

# Achieving Sustainability: Challenges and Opportunities

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ANIMAL HEALTH  
CANADA  
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@BRUCELOURIE



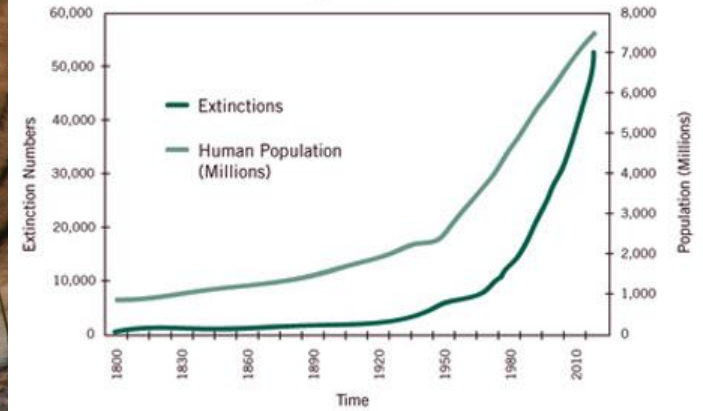
# Overview

- ▶ Sustainability trends – How are we doing?
- ▶ Climate risk, net zero and Canada's progress
- ▶ The “great transition” - climate opportunity
- ▶ Sustainability transitions and agriculture
- ▶ Takeaway messages



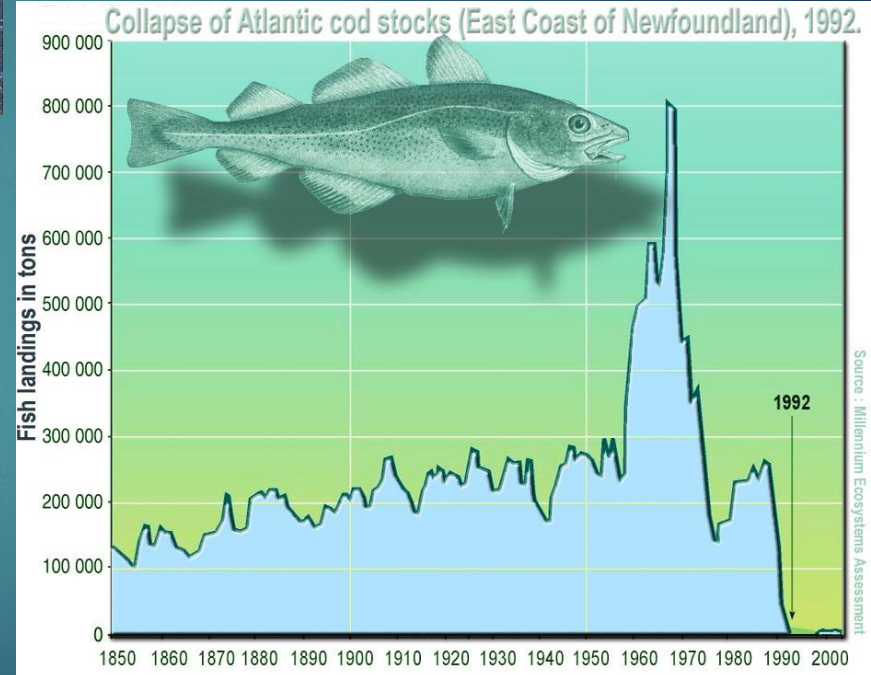
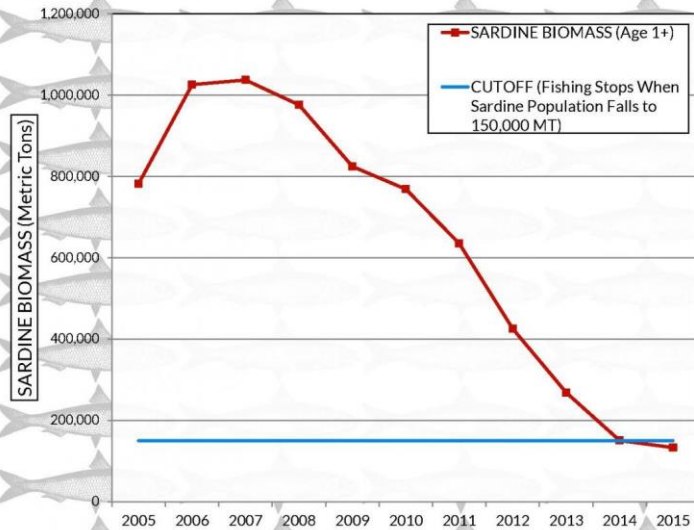
### Species Extinction and Human Population

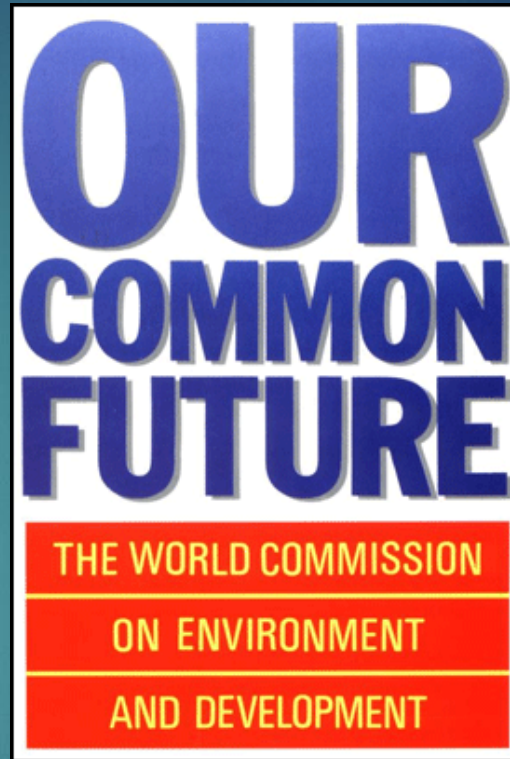
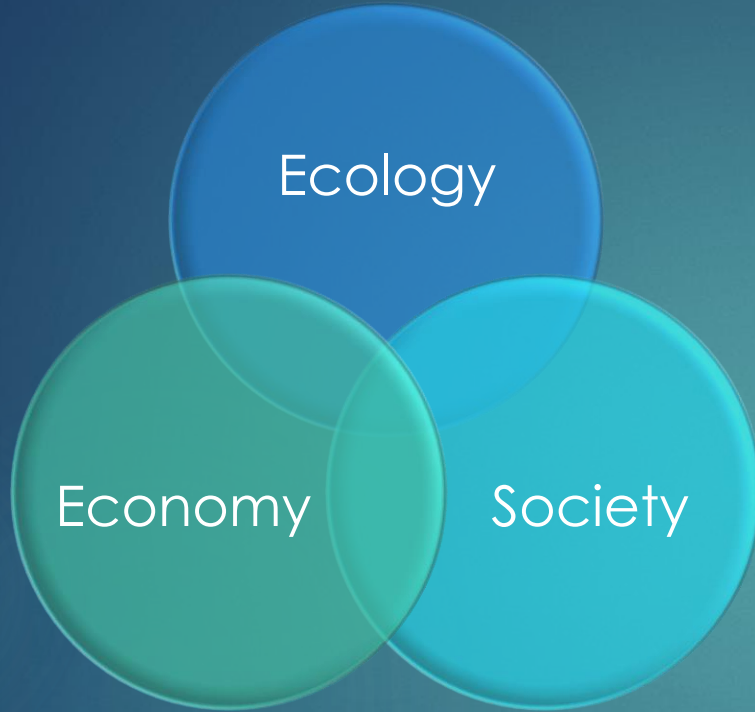
Graph source: USGS



