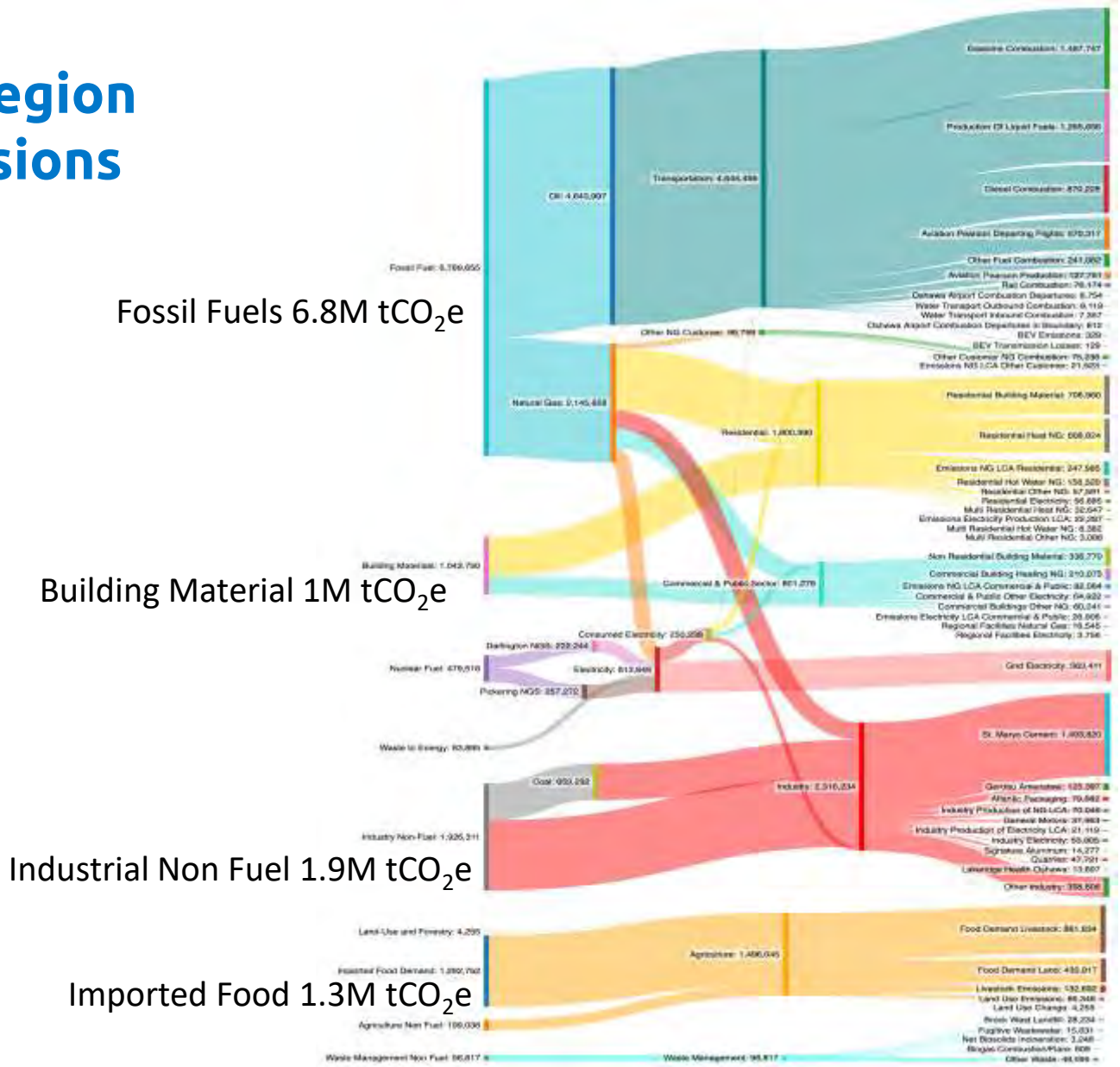
Scope 1: Emissions occurring in geographical boundaries.

Scope 2: Emissions occurring in geographical boundaries from grid supplied electricity.

Scope 3: Emissions occurring outside geographical boundaries caused by activities in the boundaries.



Durham Region GHG emissions



Fossil Fuels 6.8M tCO_2e

Building Material 1M tCO_2e

Industrial Non Fuel 1.9M tCO_2e

Imported Food 1.3M tCO_2e

Transportation 4.6M tCO_2e

Buildings 2.8M tCO_2e

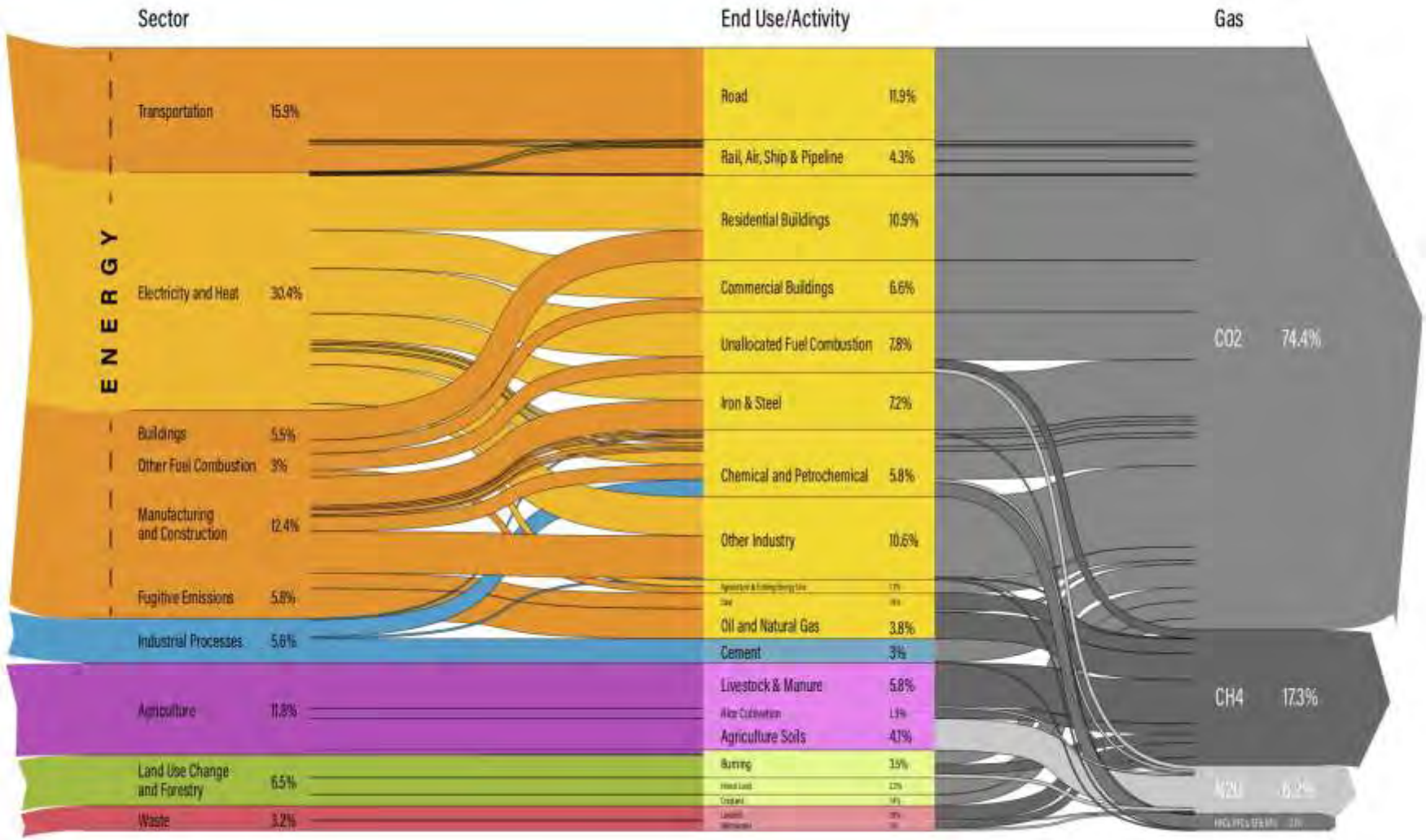
Industry 2.3M tCO_2e

Agriculture 1.5M tCO_2e

Waste 0.1 tCO_2e

World Greenhouse Gas Emissions in 2016

Total: 49.4 $MtCO_2$



Source: Greenhouse gas emissions on Climate Watch. Available at: https://www.climatewatchdata.org

