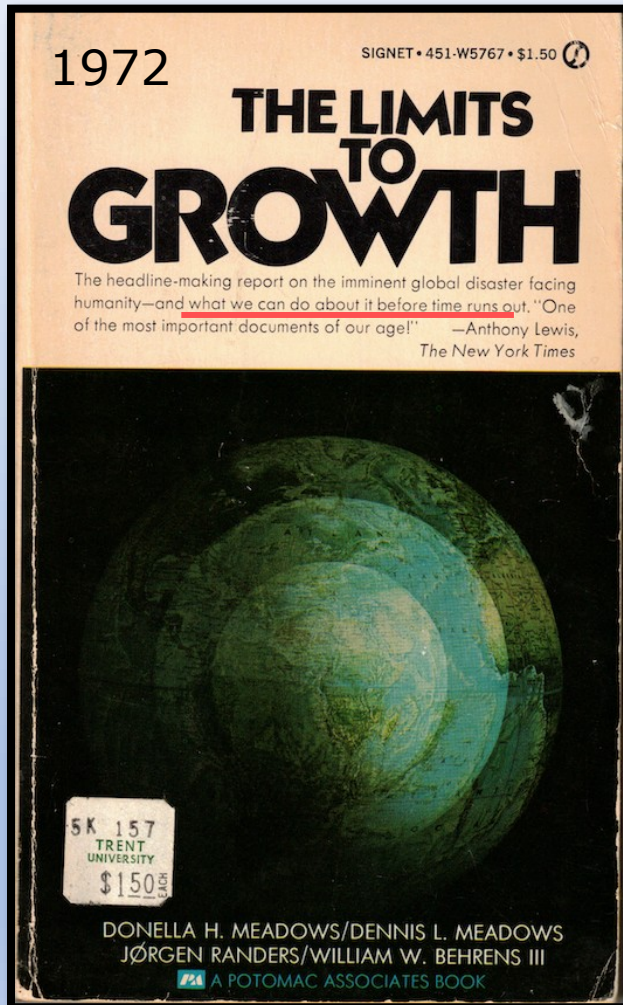


CLIMATE CHANGE: SEARCHING FOR PATHWAYS TO HOPE

Mike Brklacich, Professor Emeritus
Carleton University
Ottawa, Canada
Email: mike.brklacich@carleton.ca

Prepared for:
Canadian Association for the Club of Rome:
18 Feb 2026

Club of Rome – Mike Brklacich: Two Notable Intersections



\$1.50 in 1972 = \$11.13 in 2025

FOOD SECURITY How did we get here? Where are we going?

Mike Brklacich
Department of Geography &
Environmental Studies
Carleton University



CACOR Nov'14

Overview

- Food Security: A Brief History
- FS Trends
- Climate Change: A FS Threat Multiplier?
- Looking Ahead: Changing FS Contexts

Recent Gloom ...

Carbon dioxide levels increase by record amount to new highs in 2024

● PRESS RELEASE

15 October 2025

Carbon dioxide (CO₂) levels in the atmosphere soared by a record amount to new highs in 2024, committing the planet to more long-term temperature increase, according to a new report from the World Meteorological Organization (WMO).

Key messages

- CO₂ impacts climate today and for many centuries
- Concerns mount about carbon sinks like forests and oceans
- Rising temperatures are accompanied by more extreme weather
- Strengthened monitoring is vital to inform action



Share: X

THE CONVERSATION

Academic rigour, journalistic flair

Podcasts Arts Business + Economy Culture + Society Education Environment + Energy Health Politics Science + Tech

Heat with no end: climate model sets out an unbearable future for parts of Africa

Published: February 8, 2026 2.35am EST

Trump revokes landmark ruling that greenhouse gases endanger public health

12 Feb 2026

2 days ago

Share Save

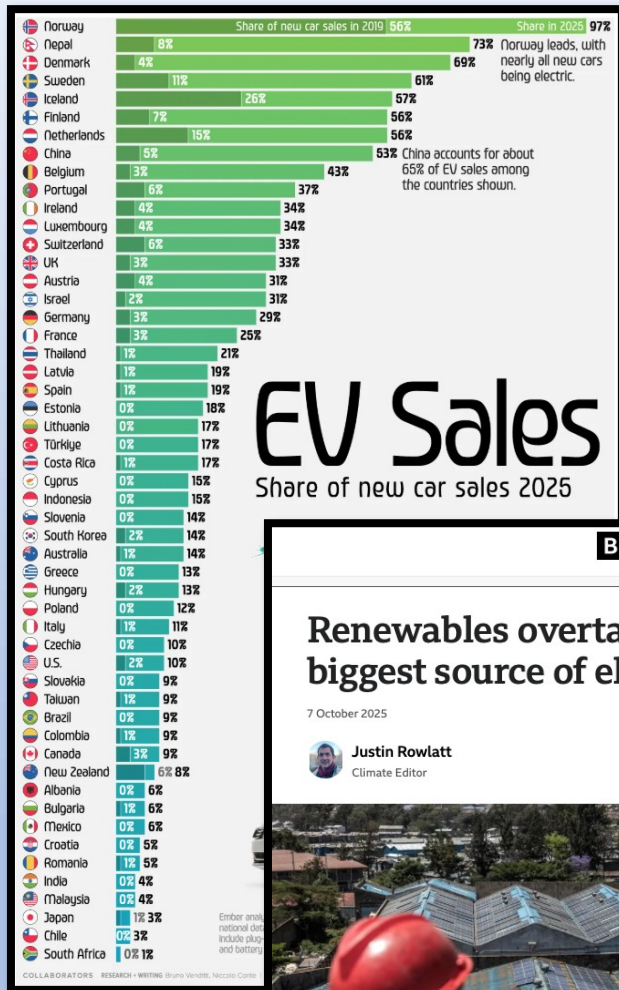
Matt McGrath

Environment correspondent



Sources:
wmo.int/media/news/carbon-dioxide-levels-increase-record-amount-new-highs-2024
theconversation.com/heat-with-no-end-climate-model-sets-out-an-unbearable-future-for-parts-of-africa-274323
www.bbc.com/news/articles/cn0zdd7yl4vo

... Coupled with Glimmers of Hope



EV Sales

Share of new car sales 2025

In 2026, we don't need to choose between the environment and economic prosperity

TIM GRAY

SPECIAL TO THE GLOBE AND MAIL
PUBLISHED JANUARY 2, 2026

FOR SUBSCRIBERS



Renewables overtake coal as world's biggest source of electricity

7 October 2025

Justin Rowlett
Climate Editor



2025

BREAKTHROUGH OF THE YEAR

AAAS Science



GOOD MORNING, SUNSHINE

The seemingly unstoppable growth of renewable energy is Science's
2025 Breakthrough of the Year TIM APPENZELLER

Today we will...

Review the Gloom (*The G's*):
Science & Policy Reminders

Discuss Pathways to Hope (*The H's*):
What we can do before we run out of time
From Limits to Growth 1972 Cover

Beyond this Presentation's Scope

*Sufficiency of Minor
vs Radical Shifts*



VS



*Have We Surpassed Earth System
Processes Tipping Points?*

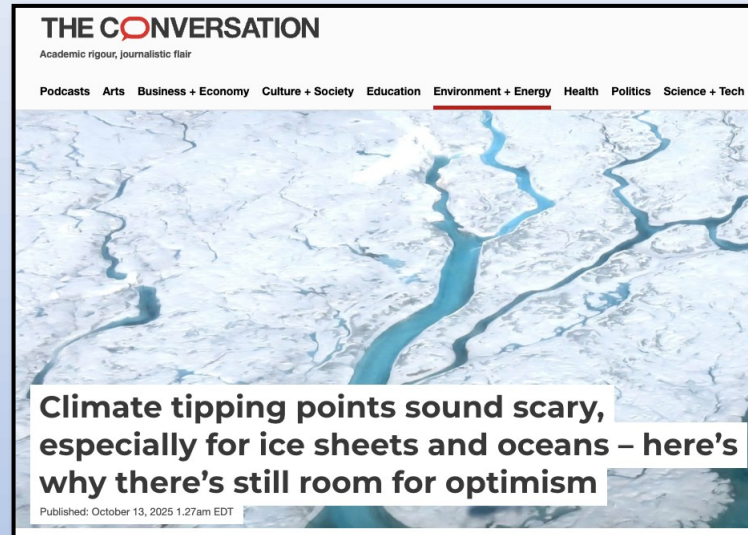


Image Credits & Sources

www.youtube.com/watch?v=-vKcsWW-Frk

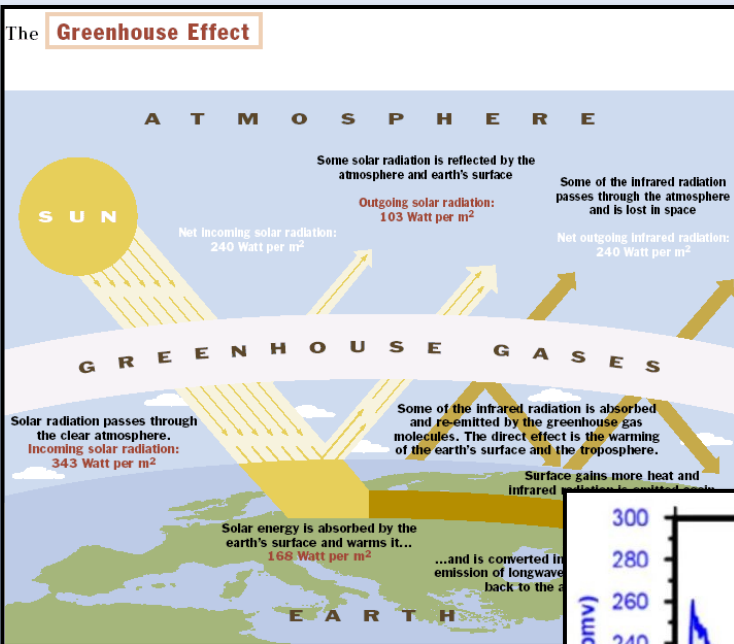
boomerecocrusader.com/environmental-impact-of-small-changes

theconversation.com/climate-tipping-points-sound-scary-especially-for-ice-sheets-and-oceans-heres-why-theres-still-room-for-optimism-265183

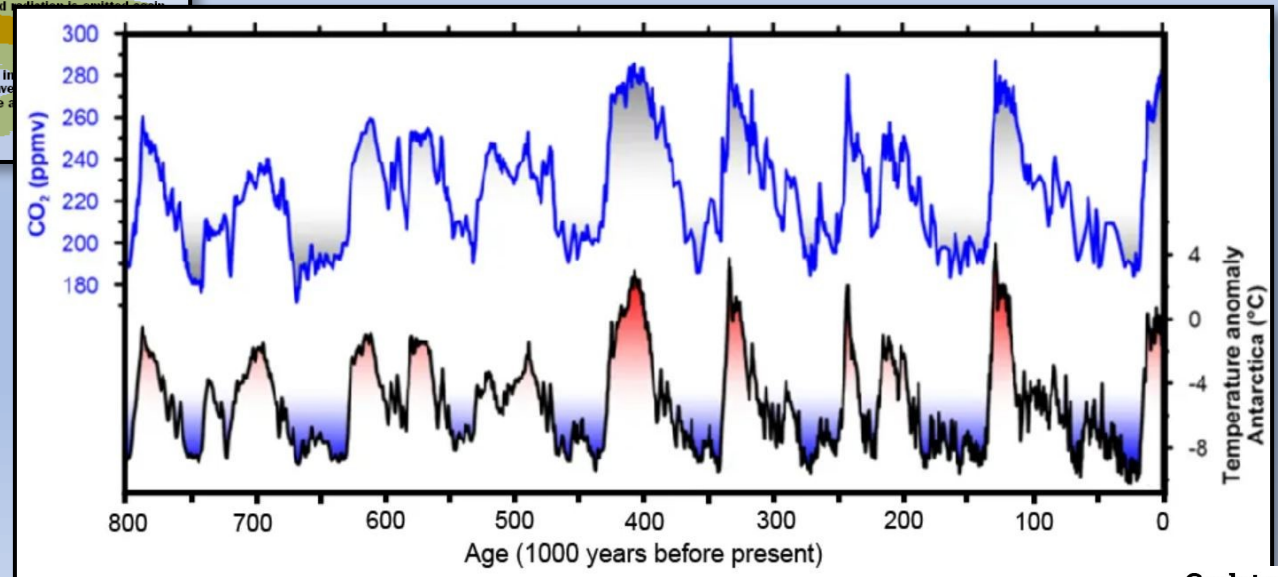
theethicalist.com/coral-reefs-signal-first-climate-tipping-point/