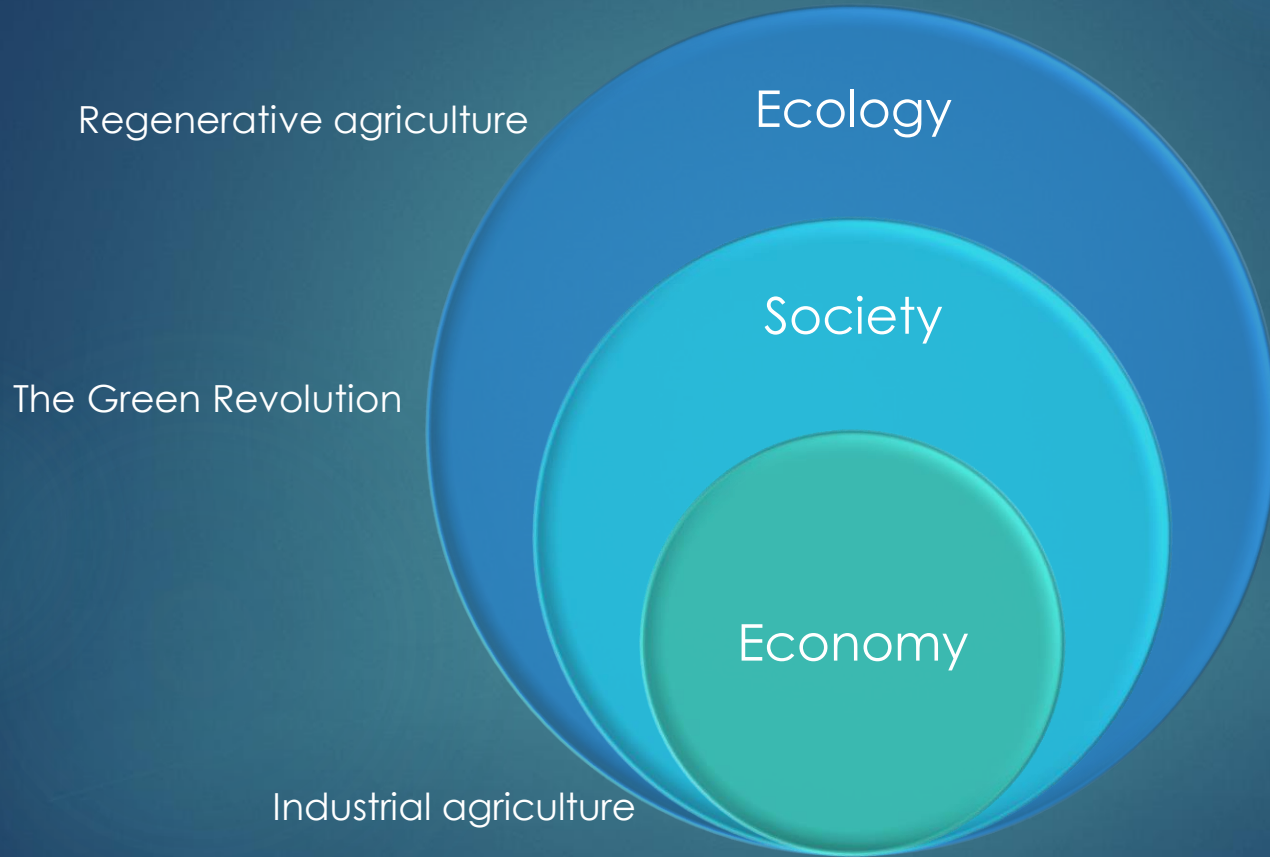


## THE COLLAPSE OF PACIFIC SARDINE



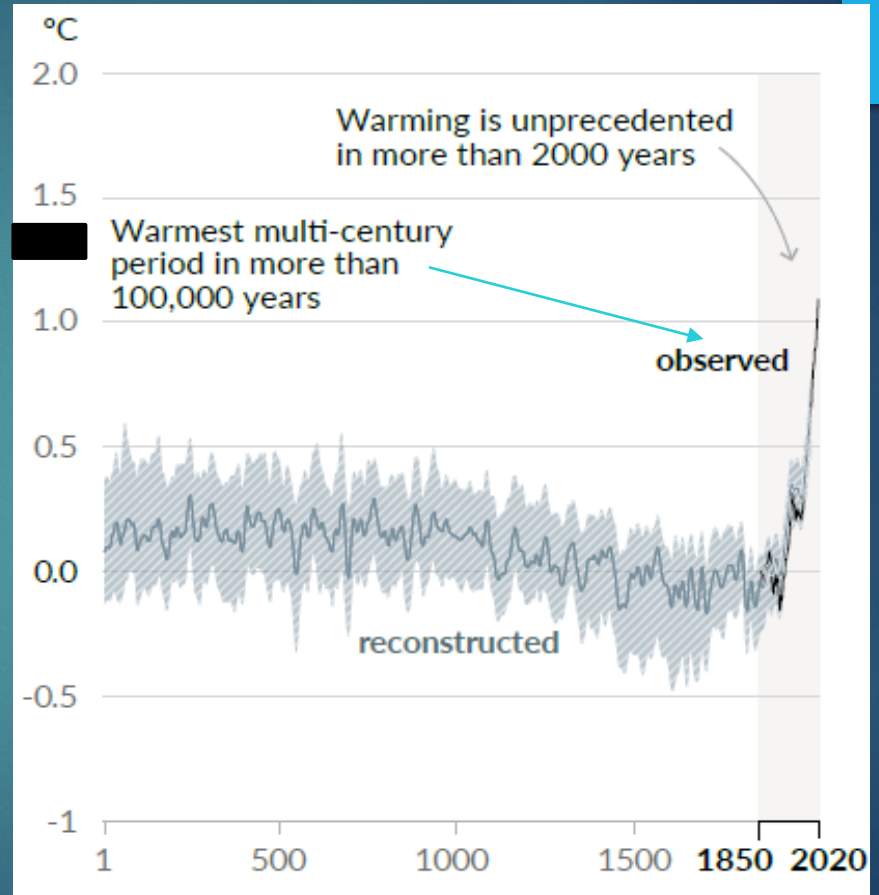


“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs”



Climate science tells us:  
The problem is **urgent**.  
The problem is **real**, and  
caused by human  
activities

Clearly science isn't  
enough...





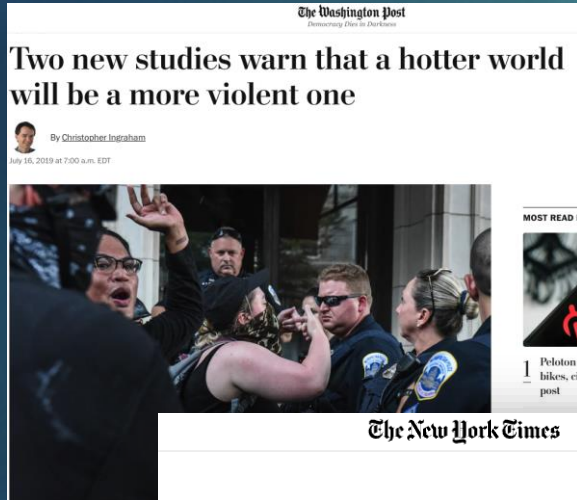
Which of the following does climate change impact?

- a. Violent crime rates
- b. Anxiety and depression
- c. Investment decisions
- d. The price of wine
- e. Where people live
- f. All of the above




More heat = higher rates of aggression and violent crime.

Anxiety and depression levels increase with the existential threat of climate change.



Climate impacts every part of the economy, including where/how investments are made.

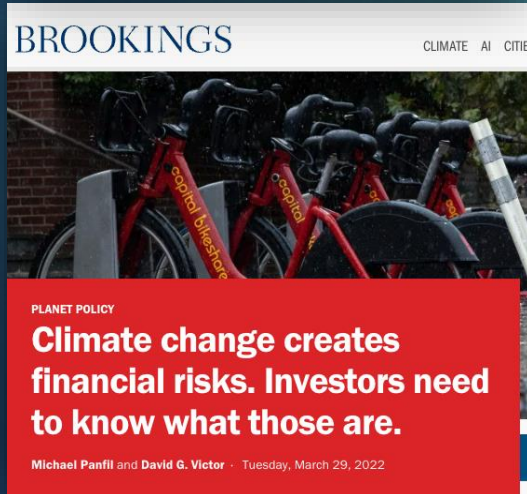


THE GLOBE AND MAIL


YOUR GLOBE CANADA WORLD BUSINESS INVESTING WATCHLIST PERSONAL FINANCE OPINION POLITICS SPORT

PODCAST

### How climate anxiety is shaping small and large financial decisions

BROOKINGS CLIMATE AI CITIES



PLANET POLICY

## Climate change creates financial risks. Investors need to know what those are.

Michael Panfil and David G. Victor · Tuesday, March 29, 2022

Hotter temperatures will change where we can grow certain crops.