WORLD RESOURCES INSTITUTE

Keeling Curve …. World's most consistent measure of the greenhouse effect

Nov 14, 2023: 419.1 ppm CO_2


COP
STOP
CLIMATE
CRIME

Uxbridge moves to strike climate action committee

Committee approved but no climate emergency declared

By **Moya Dillon** Uxbridge Times Journal

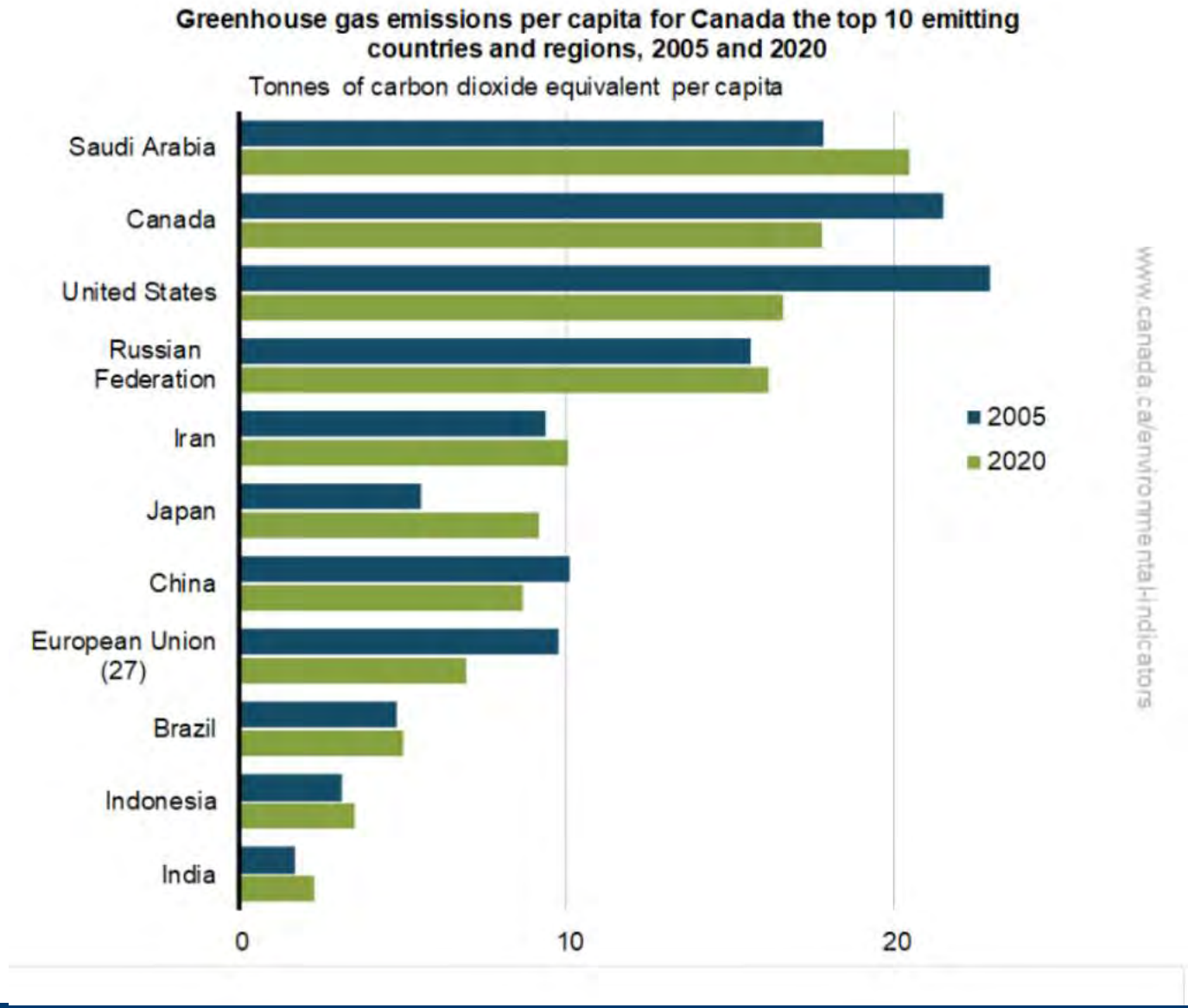
Thursday, January 16, 2020 | 2 min to read

UXBRIDGE -- Demonstrators marched through downtown Uxbridge and up Toronto Street to Uxbridge Town Hall to show their support for immediate action to tackle the climate crisis in September. The event's organizers, Uxbridge Climate Action, were successful in a recent request to have a new committee of council formed to focus on lowering emissions. Friday, Sept. 27,2019. - Moya Dillon

Closer to home

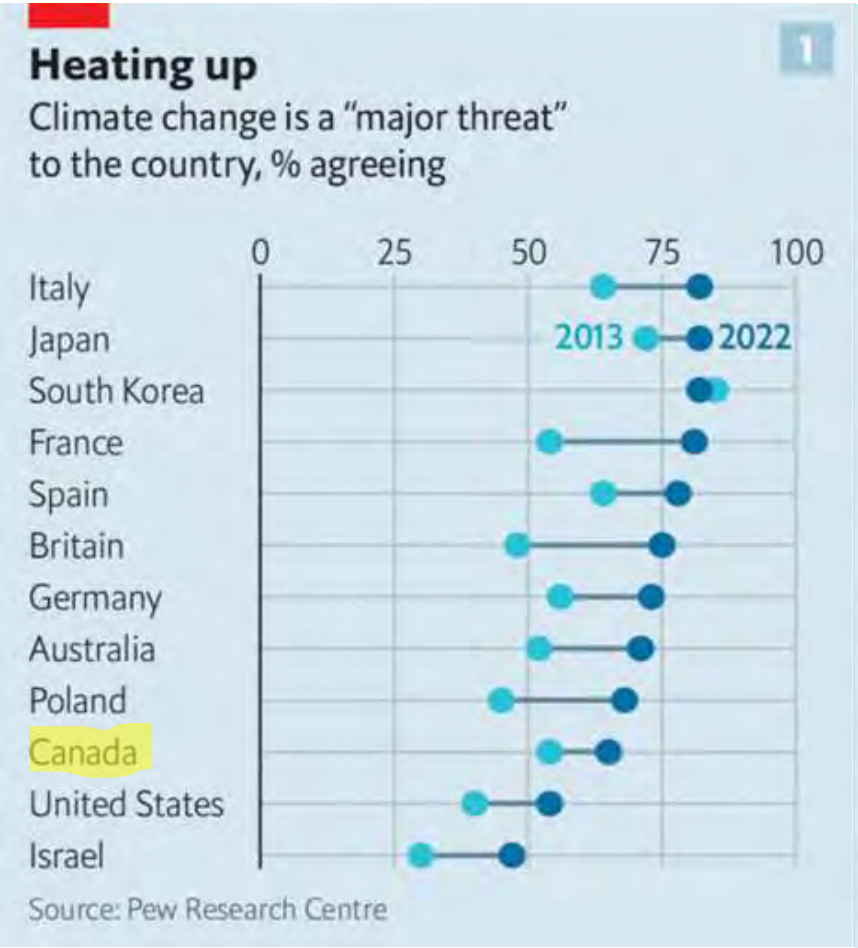
Climate emergencies declared!
Net-zero targets legislated!