G#1: The Natural Climate System

Naturally Occurring
GHGs are Essential

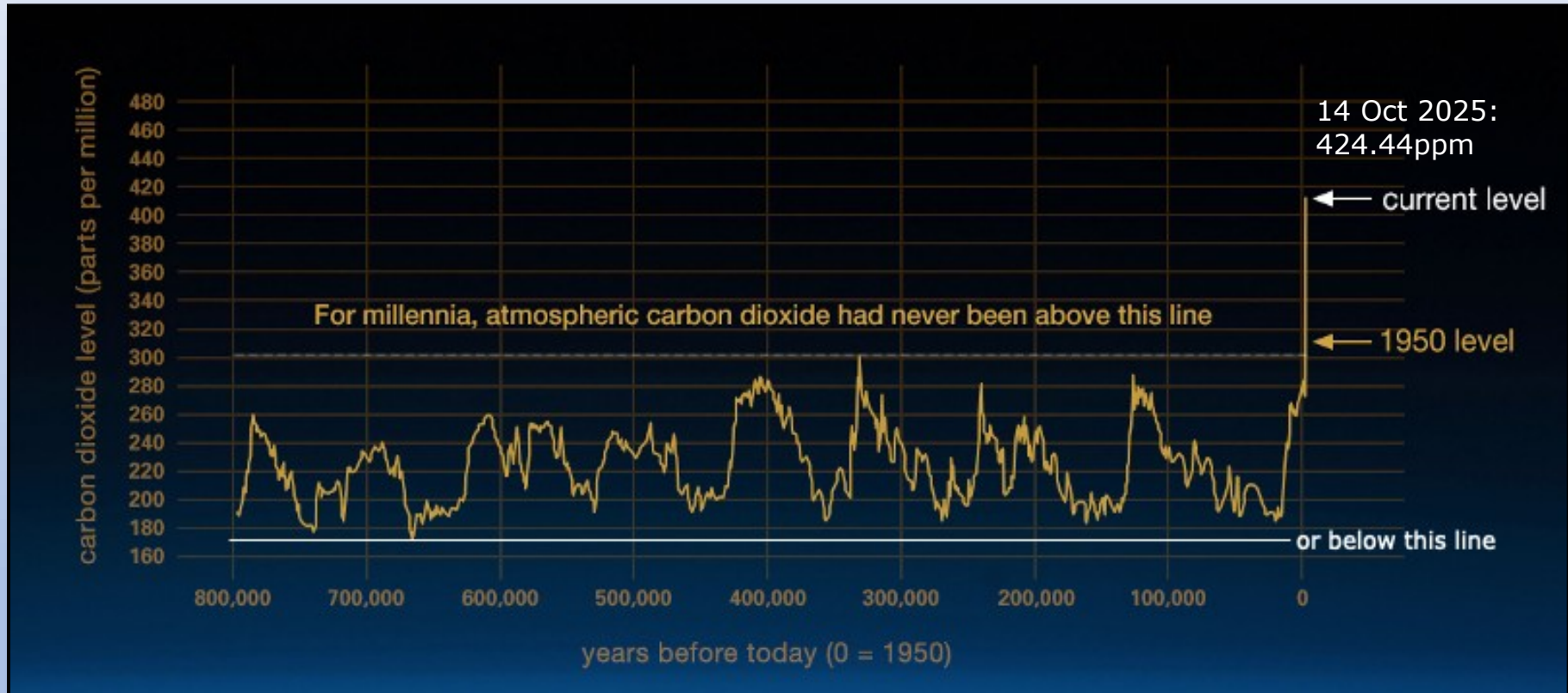


Natural Climate Systems,
Variability & Planetary Guardrails:
Volstok Ice Core Record



Sources:
UNEP & WMO 1996
Adapted from Petit et al 1999,
Loulergue et al 2008 & Lüthi et al 2008

G#2: Human Interference & Breaching of Planetary Guardrails



Sources:

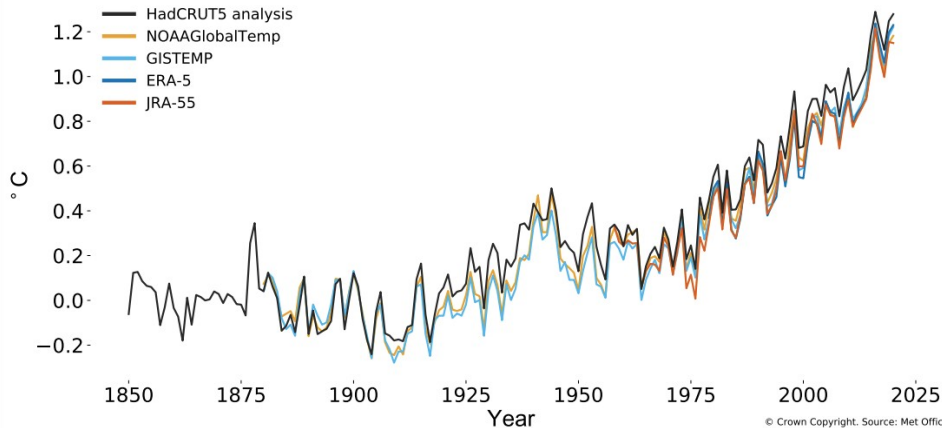
Adapted from the Global Carbon Project
gml.noaa.gov/ccgg/trends/monthly.html

G#3: Climate Systems Are Stressed

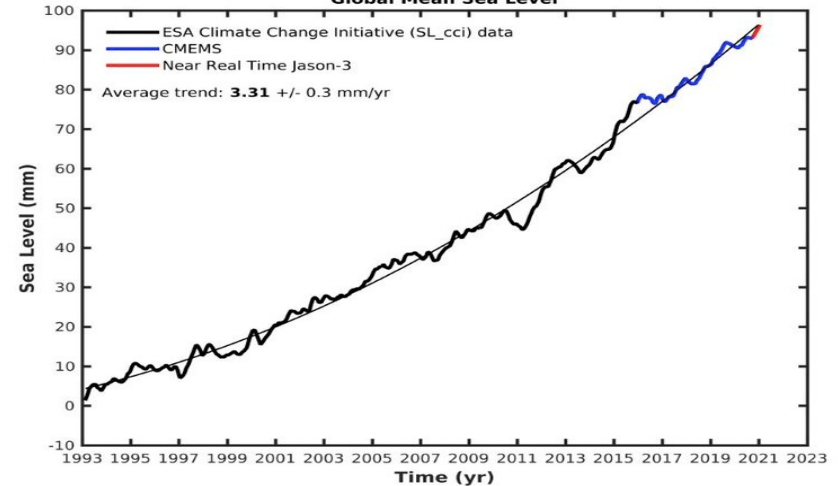
Derived from IPCC WG1 AR4, WMO 2021, NOAA

Met Office

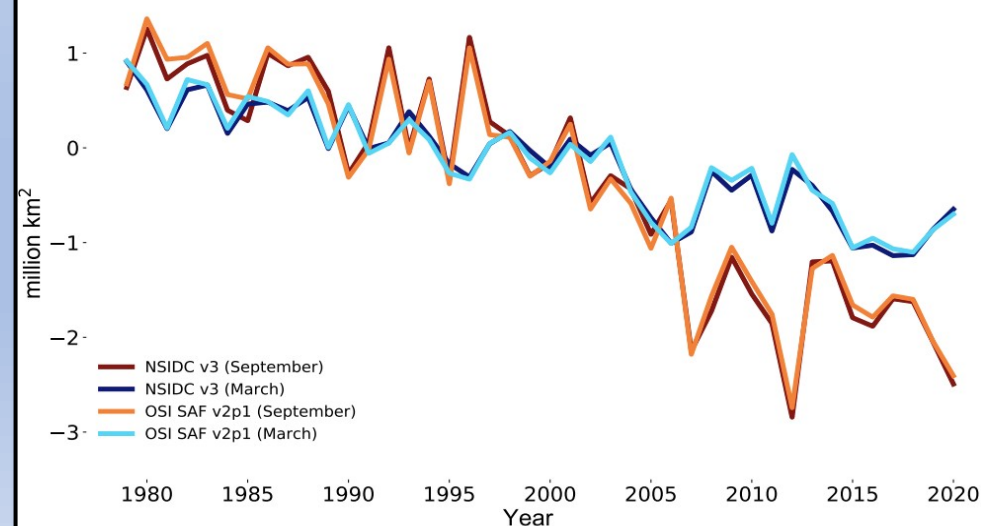
Global mean temperature difference from 1850-1900 (°C)