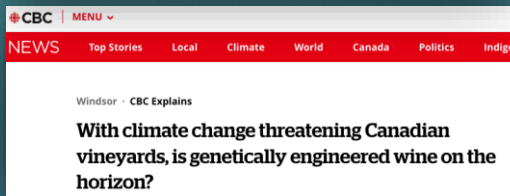


CBC MENU

NEWS Top Stories Local Climate World Canada Politics

Business

### Time to buy more Canadian wine? Climate change driving up prices from other wine regions



CBC MENU

NEWS Top Stories Local Climate World Canada Politics Indigenous

Windsor · CBC Explains

### With climate change threatening Canadian vineyards, is genetically engineered wine on the horizon?

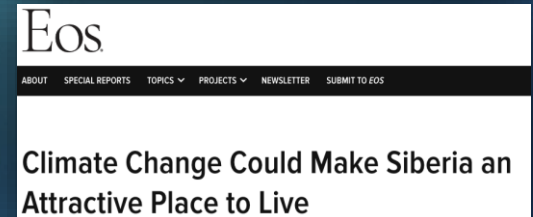
Some areas will become more livable, others will become unlivable.



Inside Climate News Pulitzer Prize-winning, nonpartisan reporting on the biggest crisis facing our planet. Donate

Science

### 50 Years From Now, Many Densely Populated Parts of the World Could be Too Hot for Humans



Eos

ABOUT SPECIAL REPORTS TOPICS PROJECTS NEWSLETTER SUBMIT TO EOS

### Climate Change Could Make Siberia an Attractive Place to Live

Climate change and its impacts are already here: These will intensify if we do not act.

The Guardian

### World's largest skating rink on thin ice as Canada's warm winter prevents opening

Mild temperatures in Ottawa make it too dangerous to open Rideau Canal Skateway, the capital's 7.8km long 'blockbuster' attraction



### Judge says Ontario's weak climate plans increase risk of death for the young

Canadian youth activists' case nevertheless dismissed as judge rules province's policies do not violate Charter rights



### Canada's Alberta announces state of emergency over wildfires

Almost all of Alberta and much of neighbouring Saskatchewan province face extreme fire risks.



ENVIRONMENT

### Carbon emissions are costing Canadians 5 times what Ottawa once thought: minister

By Mia Rabson • The Canadian Press

Posted April 19, 2023 4:31 pm · Updated April 19, 2023 4:35 pm

As of September 15, 2023  
6,317 fires had burned 173,598  
square kilometres (67,027 sq mi;  
42,897,000 acres), about 5% of the  
entire forest area of Canada and  
more than six times the long-term  
average

## Vancouver Sun

B.C. heat wave update for June 30:  
Chief coroner reports  
hundreds died from heat  
over past five days -  
wildfire takes control of Lytton

Lytton, BC – June 2021



# Doing nothing is expensive!

## Re-thinking affordability

- ▶ US\$13.6 billion/year in damage to homes and buildings
- ▶ US\$12.8 billion/year in damage to roads and railways
- ▶ US\$4.1 billion/year in damage to electric grid
- ▶ Some costs unquantifiable – health costs, social services, human suffering

Abbotsford, BC – November 2021



# In fact, inaction is more costly than action

## The Physical Costs of Climate Change to Canada

(Cumulative total by 2100 in \$billions)

2°C \$2,772.78

3°C \$3,635.65

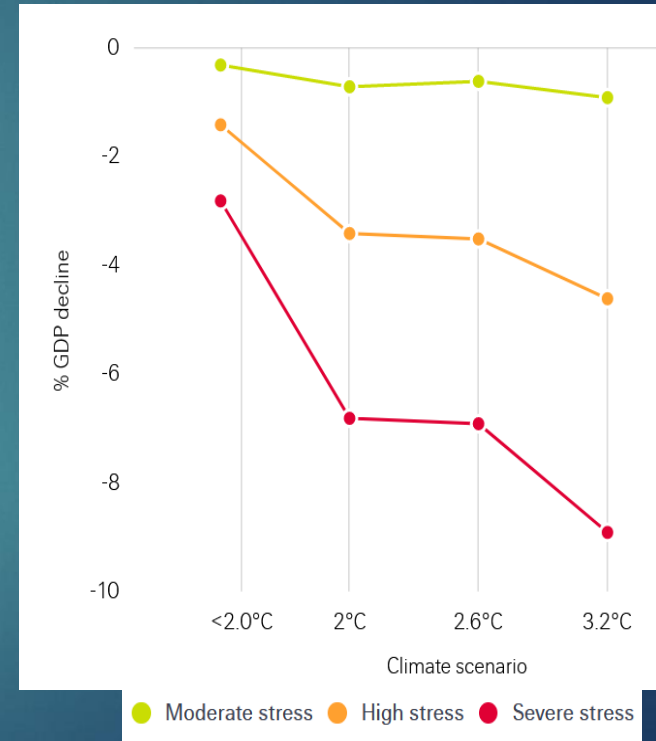
4°C \$4,794.57

5°C \$5,520.06



Source: Institute for Sustainable Finance, The Physical Cost of Climate Change: A Canadian Perspective, 2022

## GDP loss by 2048 from climate impacts



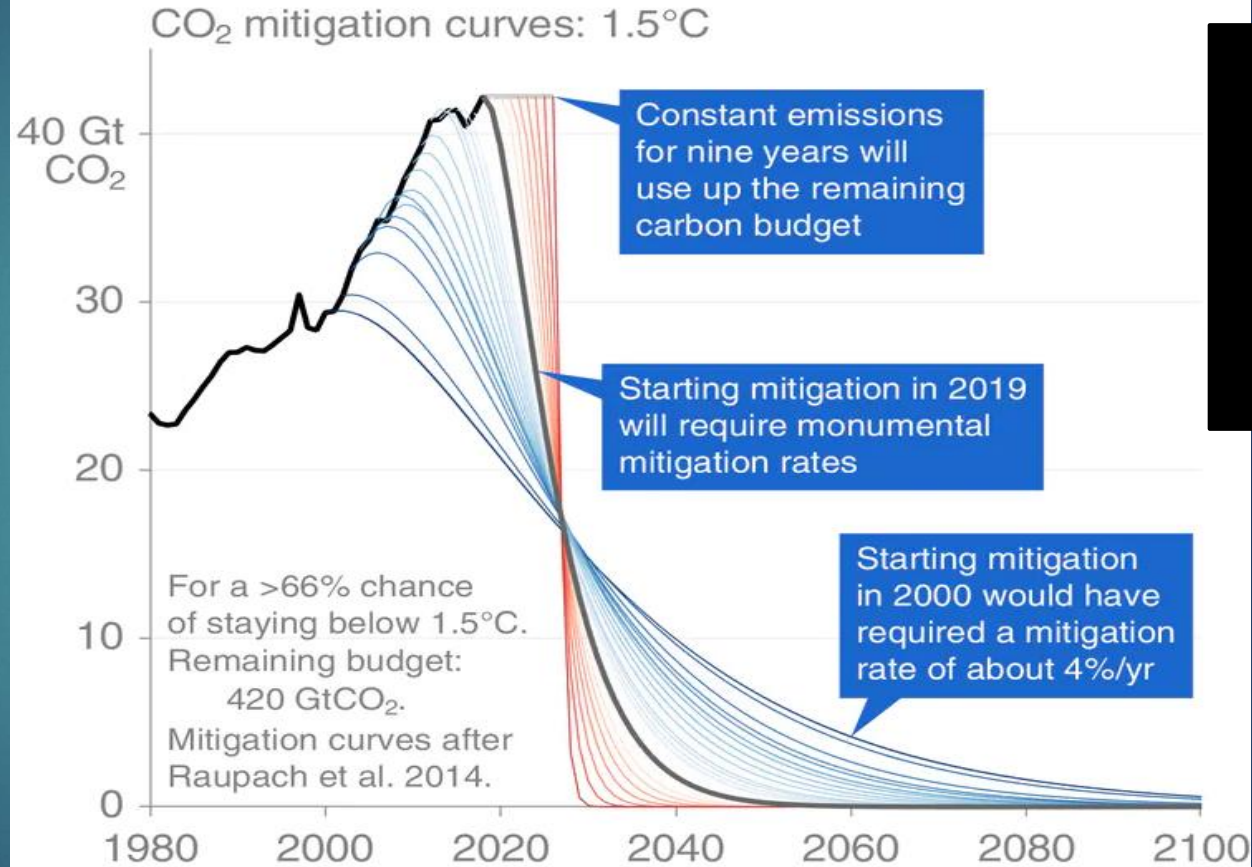
Swiss Re Institute, 2021

# Risks to life and infrastructure

- ▶ Heat events
- ▶ Floods
- ▶ Violent storms
- ▶ Crop and farm damage
- ▶ Electricity system overload
- ▶ Blackouts and brownouts
- ▶ Stranded remote access to health and other services



The longer we delay, the greater the challenge





A photograph of a young child in a bright red long-sleeved shirt and purple pants, crouching on a vast expanse of cracked, dry earth. The ground is parched and broken into irregular, angular blocks, illustrating the severe impact of drought. The child is looking down at the ground, possibly searching for water or food. The background is a continuous field of this cracked earth, extending to the horizon under a clear sky.