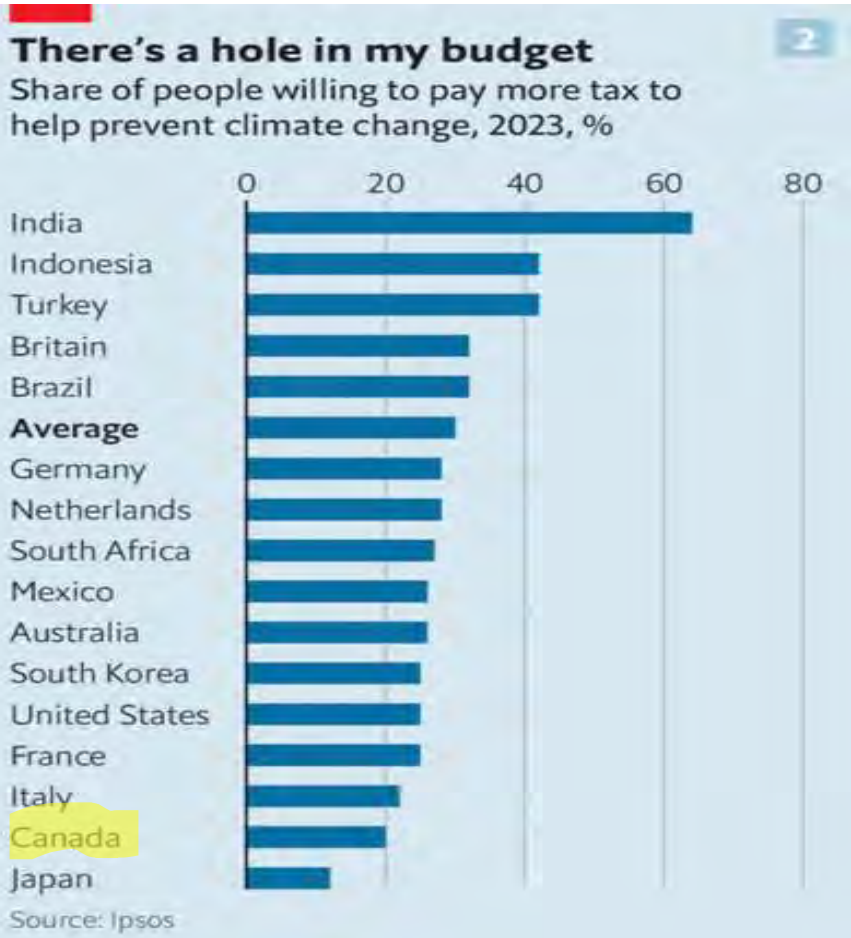
Canada's GHG emissions. Ranking Per Capita



The Power of Politics

The Economist, 12 October 2023





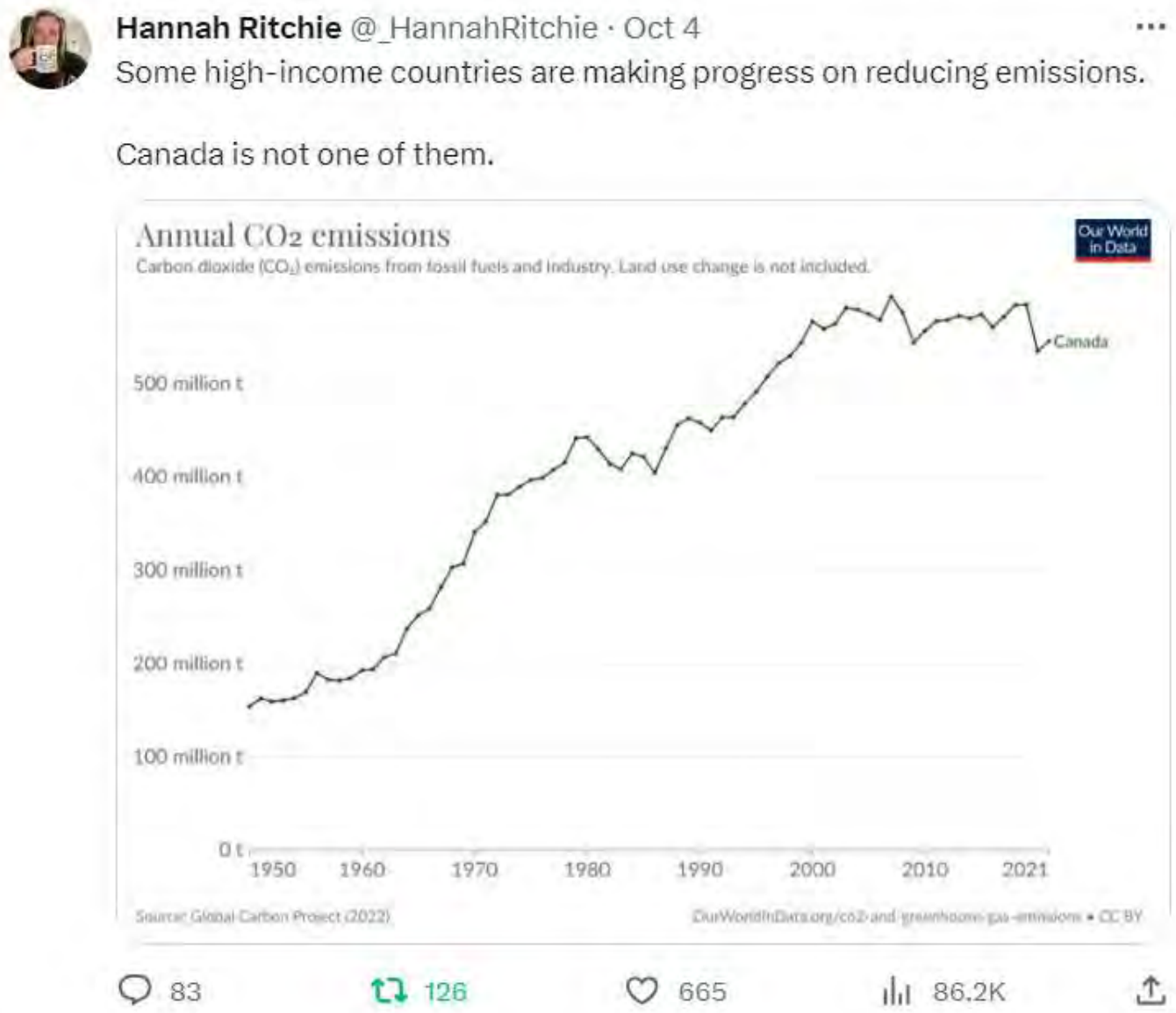
Canada's climate challenge

* global laggard on reductions

* emissions and trends vary by province (and community/household)