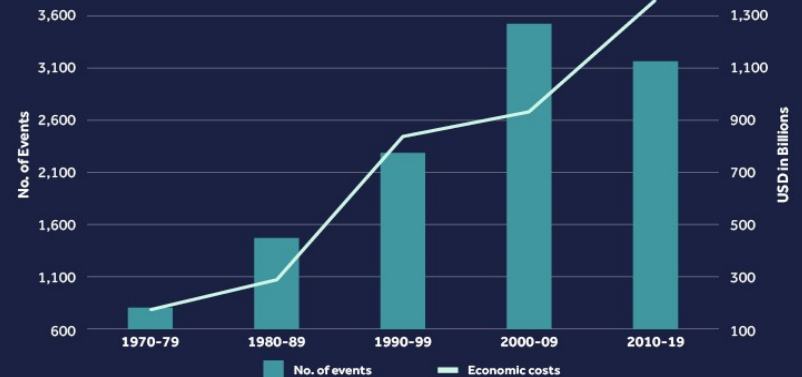
Global Mean Sea Level



Arctic sea-ice extent difference from 1981-2010 average

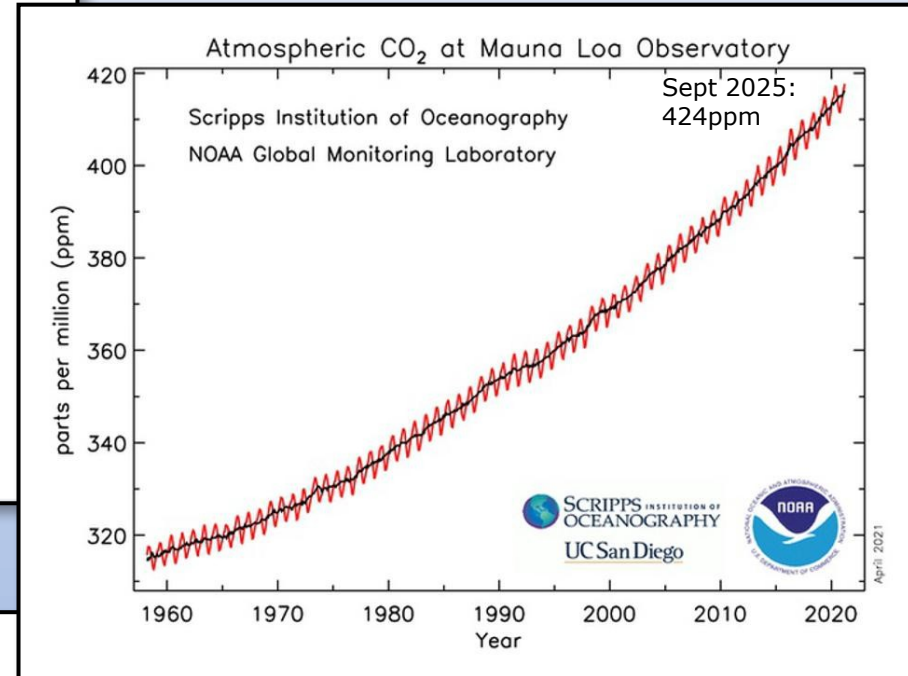
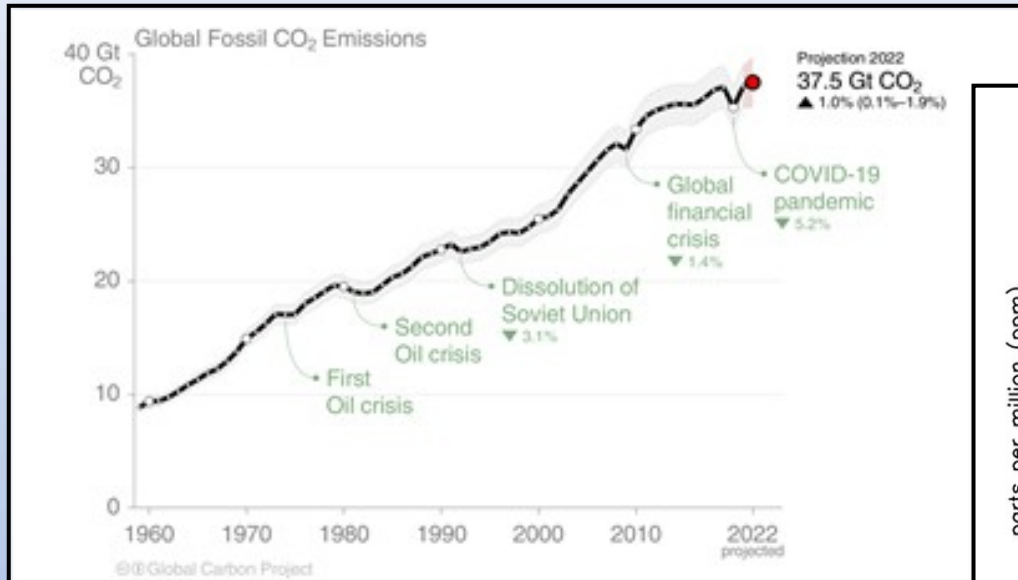


Increasing frequency and cost of extreme weather events



Source: World Meteorological Organization (WMO)

G#4: Kyoto Protocol (1993) & Paris Agreement (2015) have Failed



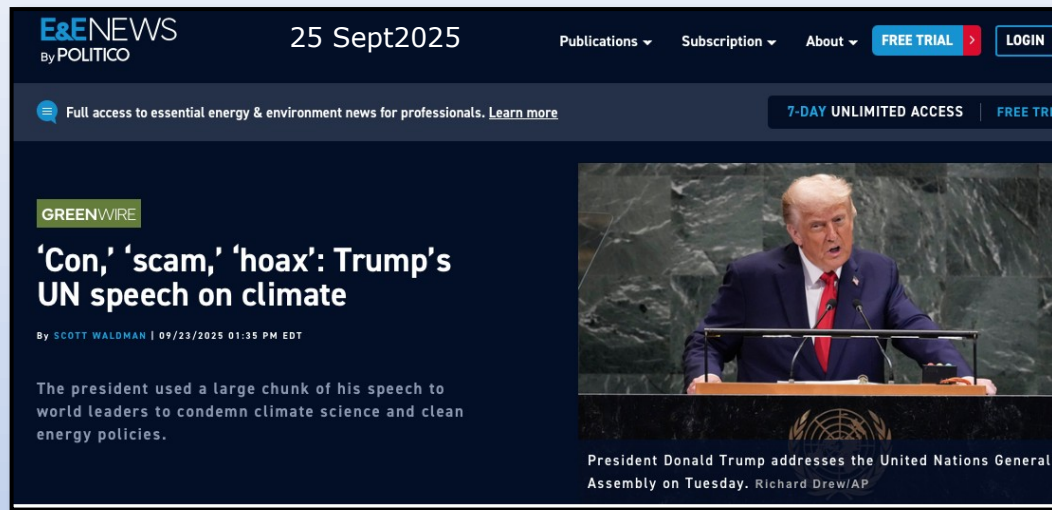
Greenhouse gases continued to increase rapidly in 2022

Carbon dioxide, methane and nitrous oxide rise further into uncharted levels

Focus areas: [Research](#) Topics: [greenhouse gases](#)

Share: [Twitter](#) [Facebook](#) [Email](#) [Print](#)

G#5: Uneven Transition to Net Zero



Sept. 2023:
419ppm



Climate misinformation turning crisis into catastrophe 19 Jun 2025

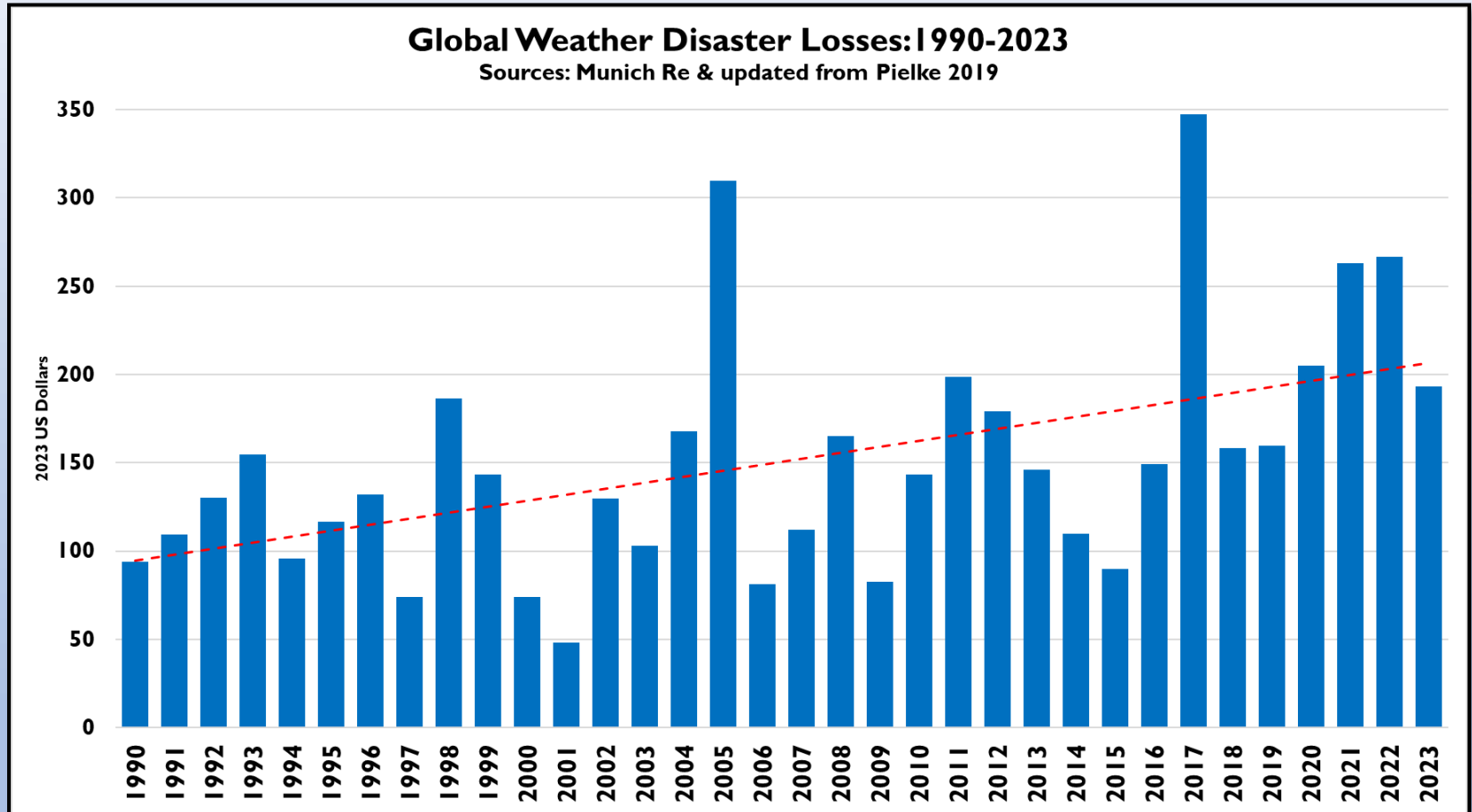
*"misinformation ranges from industry promoting fossil gas as a "low-carbon fuel" to bizarre conspiracy theories such as that **wildfires in southern California** this year were planned by officials in order to destroy child-trafficking tunnels."*

Sources:

www.eenews.net/articles/con-scam-hoax-trumps-un-speech-on-climate

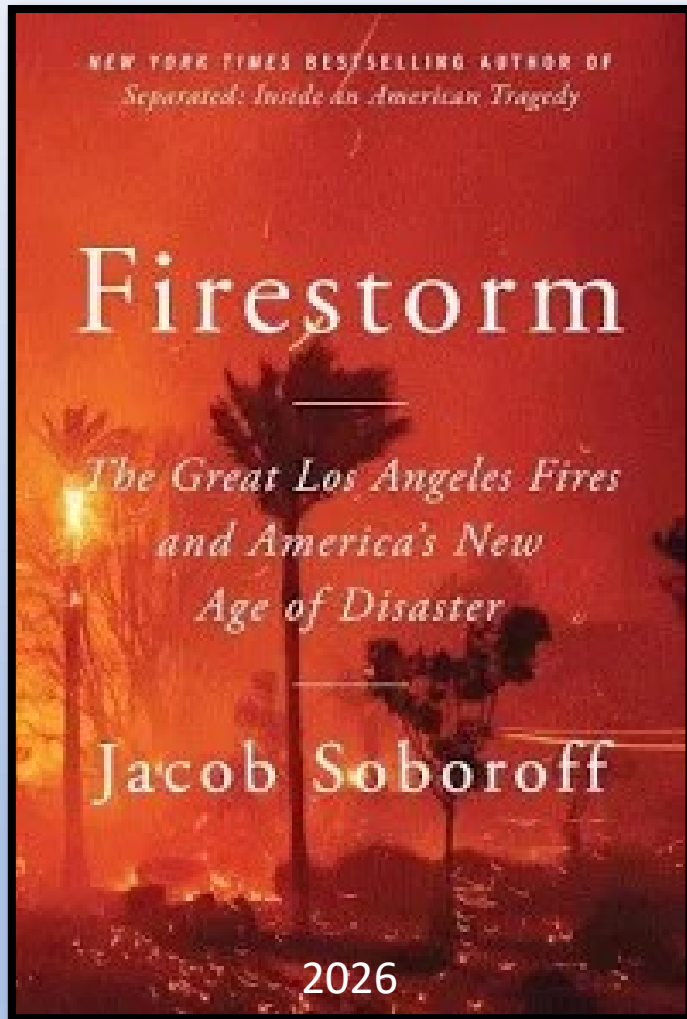
www.theguardian.com/environment/2025/jun/19/climate-misinformation-turning-crisis-into-catastrophe-ipie-report