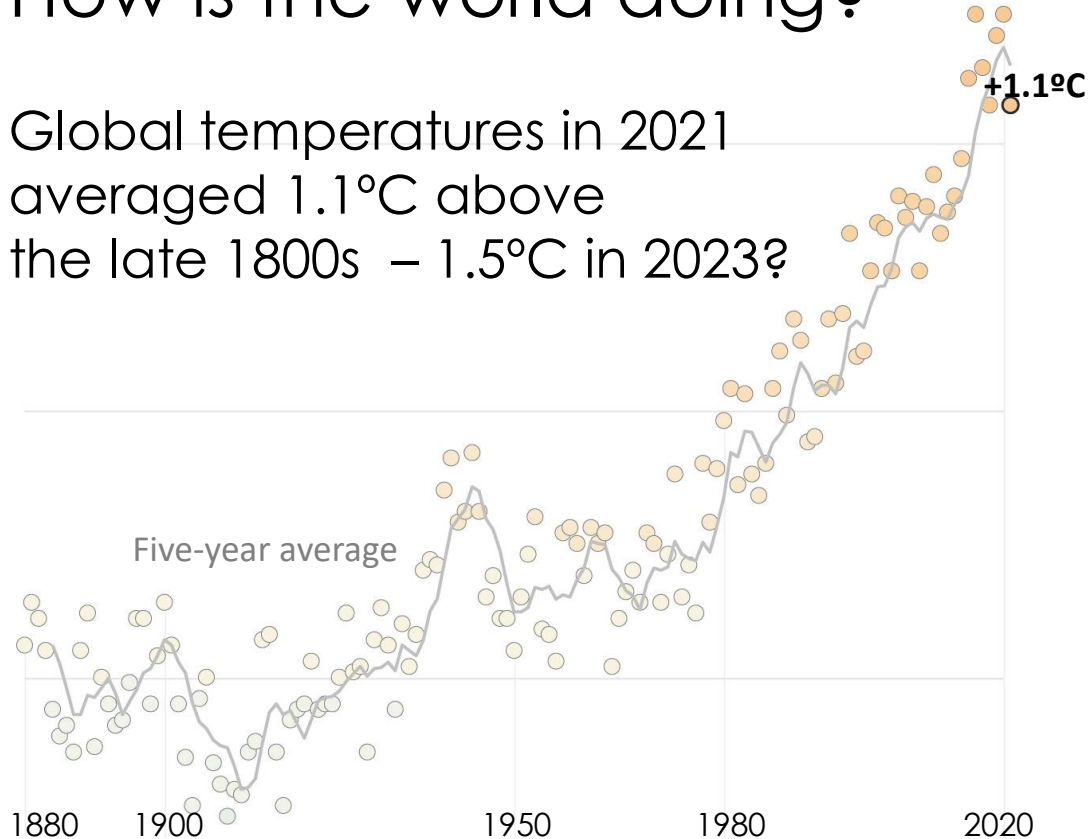
Climate risk = human risk

the impact of a 1.5C increase in global temperatures will "disproportionately affect disadvantaged and vulnerable populations through **food insecurity, income losses, lost livelihood opportunities, adverse health impacts, and population displacements**".

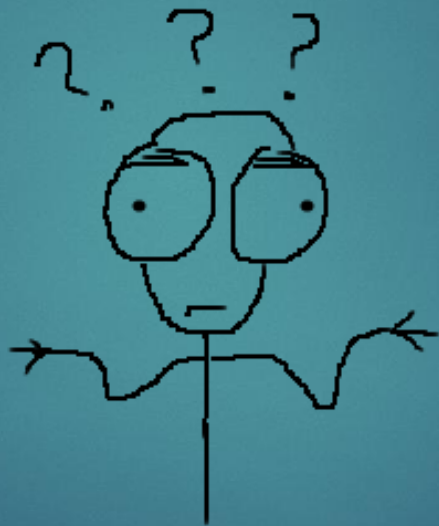
- IPCC Report 2018

# How is the world doing?

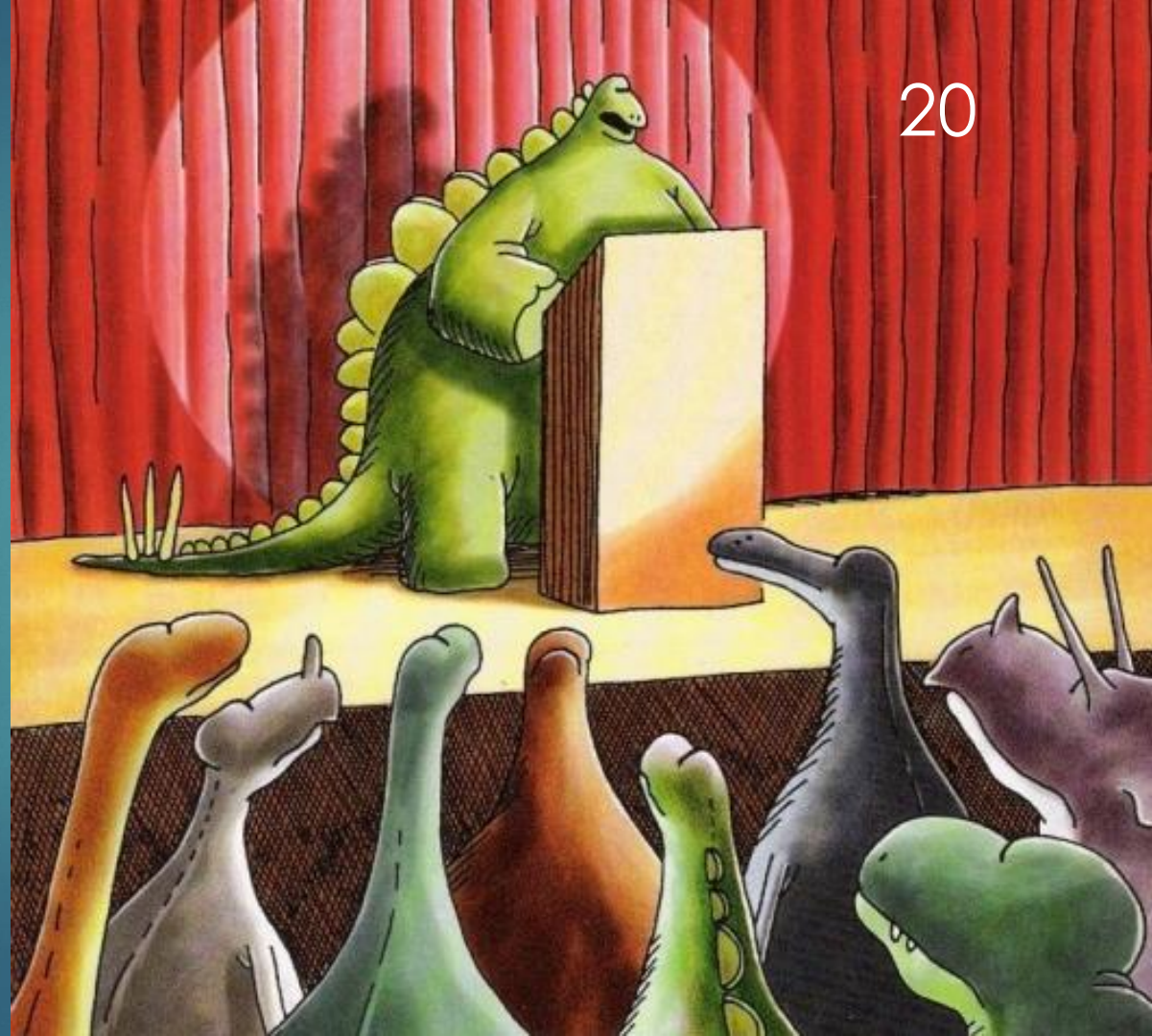
Global temperatures in 2021 averaged 1.1°C above the late 1800s – 1.5°C in 2023?



Given what we know, why don't we act?