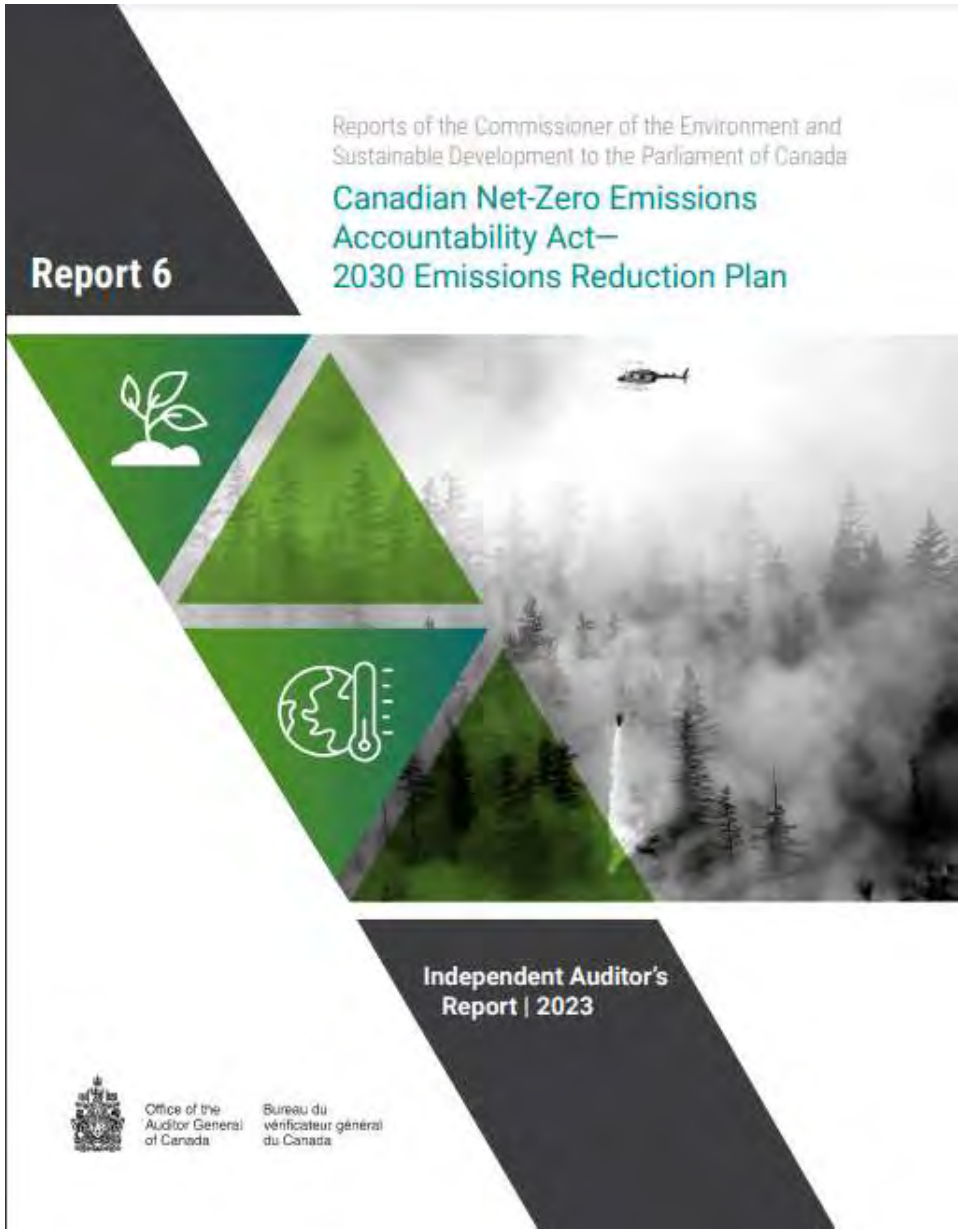
* lots of money and politics involved

* some behavioral changes needed



Strong Goals

Weak Plans



Recognized the world over

Fossil fuels

‘Insanity’: petrostates planning huge expansion of fossil fuels, says UN report

Table ES.1

A large majority of countries profiled in this report have made net-zero pledges and signed onto the Global Methane Pledge and the Glasgow Statement on international finance. Most are also planning to increase oil and gas production, and some are planning to increase coal production, until 2030. (See details in Chapter 3 and Tables 3.2–3.3.)

Country	Status of national net-zero commitment; net-zero target year	Signatory of Global Methane Pledge	Signatory of Glasgow Statement	Planned change in annual fossil fuel production for 2030 relative to 2021 (EJ)		
				Coal	Oil	Gas
Australia	In law 2050	✓		▲ 0.2	■ 0[a]	▲ 0.7
Brazil	NDC objective 2050	✓		No data	▲ 5.2	▲ 1.0[a]
Canada	In law 2050	✓	✓	No data	▲ 3.0	▲ 0.6
China	NDC objective 2060			▼ 5.3	■ 0	▲ 2.6
Colombia	In law 2050	✓		▲ 1.7	▼ 0.1	■ 0
Germany	In law 2045	✓	✓	▼ 0.5	■ 0	▼ 0.1
India	NDC objective 2070			▲ 10.7	No data	No data
Indonesia	In strategy document 2060	✓		▲ 2.5	▼ 0.2	▲ 1.1
Kazakhstan	In strategy document 2060			▼ 0.2	▲ 0.4	▲ 0.1[a]
Kuwait	Political pledge 2060 (oil & gas sector) 2060 (rest of economy)	✓		No production	▲ 2.1	▲ 0.1
Mexico	No commitment	✓		No data	▲ 1.4	▲ 0.6
Nigeria	In law 2060	✓		No data	▲ 1.3	▲ 2.8[a]
Norway	No commitment[a]	✓		No data	▼ 0.5	▼ 0.3
Qatar	No commitment			No production	No data	▲ 0.9[a]
Russian Federation	In strategy document 2060			▲ 5.2	▲ 2.9	▲ 3.9
Saudi Arabia	Political pledge 2060	✓		No production	▲ 5.5	▲ 1.9
South Africa	In strategy document 2050			No data	No data	No data
UAE	NDC objective 2050	✓		No production	▲ 1.6[a]	▲ 0.4[a]
UK	In law 2050	✓	✓	No data	▼ 0.7	▼ 0.6
US	In policy document 2050	✓	✓	▼ 5.1	▲ 5.2	▲ 2.5

[a] Norway has committed to a “low-emission society” by 2050 in its 2018 Climate Change Act, with 40–45% emission reduction targets.
[a] Planned change for 2030, further year for which data is available.
[a] Planned change for 2027, further year for which data is available.
[a] Excluding gas that is re-injected, consumed by producers, and/or flared.

Source: Net Zero Tracker (2022) and own analysis (see Chapter 3).

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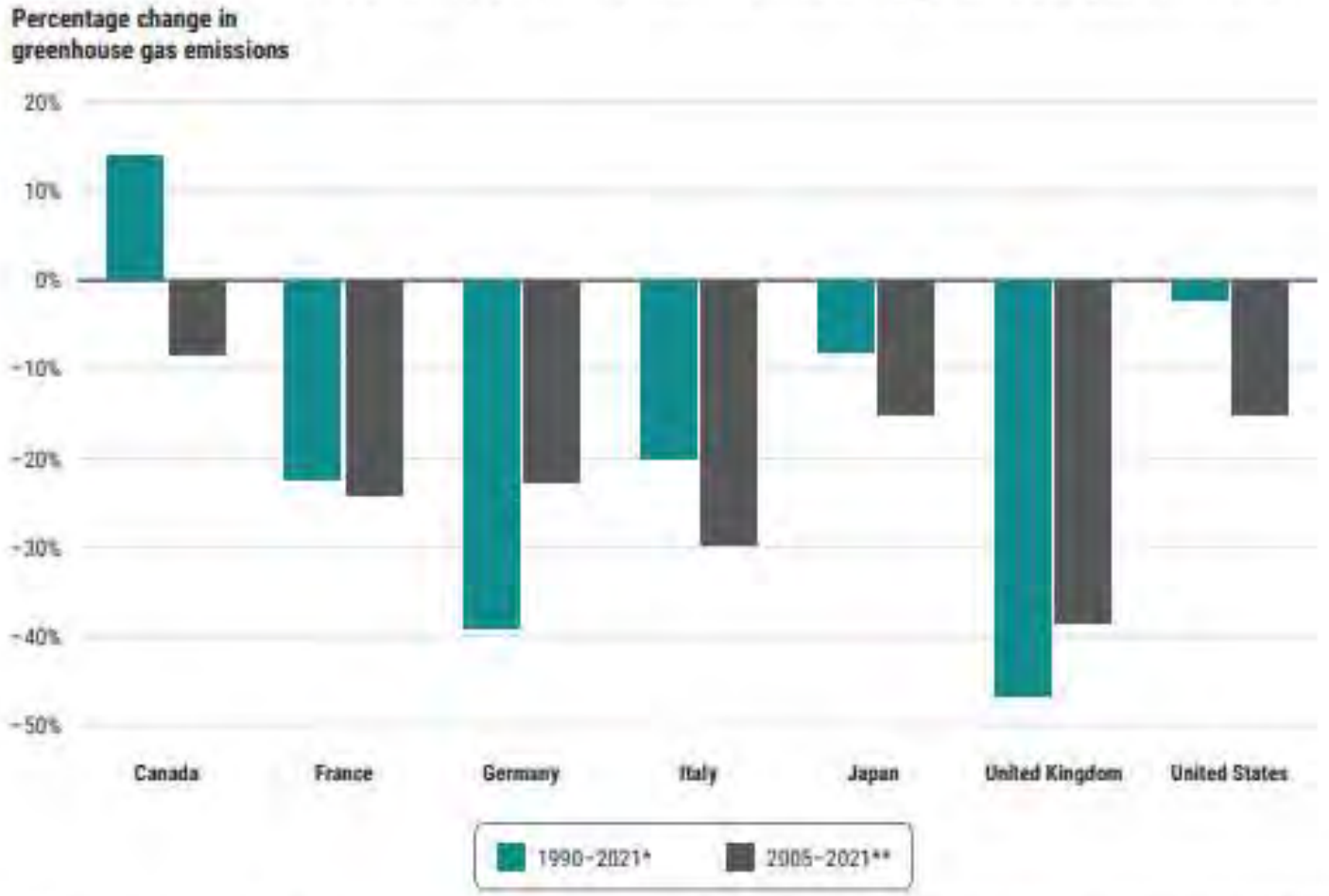
Canada's increasingly lonely challenge

Blessed by people (most educated) and geography (temperate climate, resources)

But oil and gas not uniformly distributed, much locked up in sand.