G#6: Costly Road to Net Zero



Sources:
<https://rogerpielkejr.substack.com/p/global-disaster-losses1990-2023>

G#7: Policy Complexity & Future Disasters



What last year's L.A. fires reveal about the politics of disaster

January 11 | Radio | 20:42

CBC The Sunday Magazine

The Perfect Storm

Sept. 2023:
419ppm

- CC & prolonged drought
- Santa Ana winds
- Faulty electrical equipment
- Inadequate water supply/pressure/fire trucks
- First responder fatigue
- Disaster politization/misinformation (e.g. *Newscumb*, fictional tap, etc)
- EV batteries exploding
- NOAA/FEMA/Occupational Health purge
- Immigration policy & labour for recovery
- Post-disaster land sales

Disaster of the Future

The Gloom:

Our Climate is in Crisis & It's Anthropocene Now



*The alarm bells are deafening.
GHG emissions ... are choking our
planet and putting billions of
people at immediate risk.*

*UN Secretary-General, 9 August 2021. Upon release of
IPCC AR6 WG1 Report*



*It's a pity we're still officially living in
an age called the Holocene. The
Anthropocene - human dominance
of biological, chemical and
geological processes on Earth - is
already an undeniable reality.*

— Paul J. Crutzen —

2002

Transitioning from Gloom to Hope

The image shows a screenshot of a New Scientist article preview. At the top, the 'New Scientist' logo is on the left, and navigation icons (user profile, search, moon, and a hamburger menu) are on the right. Below the logo is a prominent orange button that says 'Subscribe now' with a right-pointing arrow. The article title 'The 1.5°C target is dead, but climate action needn't be' is displayed in large, bold white text. Above the title, the category 'Leader and Environment' is written in a smaller font, with 'Leader' in orange and 'and Environment' in white. Below the title, a paragraph of text explains that climate scientists have explicitly said it will be impossible to limit peak warming to 1.5°C, and that the focus should now be on taking action rather than using platitudes and slogans. The date '21 August 2024' is shown with a calendar icon. At the bottom, there is a row of social media sharing icons: Facebook, X, WhatsApp, LinkedIn, Reddit, Email, and Print. A small orange button with a white 'X' is located in the bottom right corner of the preview.

New Scientist

Subscribe now →

Leader and Environment

The 1.5°C target is dead, but climate action needn't be

For the first time, climate scientists have explicitly said it will be impossible to limit peak warming to 1.5°C. Now our focus should be on taking action, not meaningless platitudes and slogans

📅 21 August 2024

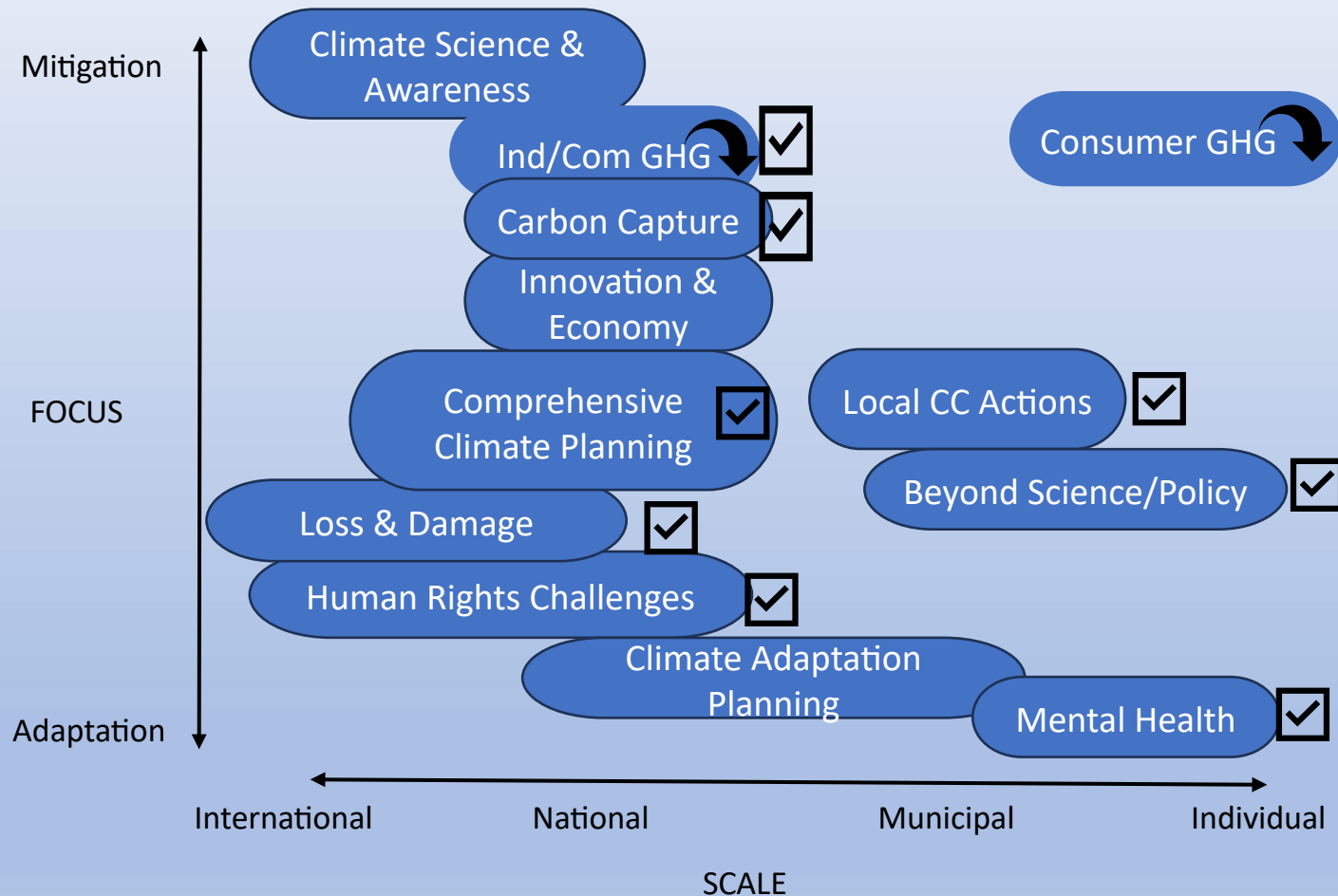
f X WhatsApp in reddit envelope printer

Searching for a Pathway to Hope

*An **Uncritical** Review of
Pulling Back from the Brink*

Pathways to a Safer Climate:

A Partial Catalogue of Hope



H#2: Growing GHG Reduction Potential

Reductions are Feasible with Current Technology



Journalism for the
energy transition

13 Oct 2025, 10:48 Sören Amelang | Germany

Hamburg referendum backs more ambitious climate action, 2040 net-zero target

#Cities #Policy #Society



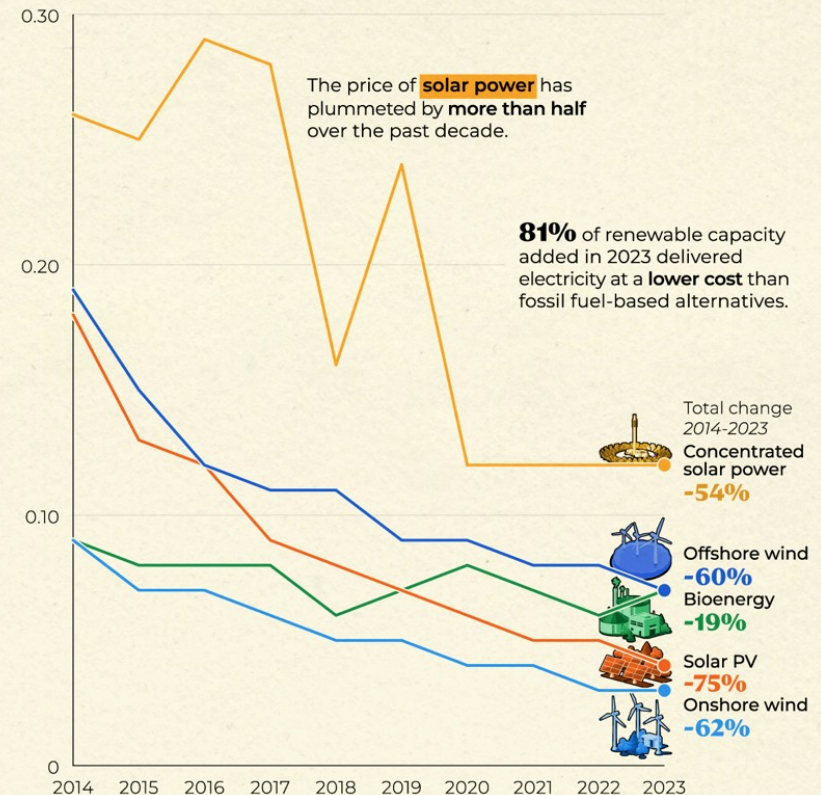
Hamburg reinvented a wartime bunker into a rooftop urban park. Photo: Mediaserver Hamburg / Christian Brandes.

Voters in Germany's second largest city have approved a referendum requiring the city to reach climate neutrality by 2040 — five years earlier than planned. The result forces the local government to toughen its climate law despite warnings about costs and feasibility.

THE DECLINING COST OF

Renewable Energy

Cost per kWh (\$)



VISUAL
CAPITALIST

Represents the global average levelized cost of energy.
Source: IRENA via Our World in Data

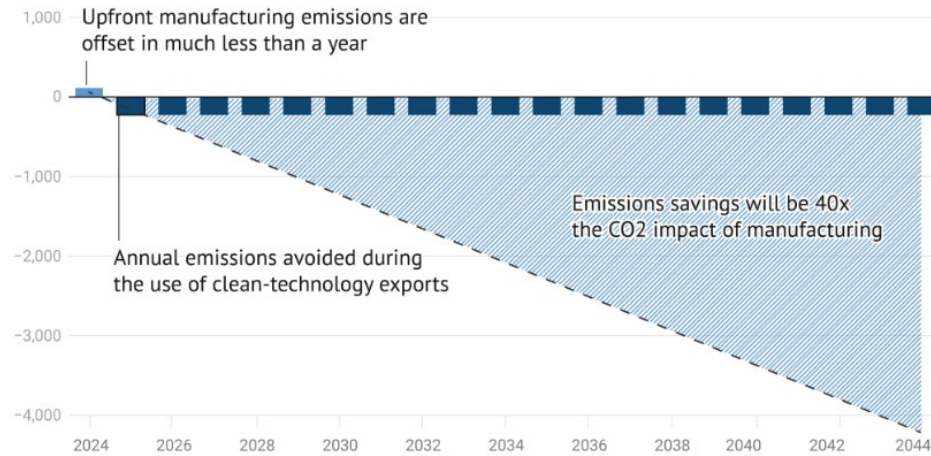
COLLABORATORS RESEARCH • WRITING Dorothy Neufeld, Niccolò Conte | ART DIRECTION • DESIGN Sabrina Lam

H#2: Growing GHG Reduction Potential-2

Reductions are Feasible with Current Technology

China's clean-energy exports in 2024 will avoid 4bn tonnes of CO2

Global emissions impact of China's clean-energy exports, MtCO2



Source: Analysis by Lauri Myllyvirta for Carbon Brief

Carbon Brief
CLEAR ON CLIMATE

Emissions associated with the production of China's clean-technology exports in 2024 and the annual emissions avoided during their use (columns), as well as the cumulative impact on global emissions over the lifetime of these products, MtCO2. Source: Analysis by Lauri Myllyvirta for Carbon Brief.