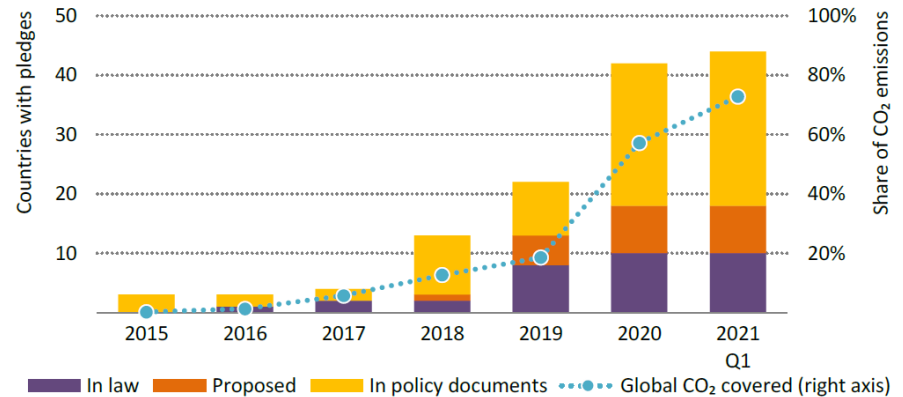


The picture's pretty bleak, gentlemen... the world's climates are changing, the mammals are taking over, and we all have a brain about the size of a walnut.



The world's economies are increasingly moving to adopt net zero targets and strategies to get there

**Figure 1.2** ▶ Number of national net zero pledges and share of global CO<sub>2</sub> emissions covered



IEA. All rights reserved.

*There has been a significant acceleration in net-zero emissions pledges announced by governments, with an increasing number enshrined in law*

**Net zero** refers to all efforts to reduce greenhouse gas emissions at the source, together with *natural* and technical methods of removing residual greenhouse gases either from emission sources or directly from air. The result of all emission reductions and residual removals must net out at zero (or less).

# The challenge of removals

‘Nature-based’ and technological solutions

All face serious challenges

Permanence

Uncertainty

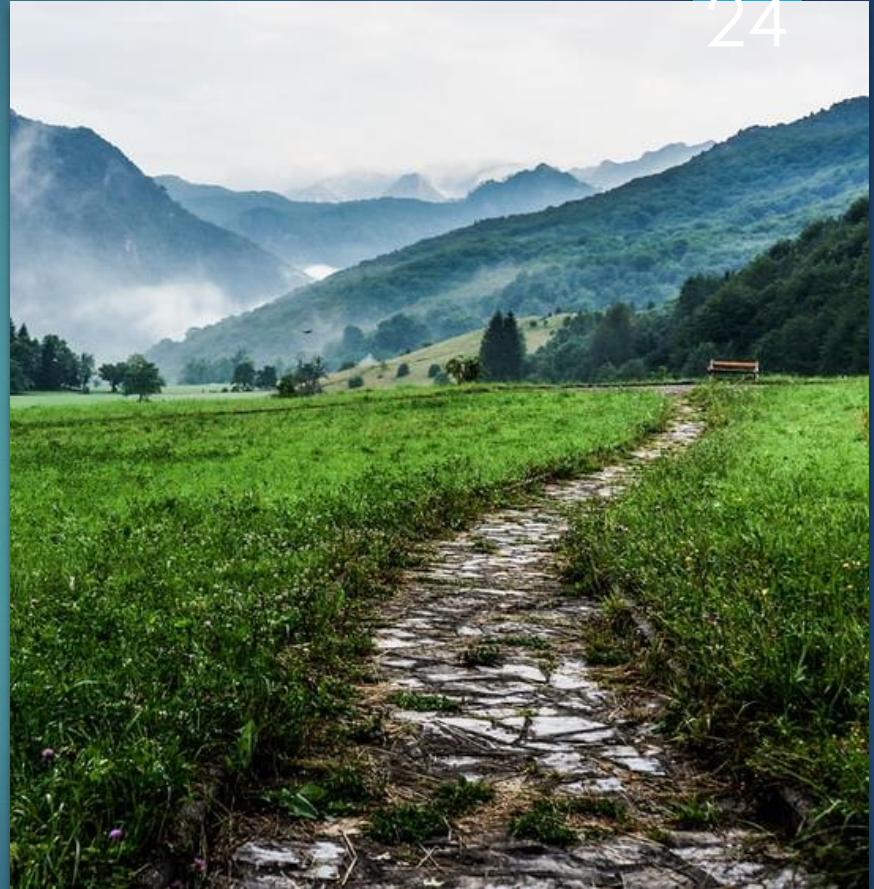
Scale of deployment

High cost



# Net Zero: Key Messages

- ▶ An inclusive conversation
- ▶ Don't get "caught in the net"
- ▶ There is more certainty than uncertainty
- ▶ Global consensus is clear (ish)
- ▶ Take a transition pathways approach
- ▶ Move quickly on clear pathways (Investigate obstructed pathways)
- ▶ Agriculture is critical (vs forests...)







# Live Poll: Canada's climate engagement



1. By how much has Canada reduced its emissions since 2005?

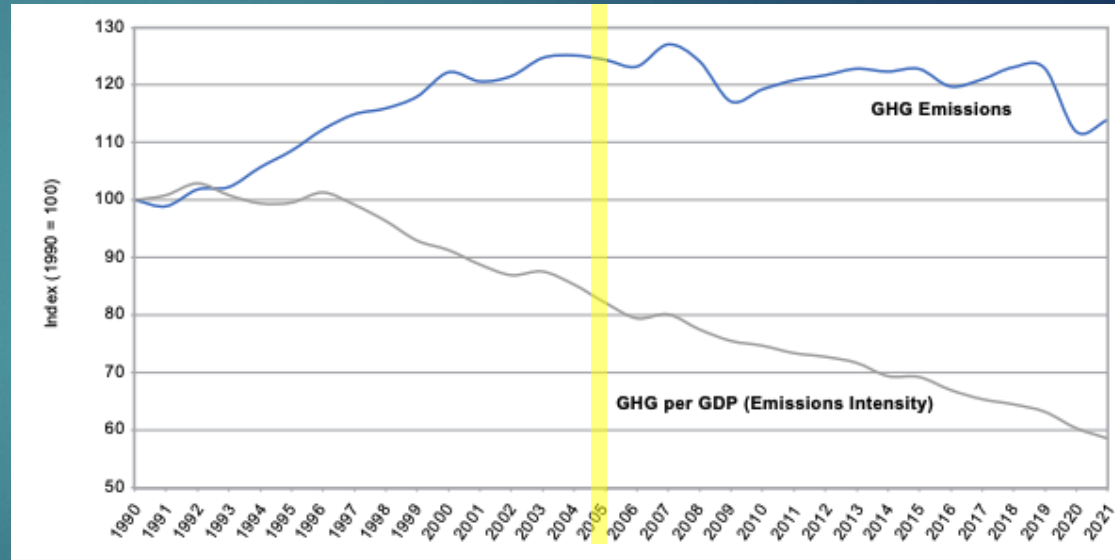
- a. They have risen
- b. By almost nothing
- c. Modestly
- d. Substantially

# Question 1

By how much has Canada reduced its emissions since 2005?

[C] Canada has reduced its emissions by 8.4% from 2005 levels

- ▶ 670 megatonnes (MT) in 2021 vs 732 MT in 2005
- ▶ Equivalent to **13.9% above** 1990 levels