With plentiful energy and hydro-power, per-person most wasteful nation on earth (solid waste, GHG, energy-use).

Exhibit 6.3—Performance of Group of Seven countries in reducing greenhouse gas emissions



*1990 is the baseline year for reporting emissions and assessing progress for Canada and other industrialized countries under the United Nations Framework Convention on Climate Change.

**2005 is the baseline year picked by Canada for its 2030 target under the Paris Agreement.

Source: National Inventory Report 1990–2021: Greenhouse Gas Sources and Sinks in Canada, Environment and Climate Change Canada, 2023

Global Mitigation path is extremely steep

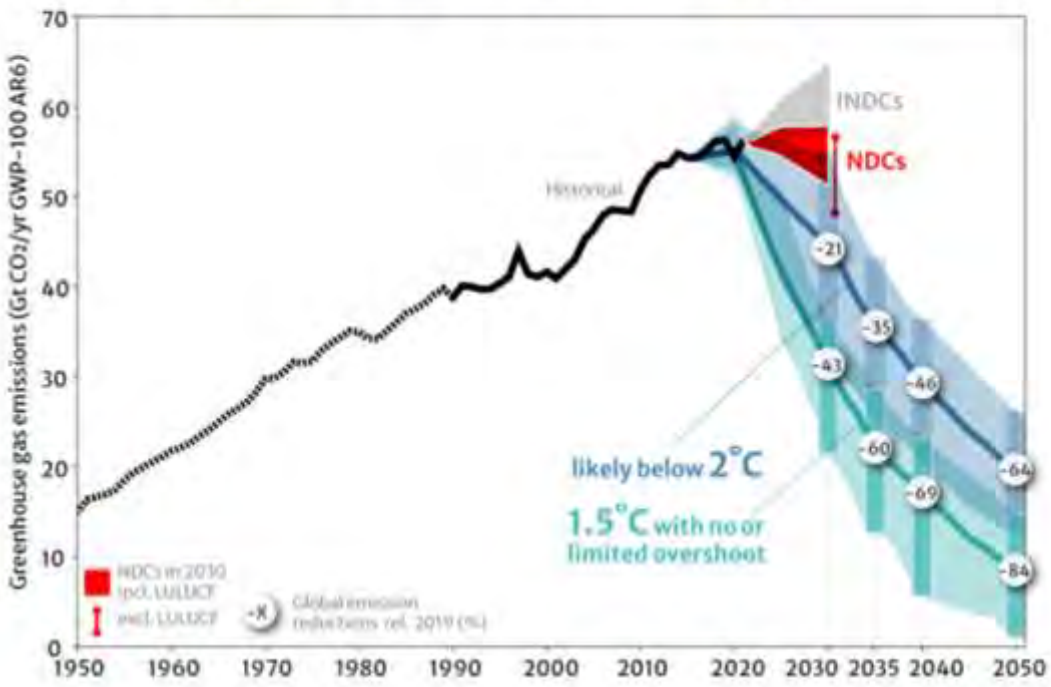
Two possible paths – (i) World gives up (warming >3 degrees)

(ii) Ratchet up our ambitions.

There is a benefit in being an ‘early adopter’. Canada is likely not able to ‘go it alone’.

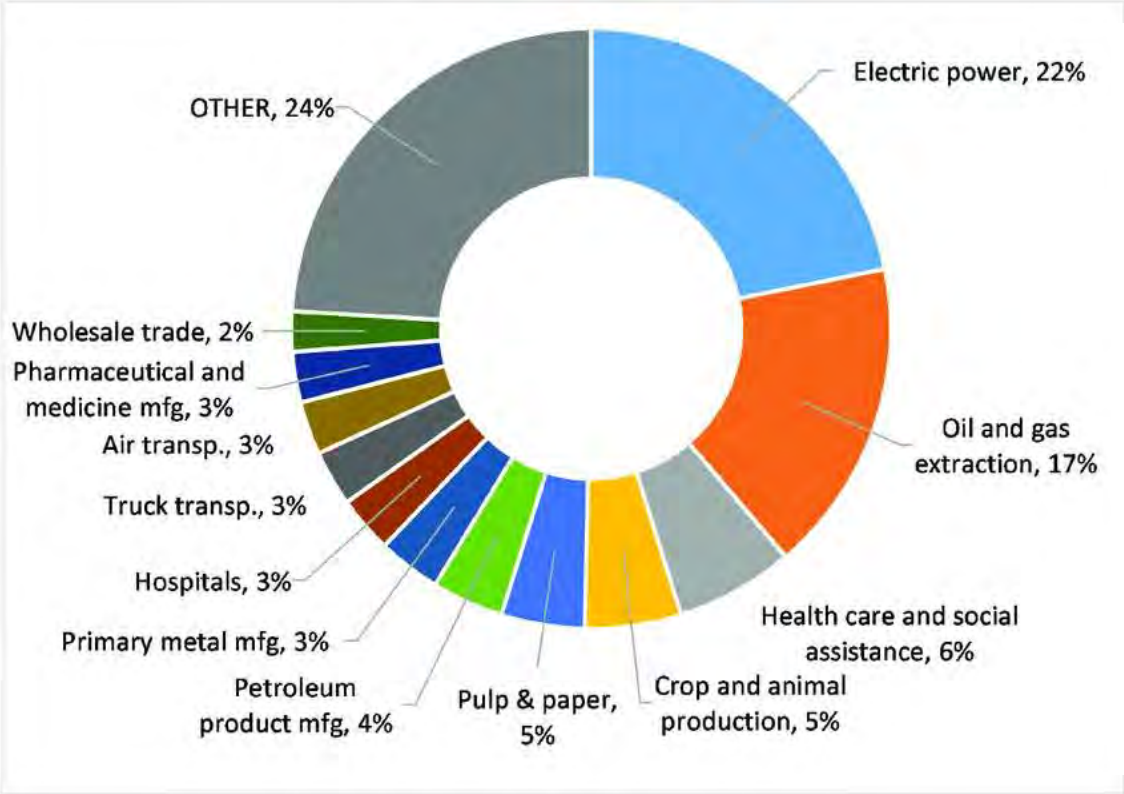
Any net-zero pledge requires much greater ambition. More excuses and delays are coming.