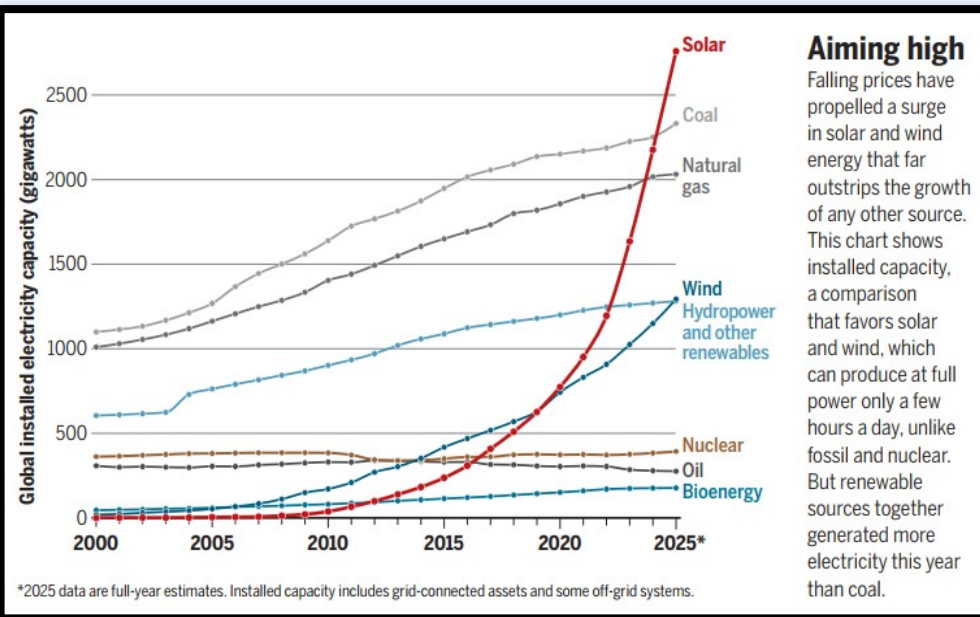


Sources:

www.carbonbrief.org/analysis-chinas-clean-energy-exports-in-2024-alone-will-cut-overseas-co2-by-1/

<https://www.sciencenews.org/article/net-zero-carbon-emissions-climate>

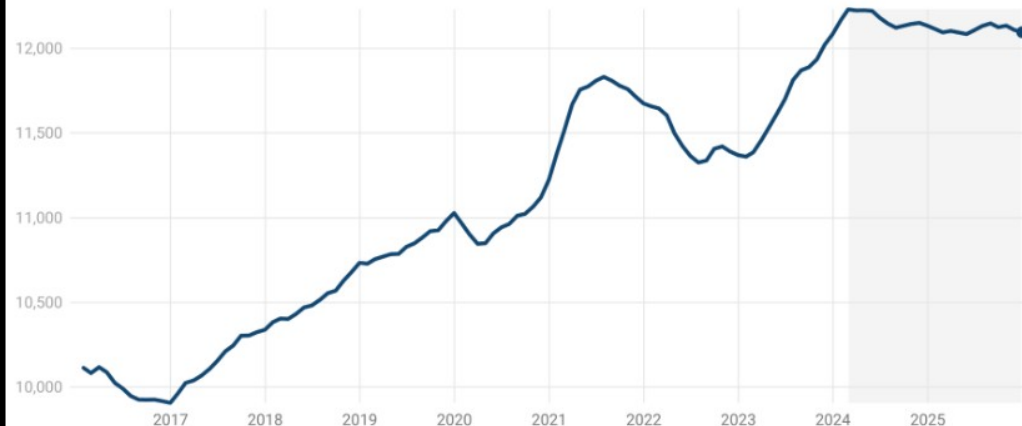
H#2: Growing GHG Reduction Potential-3



Thanks to renewables, the long-awaited decline in fossil fuels is within sight.
Hannah Ritchie, U of Oxford 2025

China's CO2 emissions have now been 'flat or falling' for 21 months

CO2 emissions from fossil fuels and cement, million tonnes of CO2, rolling 12-month totals



Source: Analysis for Carbon Brief by Lauri Myllyvirta

CarbonBrief
CLEAN ON EARTH

Carleton
University

Sources:

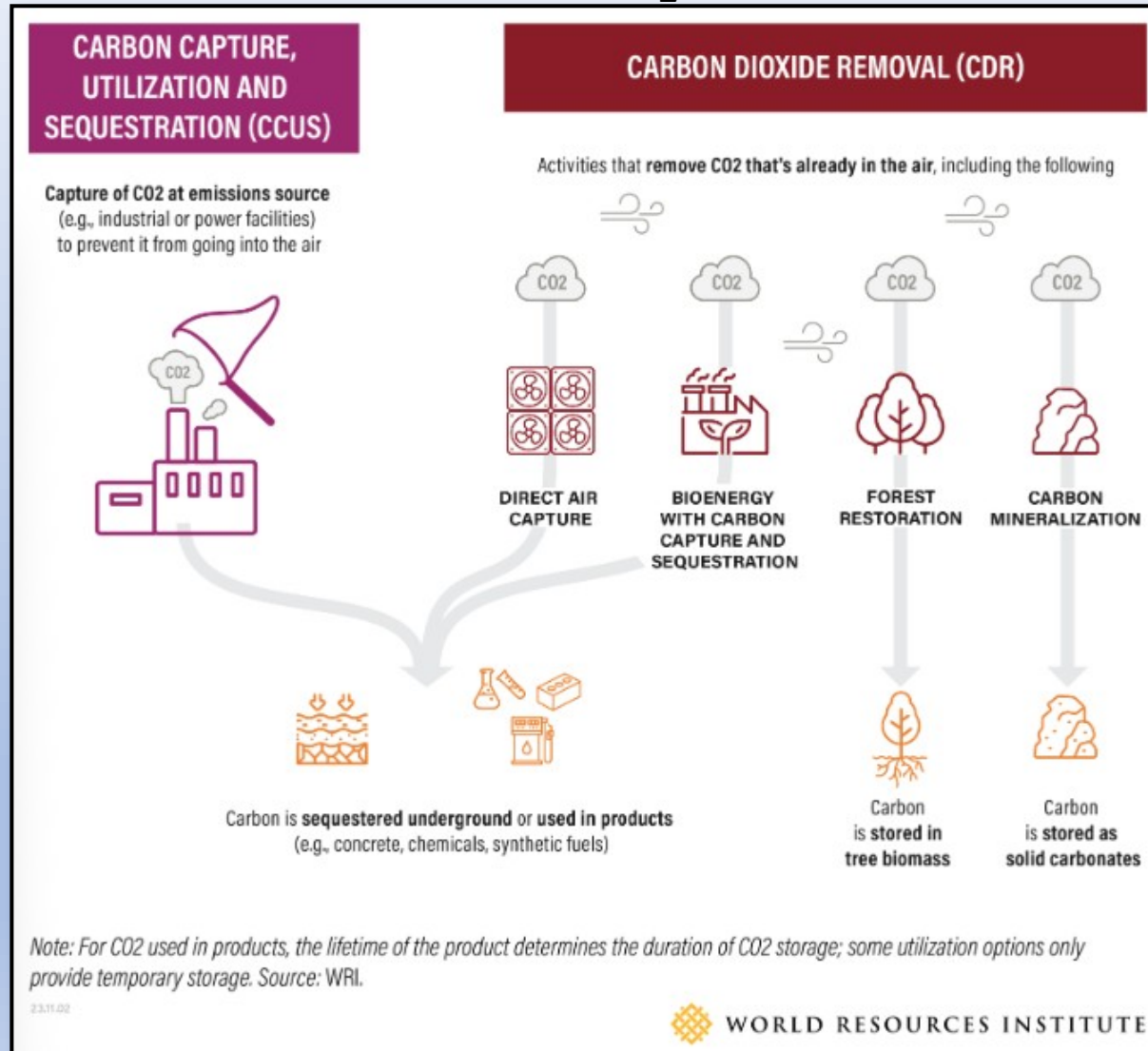
www.science.org/doi/epdf/10.1126/science.aee8000

www.carbonbrief.org/analysis-chinas-co2-emissions-have-now-been-flat-or-falling-for-21-months/

?
utm_source=cbnewsletter&utm_medium=email&
utm_term=2026-02-16&utm_campaign=Just+published+China+s+emissions+have+been+flat+or+falling+for+almost+2+years

H#3: Carbon Capture

C Capture vs CO₂ Removal



H3# : Carbon Capture: *Beyond Aspirational*

Carbon Capture, Utilization and Storage

What is Carbon Capture, Utilization and Storage?

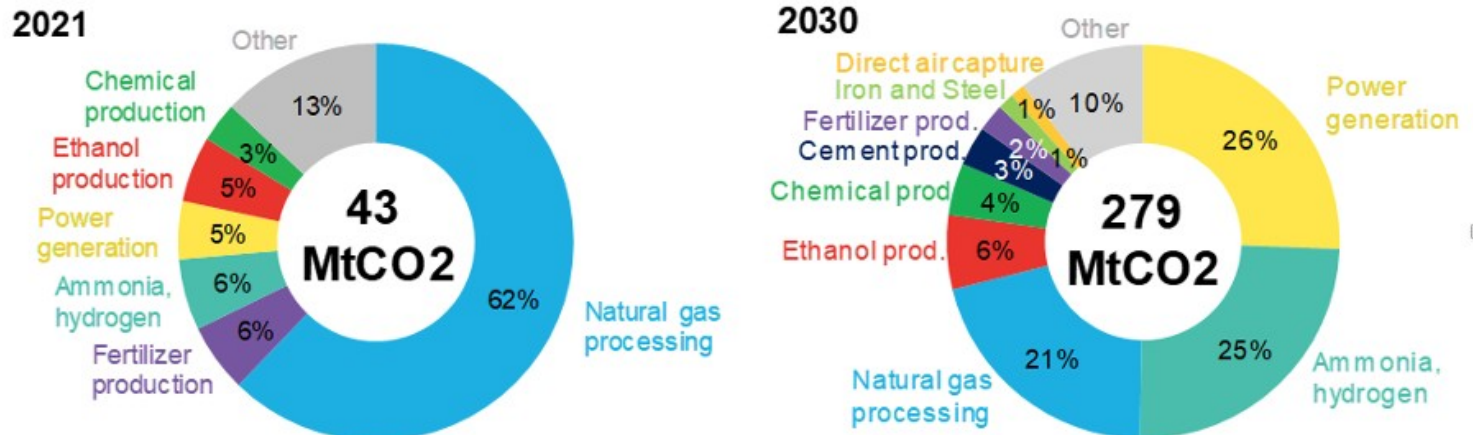
Carbon Capture, Utilization and Storage (CCUS) is a technology that reduces carbon dioxide (CO₂) emissions from large-scale industrial facilities.

The technology captures CO₂ emissions that would typically be vented into the atmosphere. The captured emissions are then transported and injected into deep geological formations for permanent storage, or they are recycled and used in a variety of innovative and value-added processes.