## 2. Which climate targets has Canada met?

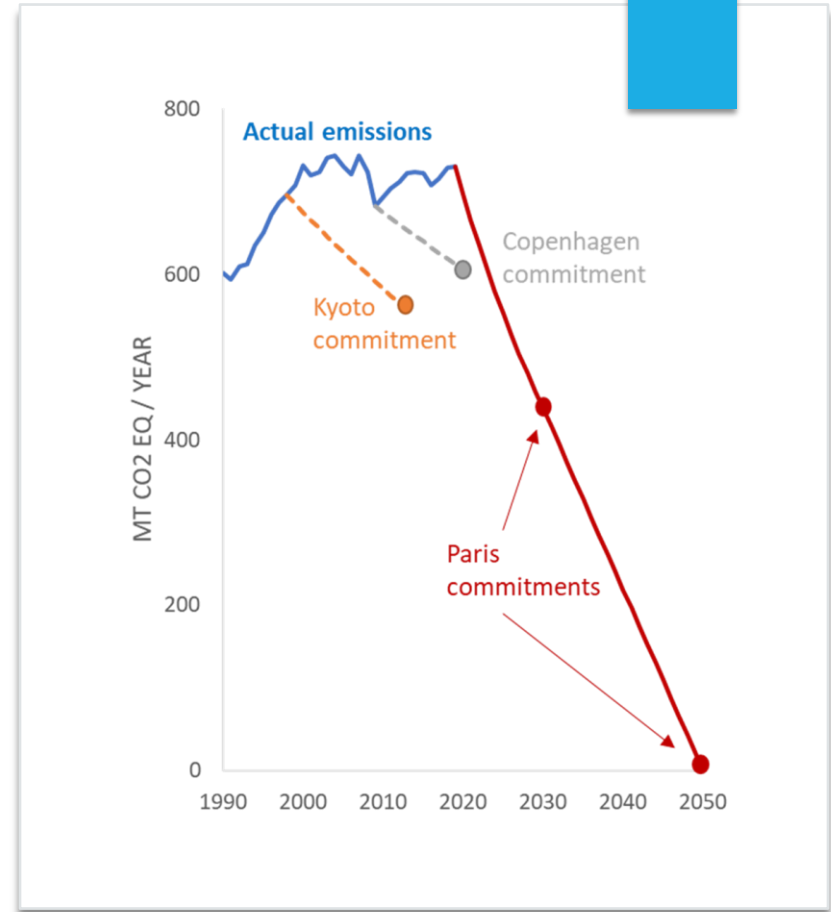
1. Kyoto
2. Copenhagen
3. None
4. All

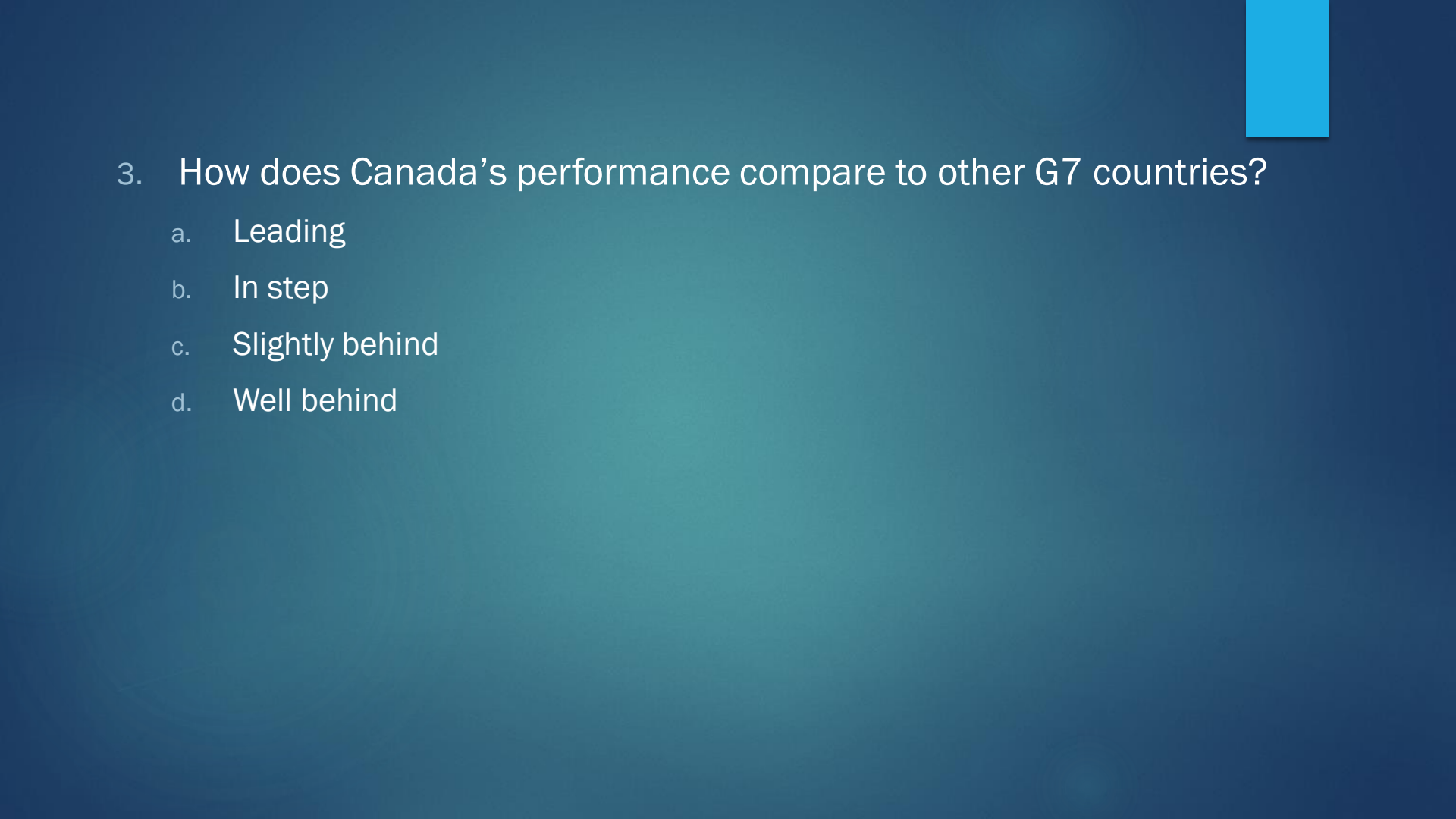
## Question 2

# Which climate targets has Canada met?

[C] Canada has not met any targets to date

- ▶ Kyoto commitment (1997): -6% of 1990 levels by 2008-2012
- ▶ Copenhagen commitment (2009): -17% of 2005 levels by 2020
- ▶ Paris revised NDC (2021): -40% to 45% of 2005 levels by 2030



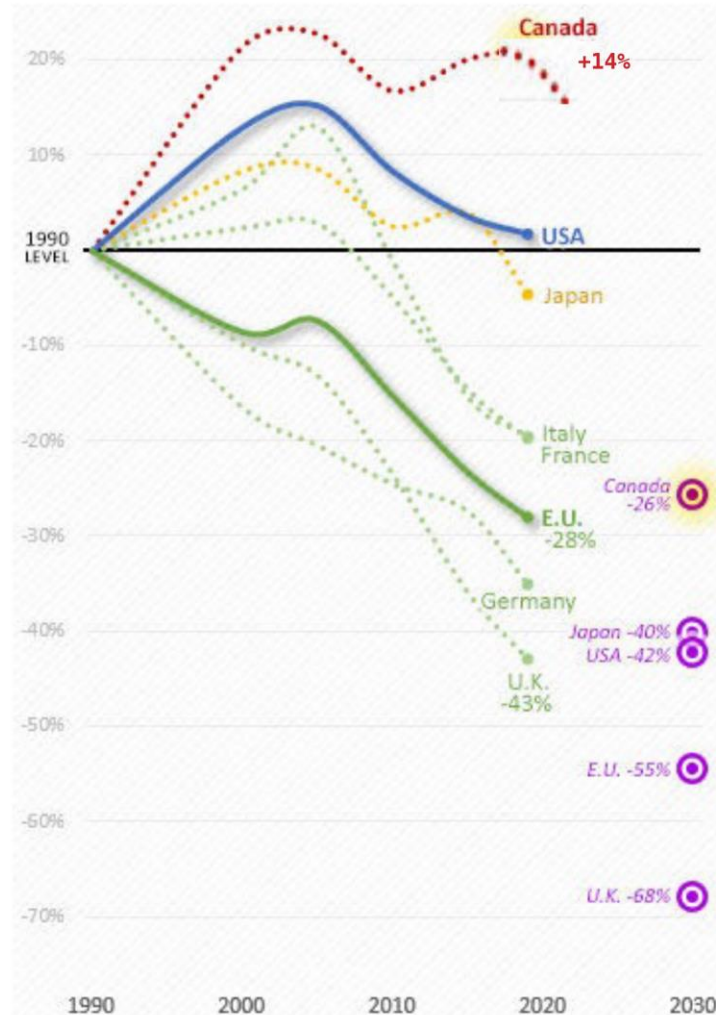
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3. How does Canada's performance compare to other G7 countries?
    - a. Leading
    - b. In step
    - c. Slightly behind
    - d. Well behind