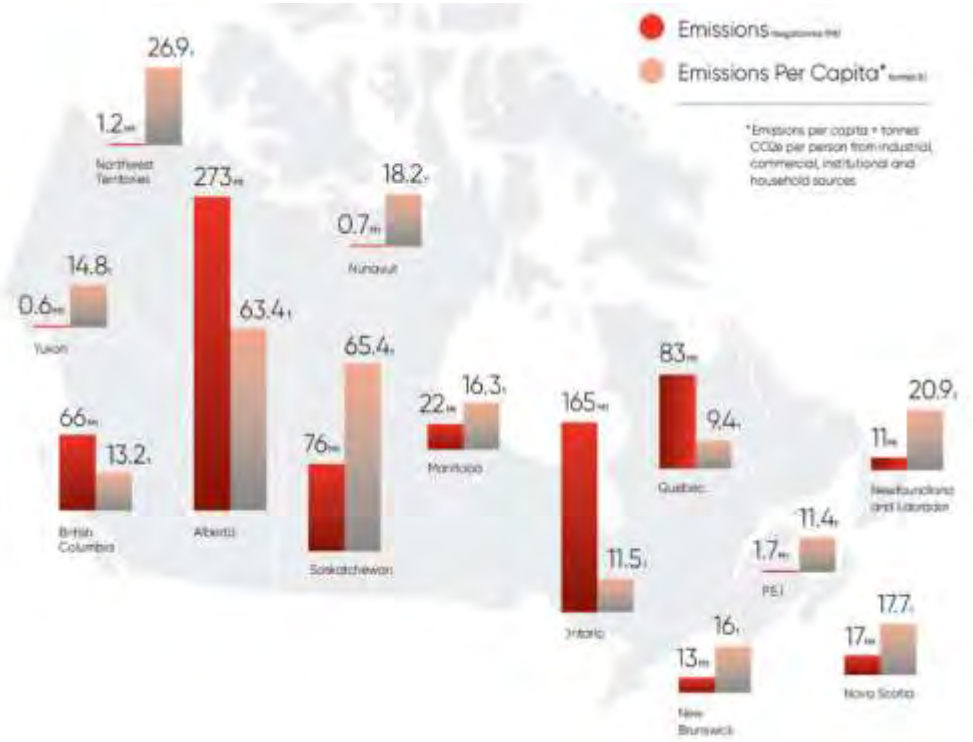
Historical emissions from 1950, projected emissions in 2030 based on nationally determined contributions, and emission reductions required by the Sixth Assessment Report of the Intergovernmental Panel on Climate Change



		Reductions from 2019 emission levels (%)			
		2030	2035	2040	2050
Limit warming to1.5°C (>50%) with no or limited overshoot	GHG	43 [34-60]	60 [49-77]	69 [58-90]	84 [73-98]
	CO_2	48 [36-69]	65 [50-96]	80 [61-109]	99 [79-119]
Limit warming to 2°C (>67%)	GHG	21 [1-42]	35 [22-55]	46 [34-63]	64 [53-77]
	CO_2	22 [1-44]	37 [21-59]	51 [36-70]	73 [55-90]

Canada's GHG emissions (they call us Bigfoot)





Durham's Community Energy Plan - Low Carbon Pathway

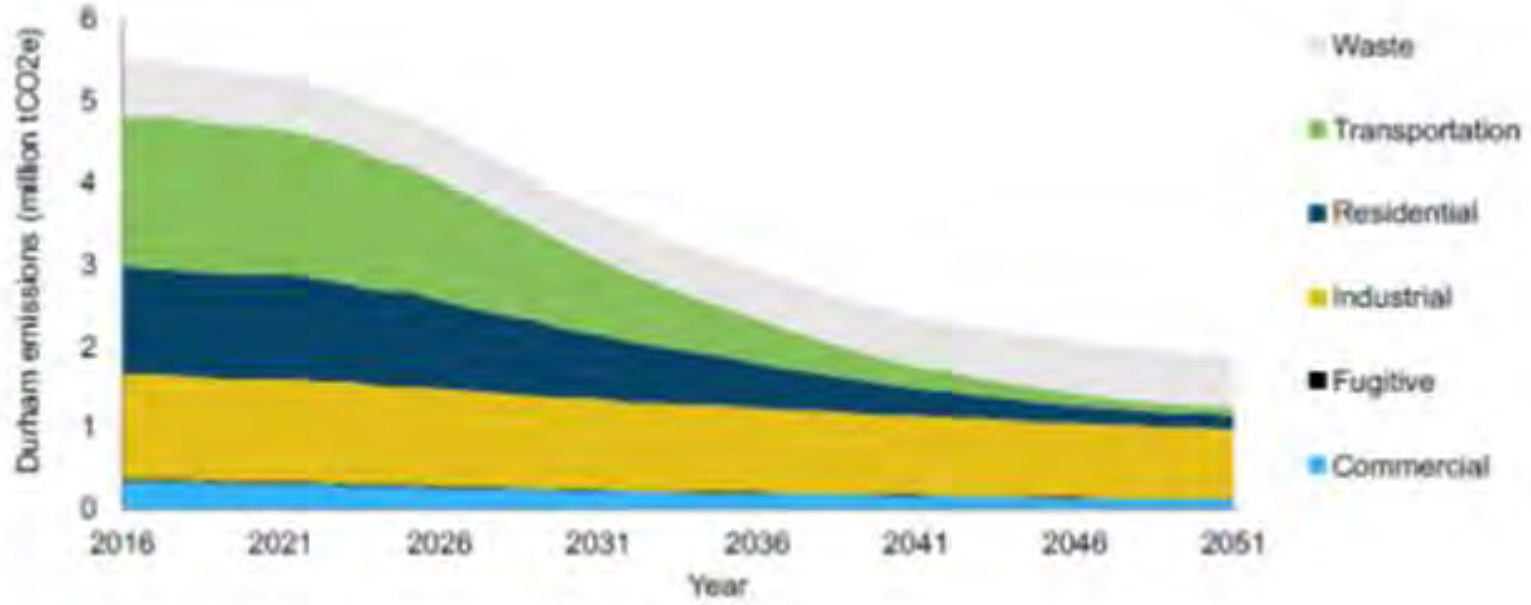


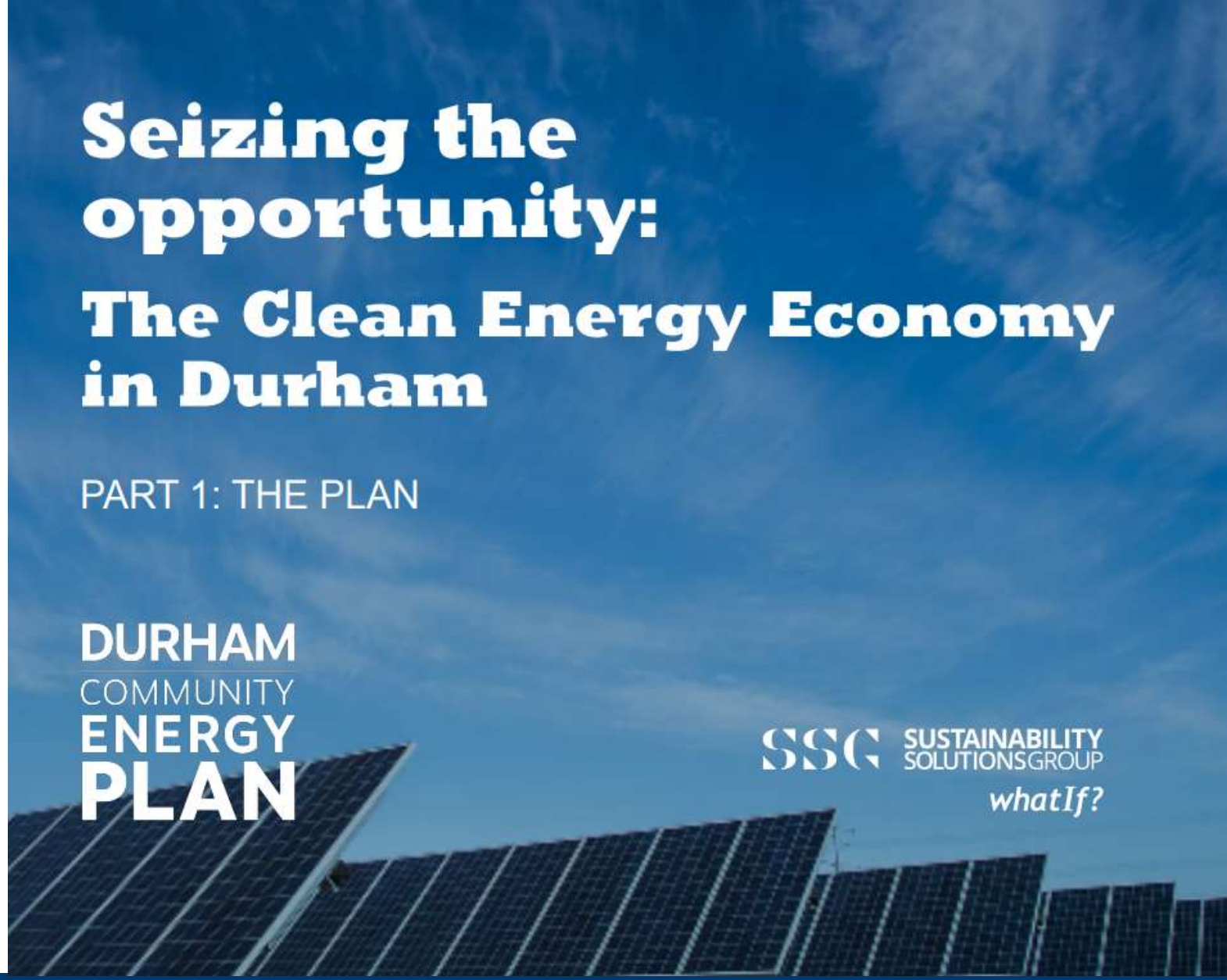
Figure 20. Annual GHG emissions by sector, LCP (2016–2051)