Quest Project



Figure 1: Global carbon capture capacity by source, 2021 and 2030

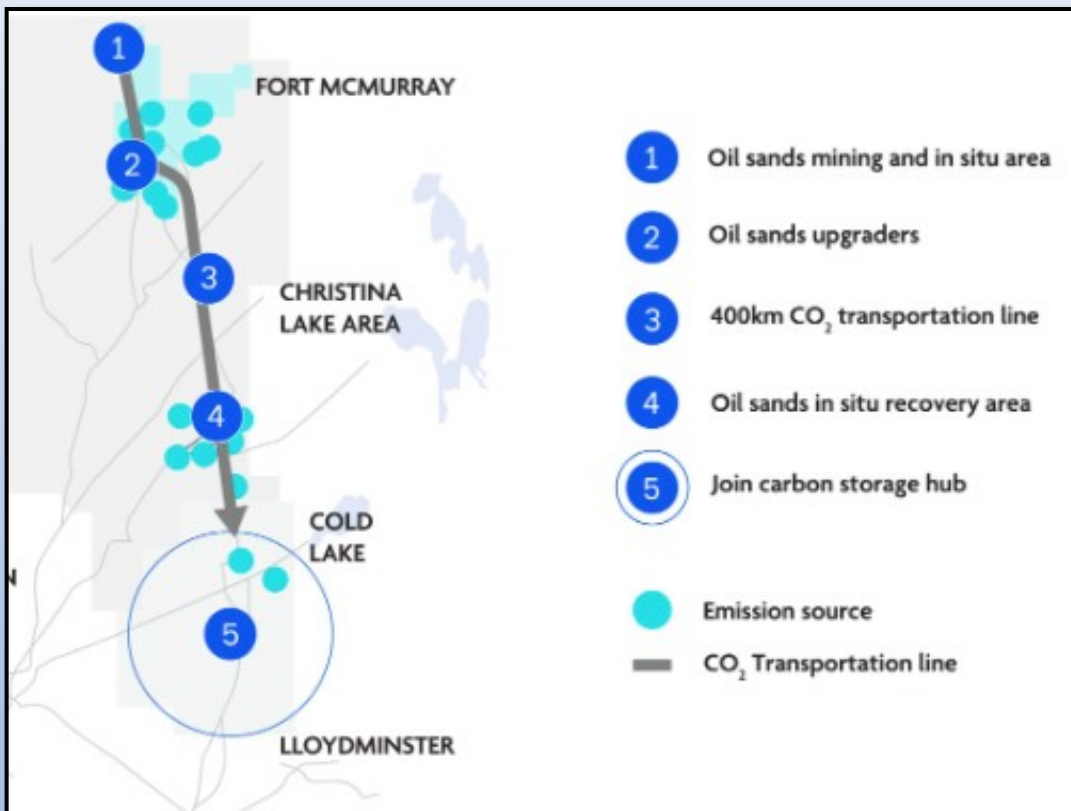


Source: BloombergNEF.

6-Fold Increase

H#3: Carbon Capture

Pathways Alliance Foundational Project



A Few Key Facts

- C removal at source
- +20 mining sites
- Production 2022: 3.1M barrels/day
- CO₂ Production Emissions
 - 2019: 68M T
 - 2030: 46M T (~32%)
 - 2050: Net Zero
- CO₂ Storage
 - 27M T/yr
- Estimated cost to 2030: \$24.1B

H#3: Carbon Capture

Place Amongst Other Hopes



WORLD
RESOURCES
INSTITUTE

Insights

Most Recent

Podcasts

News

All Insights

DONATE

7 Things to Know About Carbon Capture, Utilization and Sequestration

May 16, 2025 By **Katie Lebling**, Ankita Gangotra, **Karl Hausker** and **Zachary Byrum** Cover Image by: Bernhard Classen / Alamy Stock Photo

The IPCC, IEA and others find that CCUS can play a critical but limited role in addressing the climate crisis. Their analyses show that CCUS can be a complementary tool to reduce emissions where eliminating fossil fuel use or other emissions are not feasible.

Source:

www.wri.org/insights/carbon-capture-technology

H#5: Comprehensive Climate Planning: *Canada 2024* Overview

 Government of Canada / Gouvernement du Canada

Search ENR 

MENU 

[Canada.ca](#) > [Environment and natural resources](#) > [Climate change](#)

Climate change: our plan

Our targets

[Emissions Reduction Plan](#)
Our plan to reduce 40-45% of emissions below 2005 levels by 2030.

[Net-zero emissions by 2050](#)
We are committed to achieving net-zero emissions by 2050.

[Adapting to climate change](#)
A national strategy to better adapt to climate change impacts.

Reduce pollution

[Carbon pollution pricing](#)
How and why there's a price on carbon pollution, the impact on our emissions, and how the proceeds are returned to Canadians.

[Reducing methane emissions](#)
How we reduce methane emissions, the projections to 2030 and our progress so far.

[Oil and gas emissions cap](#)
Limit the emissions produced by the oil and gas industry.

[Inefficient fossil fuel subsidies](#)
Phase out or rationalize inefficient fossil fuel subsidies.

Invest in clean energy and create jobs

[Clean Electricity](#)
Help provinces and territories to keep electricity affordable and to make sure the power grid stays reliable as Canada's electricity needs increase.

[Clean Fuel](#)
Help drive new ideas and create jobs in different industries, like clean technology, farming, and low-carbon energy sources such as biofuels and hydrogen.

Our progress

[Greenhouse gas emissions](#)
Emissions numbers for Canada by sectors, regions and years.

[Climate Actions](#)
An overview of climate actions taken in Canada since 2016.

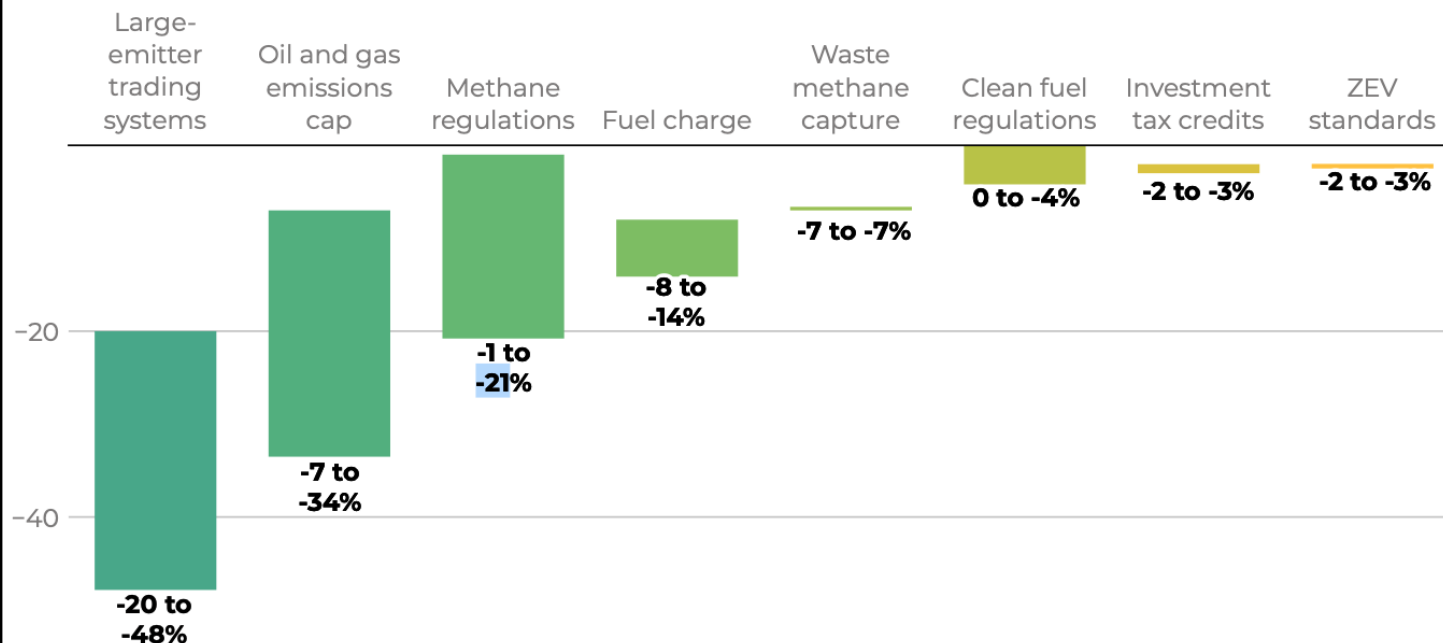
[Progress report](#)
Progress reports on objectives to reducing emissions, growing the economy, and building climate resilience.

Source:
canada.ca/en/services/environment/weather/climatechange/climate-plan.html
Accessed 16 Sep 2024 Carleton University

H#5: Comprehensive Climate Planning: *Canada 2024 Unpacked*

Range of incremental emissions reductions from climate policies in 2025-2030

Share of total emissions reductions between the baseline and the full ERP policy scenarios (%)

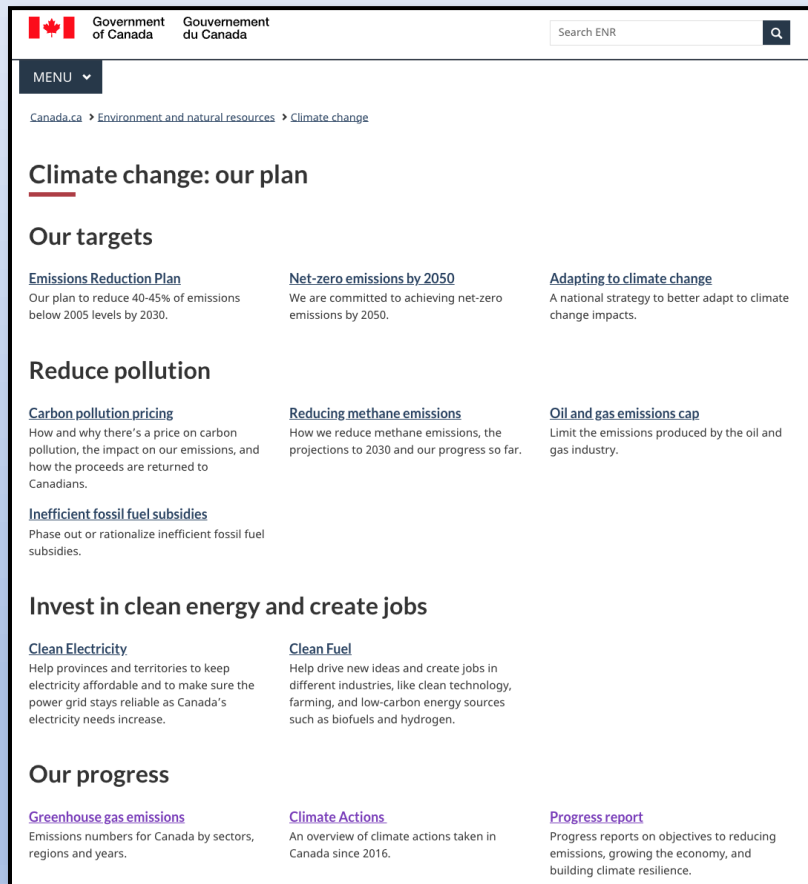


The figure shows the impact of each of the analyzed policies under two extremes. In the first, the policy is added to a baseline scenario, which does not include the legislated policies we simulated after 2025. This scenario isolates the impacts of a policy without interactions with other ERP policies. In the second, the policy is added to a scenario that includes all other ERP policies. This scenario shows the impact of the policy including interactions with other ERP policies, with emissions reductions attributable to multiple policies accruing to the larger policy package, rather than the individual policy in question. The values represent the contribution of individual policies as a share of total reductions between the baseline and the full ERP policy scenarios in 2030.