# Question 3

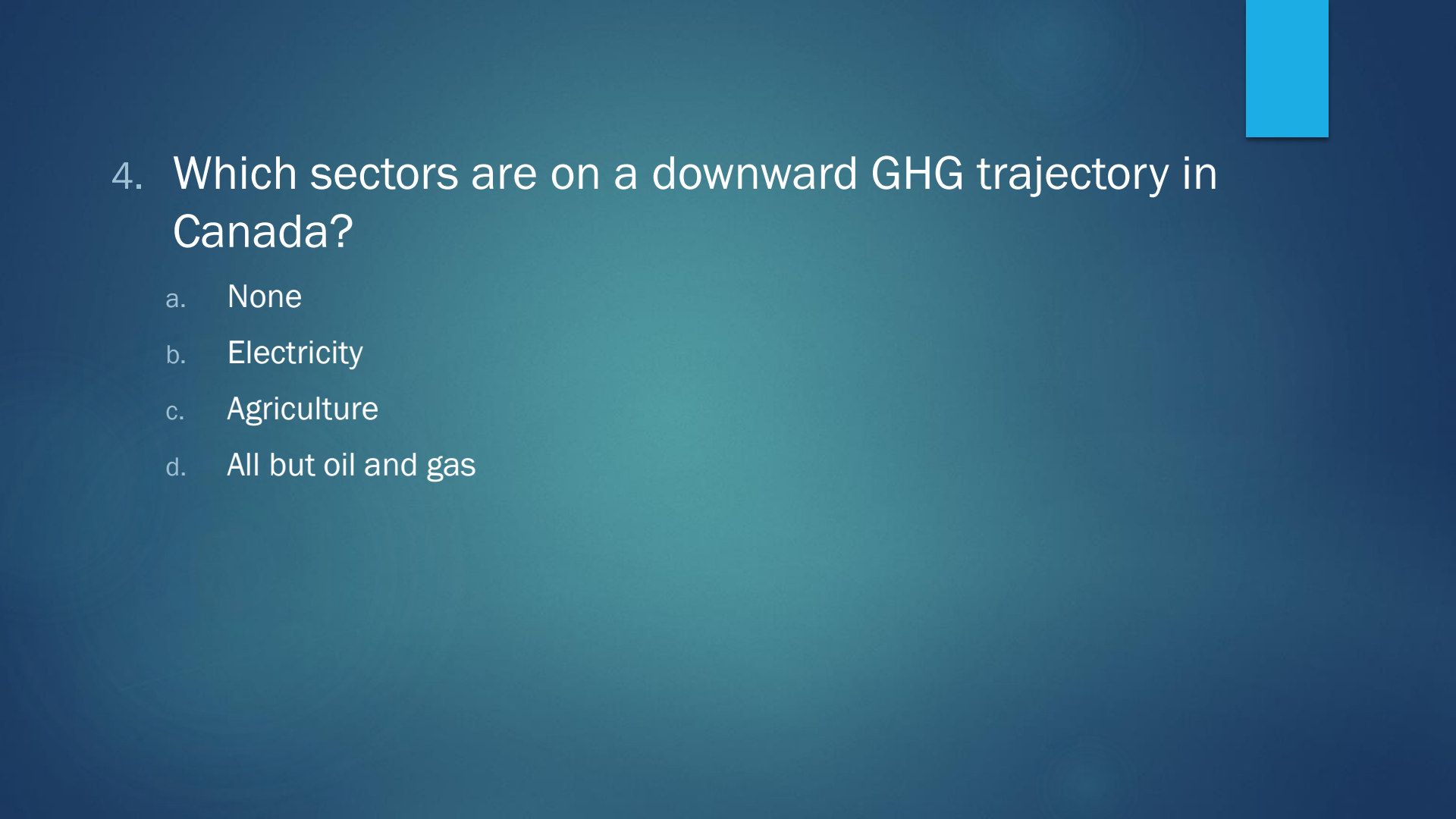
How does Canada's performance compare to other G7 countries?

[D] We are well behind all other G7 countries

- ▶ Most have reduced emissions substantially
- ▶ Even the USA is on a downward trajectory and nearing 1990 levels