The most cost effective emissions reductions are found in the transportation sector, followed by the residential sector

Durham Community GHG Emissions Profile

Durham Community Energy Plan

Excellent place to start



Excellent list of prioritized, costed mitigation activities (Scope 1 and 2)

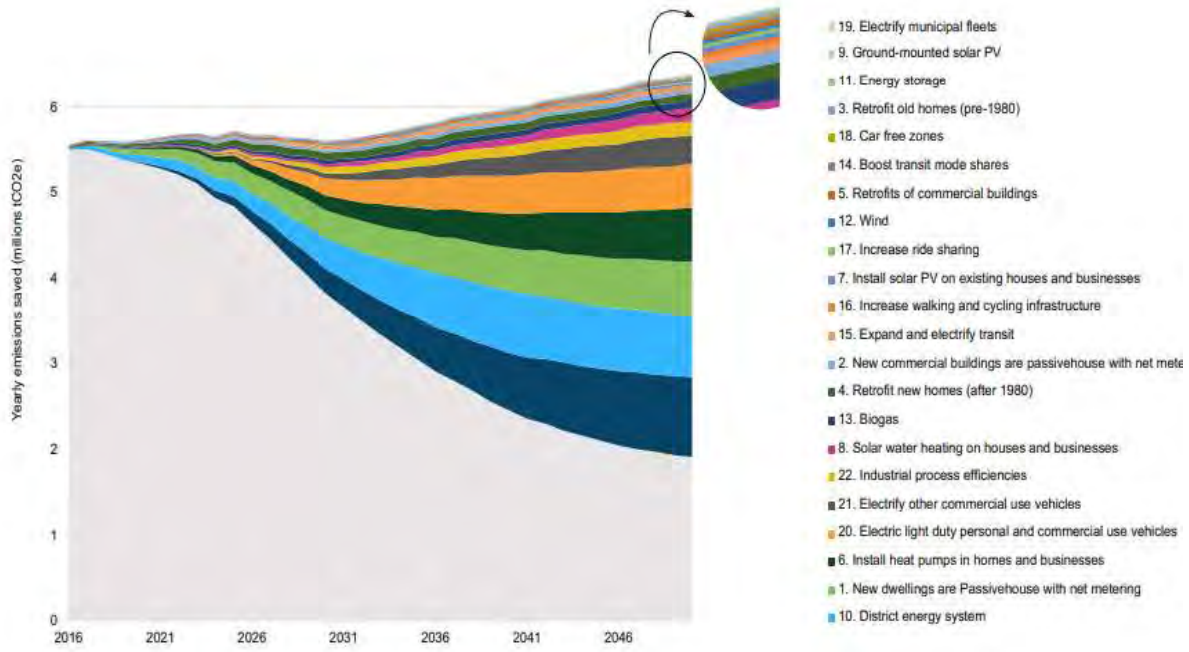


Figure 2. Projected emissions reductions from the actions in the LCP scenario, 2016–2050

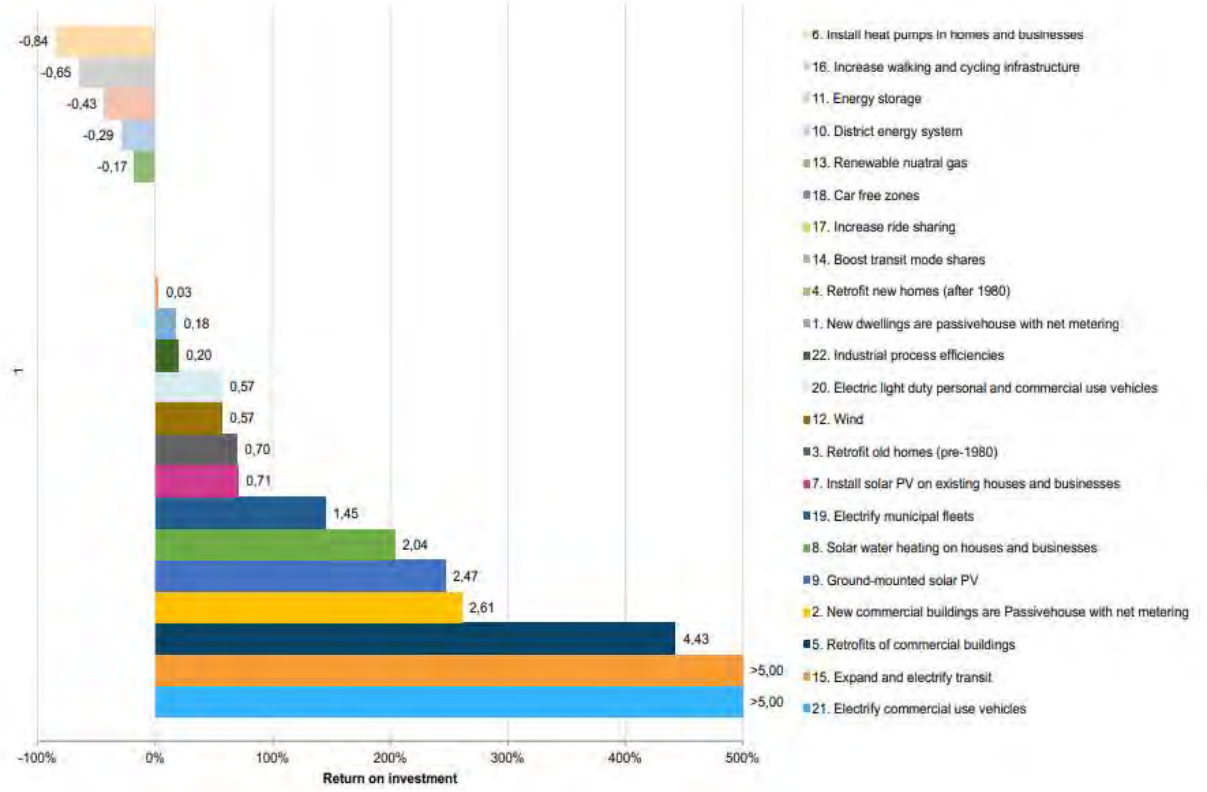
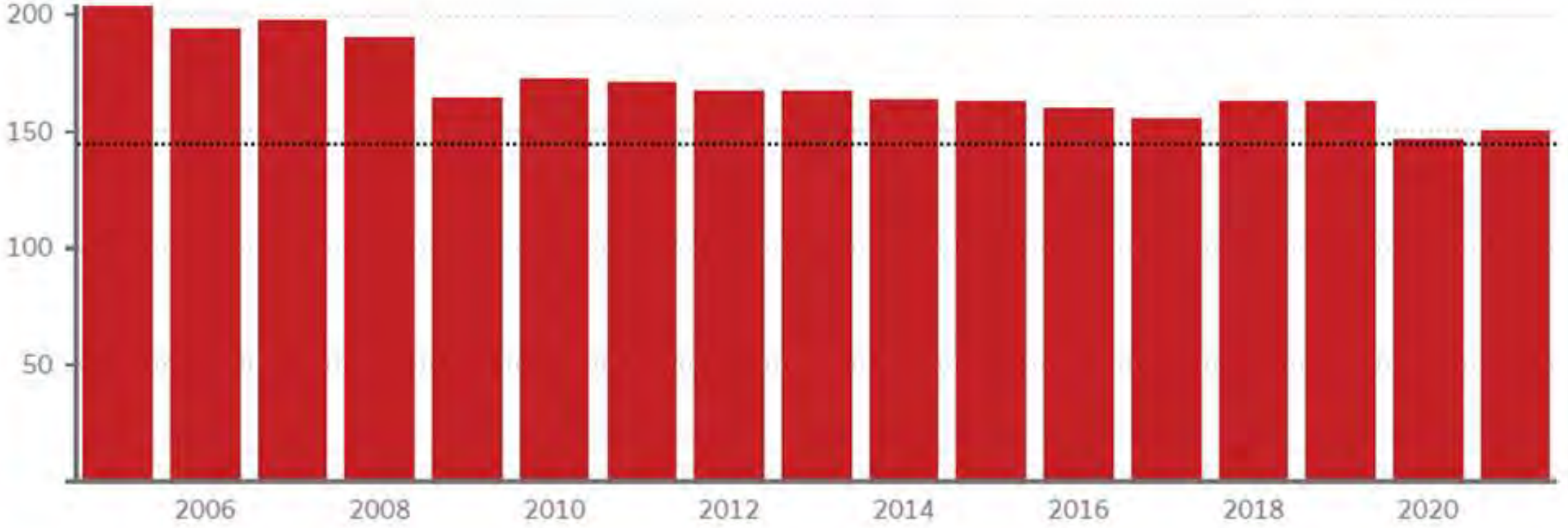