Many of these policies would have a much greater impact in 2035 and beyond, since some will only have been in effect for a few years, and others will increase in stringency after 2030 (e.g. the zero-emission vehicle standards).

Source: Canadian Climate Institute & Navius Research

H#5: Comprehensive Climate Planning: *Canada 2024 Critiques*



- Variable/limited provincial/private sector buy-in
- Poor communications
- Regulation reliance
- Conflicts/disconnects with other federal priorities

Source:
canada.ca/en/services/environment/weather/climatechange/climate-plan.html

Accessed 16 Sep 2024

H#5: Comprehensive Climate Planning: *Canada 2026 Cornerstones*

Over the years, Canada has set ...targets for reducing GHG emissions. It has missed every single one.

West Coast Environmental Law, 12 Feb 2026

The Liberals...largely abandoned regulations ... in favour of a more flexible & practical approach.

The Editorial Board, The Globe, 9 Feb 2026

The crucial difference is ... Trudeau-era policies ... revolved around ...restricting ... economic & industrial activity. Carney's are focused on driving as much clean growth as possible.

M Fawcett, Canada's National Observer, 13 Feb 2026

Sources:
www.theglobeandmail.com/opinion/editorials/article-the-liberals-incomplete-lane-change-on-evs/
www.nationalobserver.com/2026/02/13/opinion/mark-carney-climate-change-electrification
www.wcel.org/blog/lay-land-canadian-climate-policy-february-2026-6

H#5: Comprehensive Climate Planning:

Partial Comparison of Canada 2024 & 2026

Theme	2024	2026
Consumer C Tax	Tax & refund	Repealed
EV Sales	EVAS: Increase annually to 100% by 2035 + subsidies.	EVAP. Purchase subsidy partially replaced + \$1.5B charging + \$3.1B auto market diversification.
Industrial C Tax	Hard cap. Net zero by 2050	Strengthen C pricing. Secure clean energy investments
C Capture & Storage	Subsidies	+25 projects by 2030. CCS Investment Tax Credit eligible Construct world's largest CCS facility

Sources:

www.theglobeandmail.com/opinion/editorials/article-the-liberals-incomplete-lane-change-on-evs/

www.canada.ca/en/environment-climate-change/news/2023/12/canadas-electric-vehicle-availability-standard-regulated-targets-for-zero-emission-vehicles.html

[www.nationalobserver.com/2https://www.pm.gc.ca/en/news/news-releases/2026/02/05/prime-minister-carney-launches-new-strategy-transform-canadas-auto](https://www.pm.gc.ca/en/news/news-releases/2026/02/05/prime-minister-carney-launches-new-strategy-transform-canadas-auto)
[026/02/13/opinion/mark-carney-climate-change-electrification](https://www.pm.gc.ca/en/news/news-releases/2026/02/05/prime-minister-carney-launches-new-strategy-transform-canadas-auto)

www.pm.gc.ca/en/news/backgrounders/2025/11/27/canada-alberta-memorandum-understanding

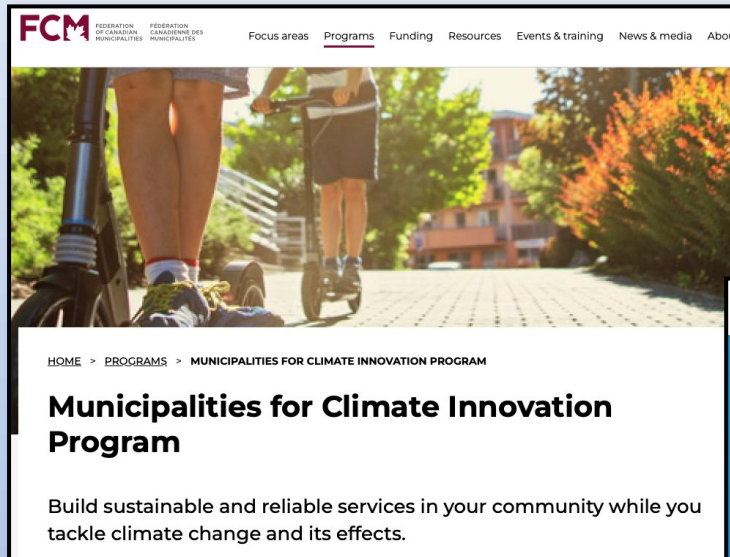
climateinstitute.ca/news/budget-2025-takes-clear-steps-to-strengthen-canadas-climate-competitiveness/

electricautonomv.ca/policy-regulations/2026-02-05/canada-repeals-ev-availability-standard-restores-5000-vehicle-incentives-with-new-automotive-policy/

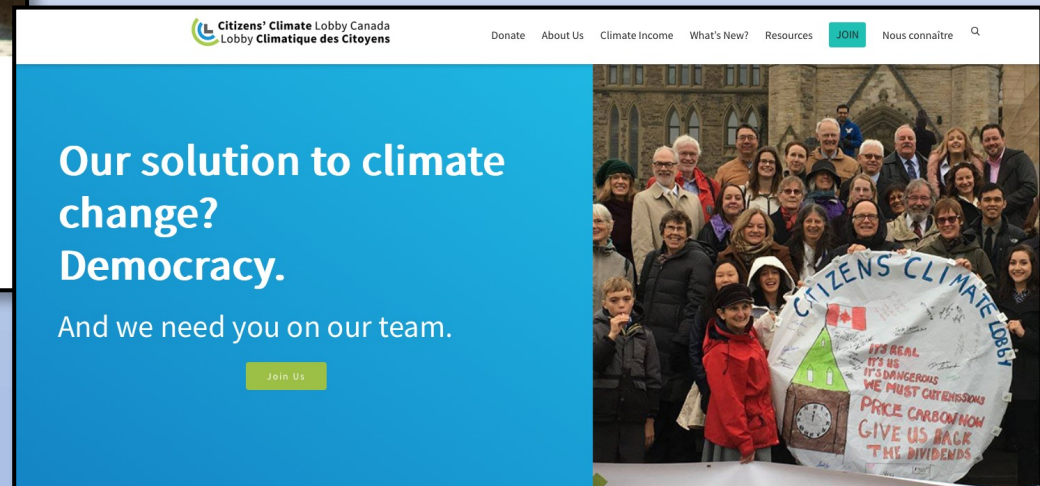
H#6: Local CC Actions

What is local?

Municipal Initiatives



Citizen Groups



Source:

<https://fcm.ca/en/programs/municipalities-climate-innovation-program>

canada.citizensclimatelobby.org

Ottawa Strategic Plan 2023-26

Strategic Priorities

A city that has affordable housing and is more liveable for all.



A city that is green and resilient.



Areas of Focus for the 4-Year Term of Council

A city that is more connected with reliable, safe and accessible mobility options.



A city with a diversified and prosperous economy.



Strategic priority

A city that is green and resilient.



The City continues to take steps to adapt to our changing climate and the future liveability of Ottawa depends upon a healthy natural and built environment. Ottawa is experiencing warmer, wetter and more unpredictable weather. It's critical that the City continues to prepare for extreme heat, wind, rain and snow and continues with efforts to reduce greenhouse gas emissions and build climate resiliency.

H#6: Municipal CC Action

Ottawa

Councillors call for city infrastructure to be better suited to extreme weather

"How many times does Mother Nature have to slap us in the face before we wake up?"

Andrew Duffy, Catherine Morrison

Published Aug 11, 2023 • Last updated Aug 13, 2023 • 3 minute read

12 Comments



The Pebb Building at 2197 Riverside Dr. was badly damaged by flooding from Thursday's severe rainstorm. Cleanup began Friday. PHOTO BY TONY CALDWELL /Postmedia

Knoxdale-Merivale Coun. Sean Devine wants Ottawa city council to commit to a more robust defence strategy to guard against the effects of the region's increasingly severe weather.

The official website of the City of Ottawa

Accessed 13 Oct 2025

[Home](#) > [Climate Resiliency](#)

Climate Resiliency

- + What is Climate Resiliency?
- + How is Ottawa's climate changing?
- + Climate Projections for the National Capital Region report
- + Ottawa's climate risks
- + What is the City doing to adapt to climate change?
- + What can you do to prepare for a changing climate?

Emergency mgt planning
Maps: Urban heat islands; Flood risk
Asset mgt: Climate lens & future
Climate proofing
Urban forest

H#6: Local CC Action

Community Groups Mobilize: Lanark Cty



Tired of high bills and drafty rooms?



Learn how retrofits and smart energy choices can make your home:

- Affordable
- Comfortable
- Climate-ready

+ Find out how much financial support is available through the many funding programs to make upgrades affordable

 **October 25th, 2025**

 **9 am -2 pm**

 **Tay Valley Township**

Municipal Office

217 Harper Road, Perth

**Free admission, space is limited –
sign up now!**

Understanding Bill 5: Ontario's new legislation removes environmental safeguards. Here's what we know and what you can do.

[LEARN MORE](#)

Half of the greenhouse gases are generated locally and CNL wants to cut local emissions in half By 2030

3.6 BILLION

live in areas that are highly susceptible to climate change.

28%

of waste deposited in landfills can be composted. This waste leads to increased emissions of methane, a potent greenhouse gas.

50 TIMES

They can store 50 times more carbon than rainforests, helping to keep the heat-trapping gas that contributes to climate change out of the atmosphere.

100%

more thermal energy is produced than the amount of electric energy used to pump it.

Accessed 13 Oct 2025

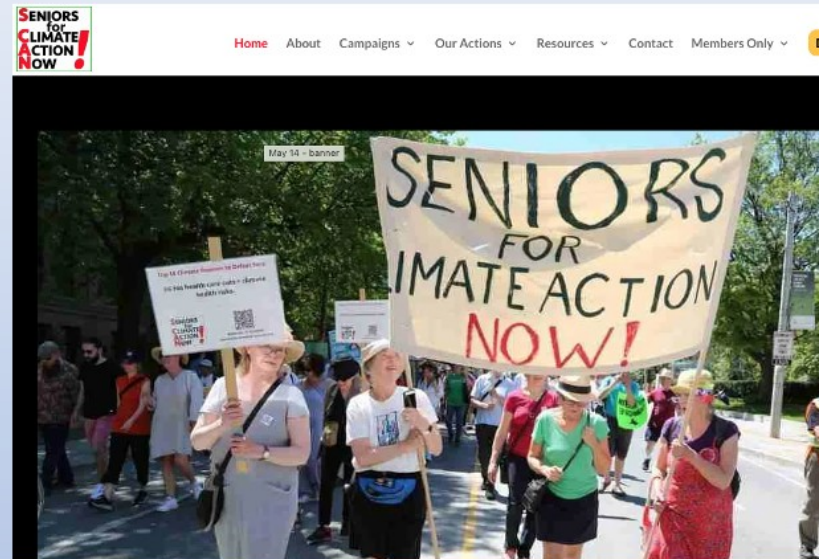
H#6: Local CC Action

Energized Seniors

Seniors for Climate Action Now

*Because we are older, wiser, angrier...
Our children & grandchildren are
responding...they need our support.*

<https://seniorsforclimateactionnow.org/>



Our economic system is built for:	We have to rebuild it for:
Growth	Sustainability
Accumulation	Sharing
Extraction	Stewardship
Exploitation	Fairness
Inequality	Equality

H#6: Local CC Action

Climate Fresk: Making Climate Science Accessible

The screenshot displays the Climate Fresk website. On the left, a photograph shows a man and a woman engaged in a workshop activity, looking at cards on a table. An orange text box overlaid on the photo reads: "The climate crisis is one of the world's most pressing and complex issues". The website header includes the Climate Clarity logo and navigation links: HOME, WORKSHOPS, SOCIAL VALUE, ABOUT US, and a CONTACT button. The main content area features the Climate Fresk logo, a description of the workshop, and a list of three benefits with checkmarks:

- ✓ Empower your teams with vital climate knowledge
- ✓ Spark conversations about positive climate solutions
- ✓ Strengthen teamwork and buy-in for your organisation's direction

Below the list is a diagram illustrating the process flow. It starts with "From individual powerlessness" and moves through four stages in ascending boxes: "UNDER-STAND", "SPREAD UNDER-STANDING", "ACT", and "DRIVE ACTION". Arrows connect these stages, leading to the final outcome: "to collective power!".