Equivalent to -40 - -45% reductions compared to 2005 levels



4. Which sectors are on a downward GHG trajectory in Canada?

- a. None
- b. Electricity
- c. Agriculture
- d. All but oil and gas

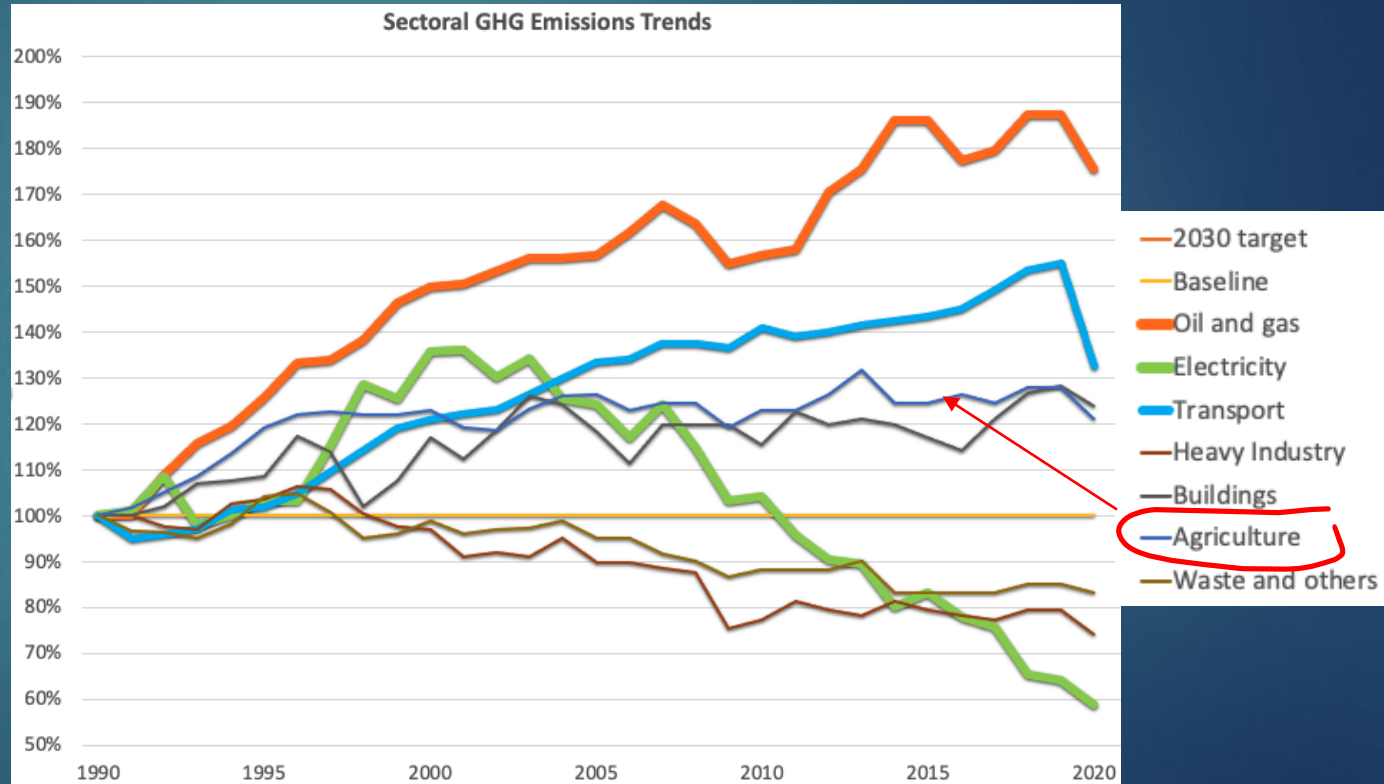


# Answer to question 4

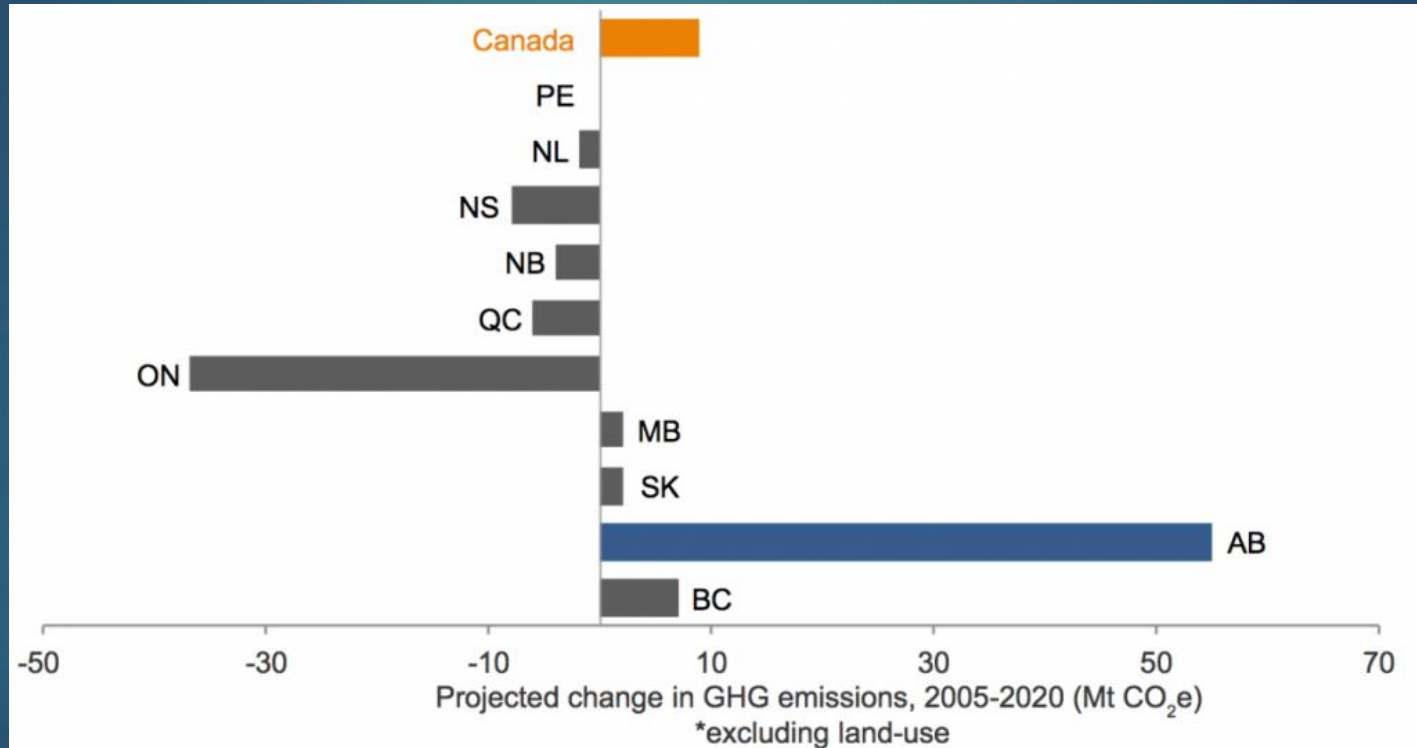
[B] Electricity is on a downward trajectory

Oil & gas on a marked upward trends

Agriculture stable since 2005



# GHGs in Canada



# Shutting down coal

35

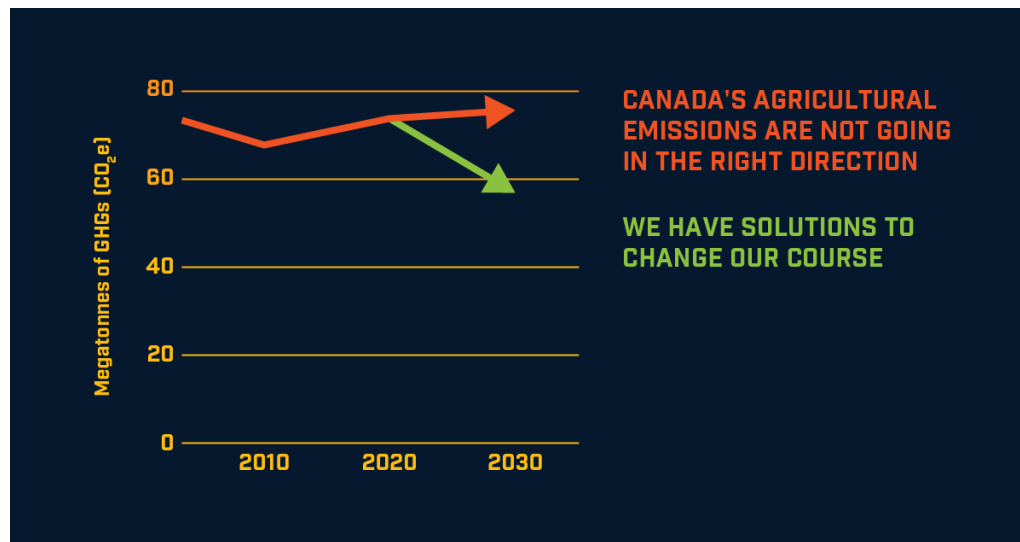




The climate,  
animal, human,  
health, global  
pandemic  
connection

# Climate and Agriculture

- ▶ With a ramping up of climate mitigation efforts agricultural emissions will have to be brought under control,
- ▶ reducing these emissions is impossible without major changes to existing farming practices, and
- ▶ agriculture could in some cases represent a site for carbon sequestration (negative emissions).



Supporting farmers

Advancing policy

Building regenerative and  
resilient agriculture in  
Canada



**FARMERS  
FOR CLIMATE  
SOLUTIONS**

Soil health = Animal health

## Regenerative agriculture

- ▶ Regenerative agriculture has the advantage of being a relatively open and dynamic movement (similar to net zero)
- ▶ It allows farmers to engage with different forms of regenerative practices
- ▶ It can apply to both large and small scale operations, and to a wide range of crops, feed and livestock



# Support for the Ag sector is needed

40

Government investment in  
climate-friendly agriculture

**HOW DOES CANADA STACK UP?**



**\$0.7** CAD  
PER ACRE

CANADA

**\$8.47** CAD  
PER ACRE

UNITED STATES

**\$51.75** CAD  
PER ACRE

EUROPEAN UNION



# \$300 million commitment

41



**PROGRAM 1 \$115 MILLION**

**Doing more  
with less  
nitrogen**

**GHG mitigation:  
2.9 megatonnes**



**PROGRAM 2 \$115 MILLION**

**Increasing  
adoption  
of cover  
cropping**

**GHG mitigation:  
2.2 megatonnes**



**PROGRAM 3** \$25 MILLION

## Normalizing rotational grazing

GHG mitigation:  
**302,000 tonnes**



**PROGRAM 4** \$30 MILLION

## Protecting wetlands and trees on farms


GHG mitigation:  
**4.1 megatonnes**



# Glimpse into the future

Electrify everything!

- ▶ Cars (and tractors) will be electric
- ▶ Homes and offices will be heated with electricity
- ▶ Delivery trucks too
- ▶ Large trucks, trains and ships will mainly use hydrogen
- ▶ Energy sources will be variable according to region with offshore wind and solar being the largest energy sources unless there are real breakthroughs in nuclear power – nuclear possible in longer term
- ▶ Air travel – short, medium, long – Electric, hydrogen, biofuel
- ▶ **Agriculture will be regenerative**




Old energy  
systems

New energy  
systems

“Net zero pathways require spending a similar fraction of GDP that we spend on energy today, but we have to immediately shift investments toward new clean infrastructure instead of existing systems,” *Net-Zero America, Princeton University, 2021.*

When we talk about solving  
climate change...

The image features a dramatic sunset sky with warm orange and yellow tones and scattered clouds. In the foreground, the dark silhouettes of a bear and a bull are perched on a rocky ledge. The bear is on the left, looking towards the right. The bull is on the right, rearing up on its hind legs, facing the bear. The overall scene is a metaphor for the tension between environmental and economic interests.

What we're really talking about is a great  
global economic and social transition...



...one which involves confronting serious economic and human risk.

In 2021, disasters triggered by weather-and climate-related hazards cost the world **US\$280 billion.** (Source: Eco-Business, 2022)



...while grasping  
unprecedented economic  
opportunity.

***“We are on the cusp of a new  
economic era”***

The world is expected to invest  
about **US\$90 trillion** on  
infrastructure in the period up to  
2030.





Solving climate change will enable the “*great transition*” by helping us transform how grow food, generate and use energy, build cities, move people and goods...

# Takeaway Messages

1. We have struggled to achieve sustainability – and climate change is at risk of overwhelming society's ability to respond
2. We can succeed if we look at climate change as a health, economic and social issue it is about health, jobs, family, food – not just an environmental issue
3. Urgency – means getting to scale, ***fast and acting now!***
4. Working with businesses, communities, all levels of government, in a coordinated and integrated way
5. There are clear and well-known pathways to net zero – “electrify everything” (add a little hydrogen...), regenerative agriculture
6. Net zero transition provides a new way of thinking – ***solving climate change is a human betterment endeavour***

Thank you

Questions?