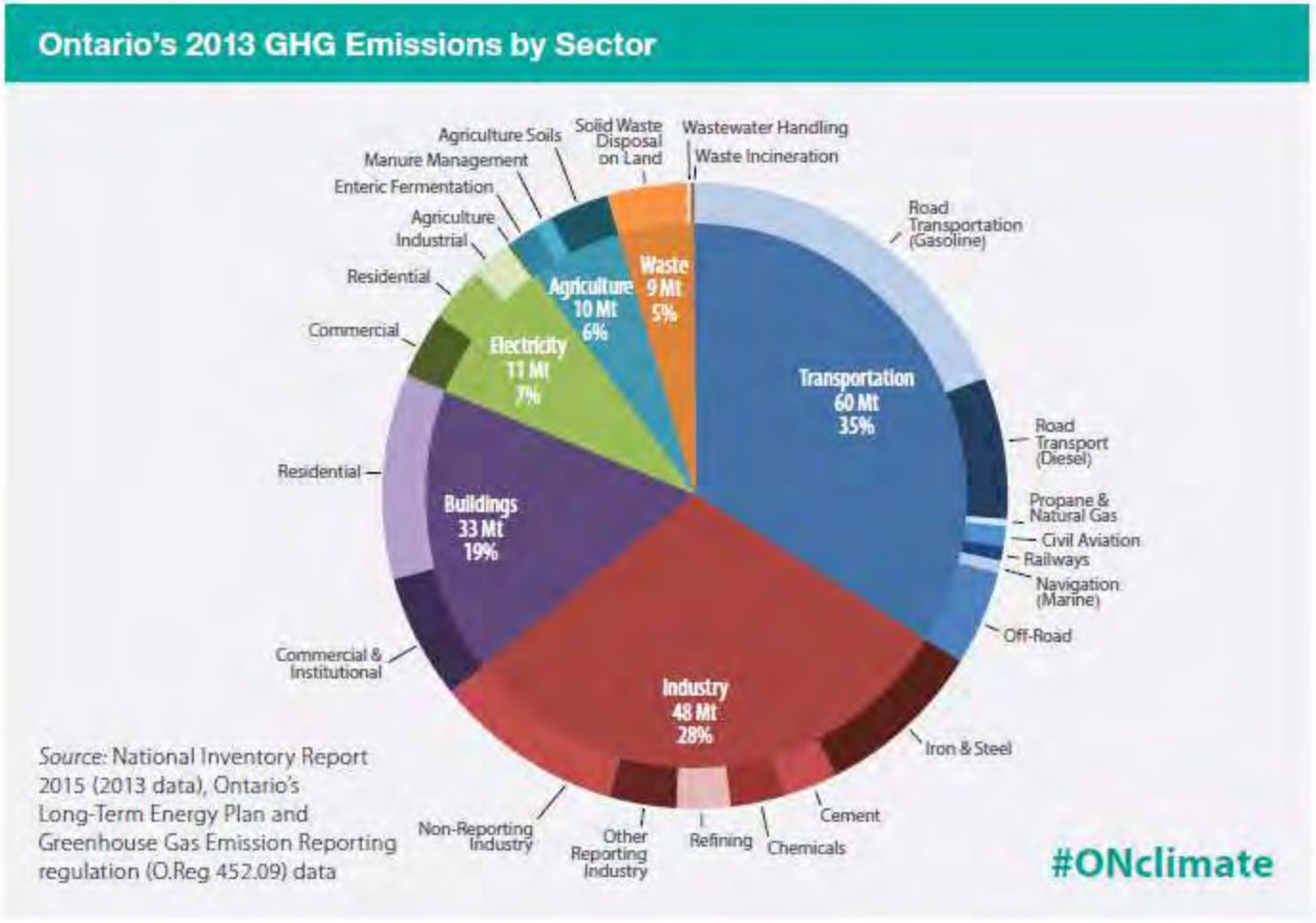
Figure 4. Ratio of the present value of savings over the present value of the expenditures for the actions evaluated in the LCP scenario

Ontario's annual greenhouse gas emissions

New figures show emissions in 2021 were 150.6 MT only slightly higher than the previous year. The Ford government's target for 2030 is 144 MT, represented by the dotted line.



Ontario's GHG focus needs to be transportation



Source: Ontario's Climate Change Strategy


TORONTO REGION
AT A FORK IN THE ROAD

Net zero targets under increasing scrutiny

"We urgently need every business, investor, city, state and region to walk the talk on their net zero promises. We cannot afford slow movers, fake movers or any form of greenwashing."

António Guterres,
UN Secretary General

Globe and Mail, editorial

20 October 2023

Regarding the Supreme Court's ruling on Impact Assessment Act

… It's easy to predict more legal clashes ahead but federalism works best when it is co-operative. Ottawa and the provinces should "exercise their respective powers over the environment harmoniously." It sounds overly optimistic. Tangled messes do not portend harmony. .. Ottawa has to be a little less bossy, and the provinces need to step up their climate ambitions. Canada needs less fighting and more doing.

Mitigation priorities (community-wide)

(i) shift to a low-carbon integrated mobility.
(ii) redesign neighborhoods to reduce single occupant vehicle use and high heating and cooling demands for buildings.
(iii) phase out natural gas for space heating, *e.g.*, use heat pumps, smart thermostats.
(iv) modify buildings (new construction and renovations) to use material with less embodied emissions.
(v) reduce (or effectively offset) air transportation and cruises .
(vi) shift to diets with less meat and reduce food waste.
(vii) shift agriculture practices to enhance carbon sequestration in soil and reduce emissions from livestock and manure management.
(viii) waste management, including reduced plastics.
(ix) minimize leaking methane in wastewater treatment, landfills, and gas transmission.
(x) shift to a more circular economy with emphasis on waste management (minimization).

Region of Durham – Progress Toward Climate Change Commitments

- Annual report (starting November 2023, Region and Local Area Municipalities)
- Credible measure of net-zero progress, linked with partners' progress
- Comprehensive GHG emissions inventory ("world class")
- All sectors (total community and per person emissions)
- Structured to fit with provincial, national, global inventories and targets, while also providing sufficient detail to capture household/neighborhood actions
- Move toward real-time monitoring as well, e.g., CityWatch

Current likelihood of meeting net-zero by 2050? Less than 50/50

Region of Durham – Progress Toward Net Zero Target

- Rational economist (true price of fossil fuels and energy, air quality, future jobs, Article 6 ‘border carbon adjustment’)
- Affordability (cost/benefits of the energy transition, timing)
- How much should the Region lead? E.g., ask the federal government to maintain a price on (all) carbon, set a sunset date for new gas connections
- Transition together, e.g., link net-zero goals of ON Tech, OPG, GM

Thank You