Participants walk away with a deeper understanding of our climate, a stronger connection to the social issues of climate change, and clear ideas about how they can make a difference.

H#6: Local CC Action

Climate Fresk: The Ottawa Experience



OTTAWA FACILITATOR

Don Sproule (donald.sproule@gmail.com)

OTTAWA WORKSHOPS (Nov2023-Oct2025)

Totals: 53 workshops, +300 participants

General Public: In community centres

Private: In homes

Public Schools: Gr 06-12, EN & FR, 4 public boards

Higher Education: uOttawa School of Public Health, Algonquin College....

At Work: Bank of Canada, Ottawa International Airport Authority,

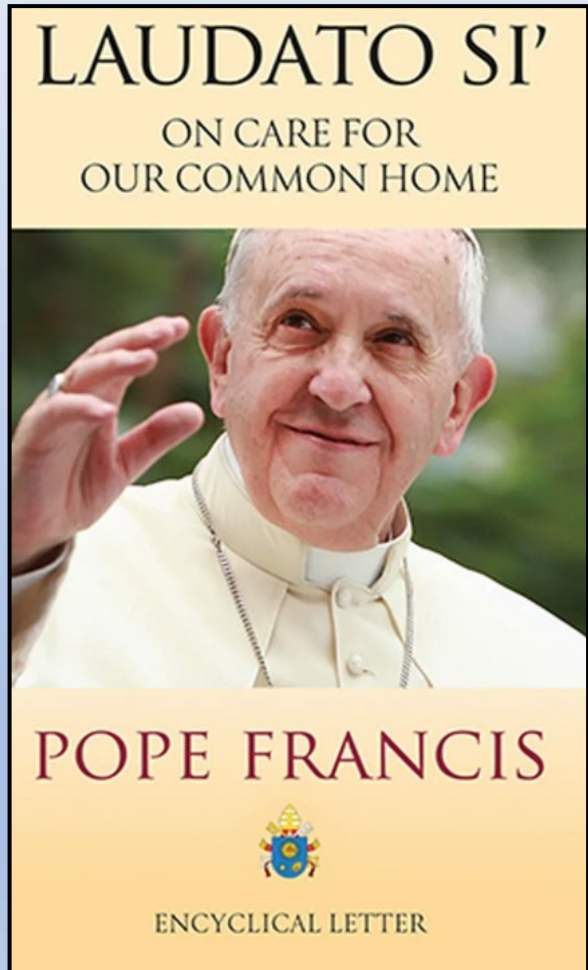


MORE INFO:

<https://climatefresk.org/world/>

H#7: Beyond CC Science

Climate Justice: Pope Francis (2015) to Pope Leo (2025)



Some have chosen ... to ridicule those who speak of global warming, and even to blame the poor for the very thing that affects them the most

Source:

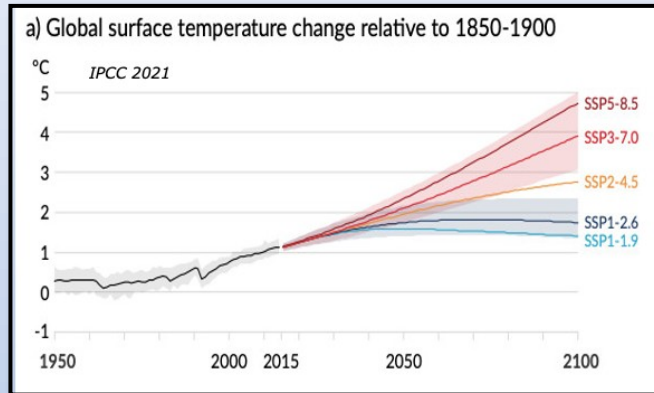
www.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html

www.bbc.com/news/articles/cgl1pgr2zn8o

www.youtube.com/watch?v=xPyPDFGL7OA

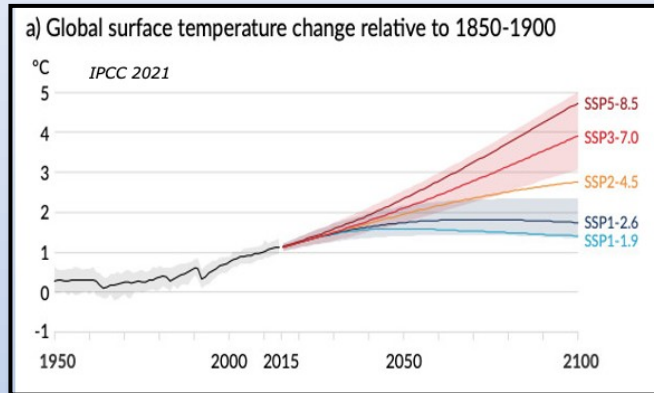
H#7: Beyond CC Science

From Earth System Science to Arts & Humanities



H#7: Beyond CC Science

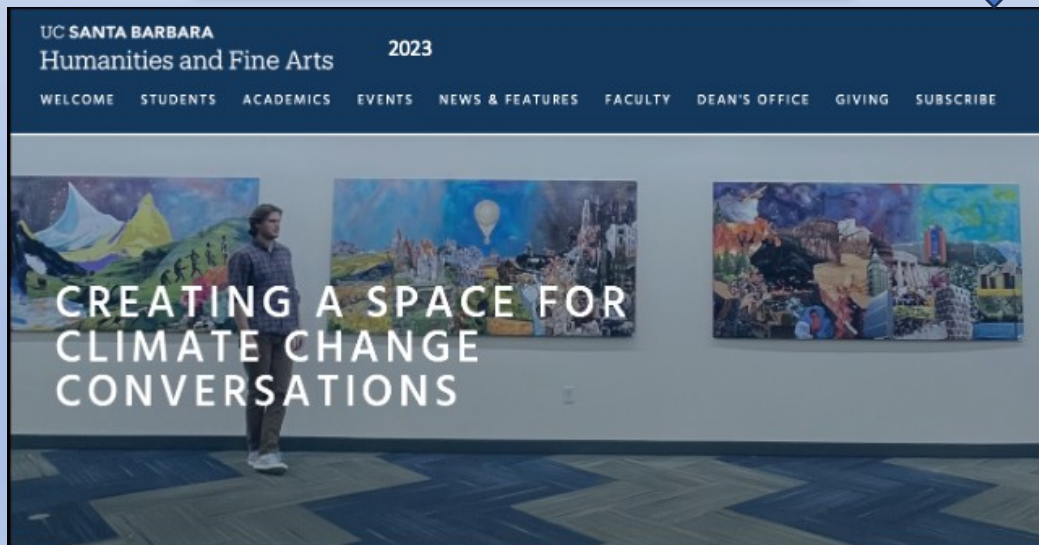
From Earth System Science to Arts & Humanities



CBC 13 Feb 2023

How kids see our changing planet

Here's what happened when artist Sanjay Sundram asked kids across Ottawa and India to paint climate change for their parents.



H#8: Loss & Damage

Moving towards a Climate Justice Agenda

UNEP Accessed 14 Oct 2025

While [mitigation](#) addresses the causes of climate change (like reducing greenhouse gas emissions) and [adaptation](#) addresses its impacts (like building sea walls to prevent flooding), **loss and damage is concerned with the unavoidable and irreversible impacts of the climate crisis.**

L&D Examples:

Economic: Infrastructure, Crop Yields

Non-Economic: Culture, Ecosystem Services, Displacement

H#8: Loss & Damage

COP 26 – Glasgow 2021

Talk vs Action

- *Moved up agenda*
- *USA, EU, Australia & others resist dedicated fund owing to liability concerns*

Source:

www.reuters.com/business/cop/climate-loss-damage-earns-recognition-little-action-cop26-deal-2021-11-13/gnhre.org/?p=14753

H#8: Loss & Damage

COP 27 – Egypt 2022

Important 1st Steps

The establishment of a [Loss and Damage Fund](#) was, for many, the highlight of the United Nations Climate Conference ([COP 27](#)) and the culmination of decades of pressure from climate-vulnerable developing countries. The fund aims to provide financial assistance to nations most vulnerable and impacted by the effects of climate change.

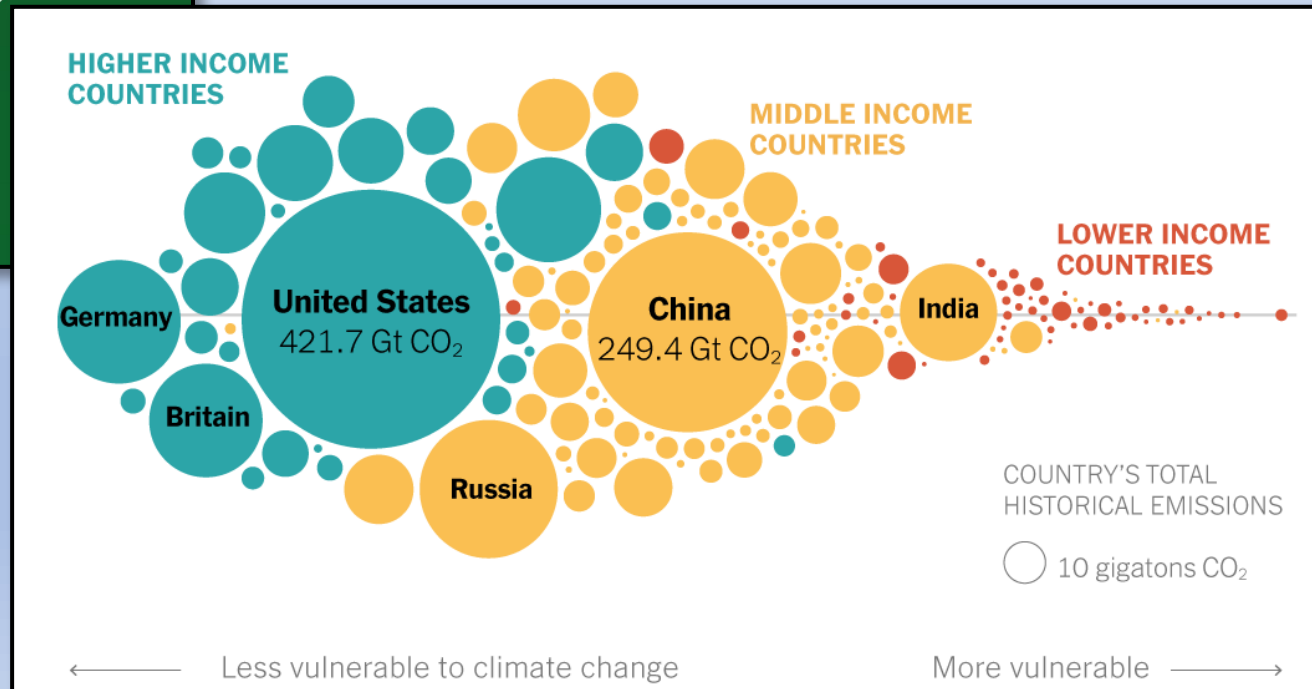
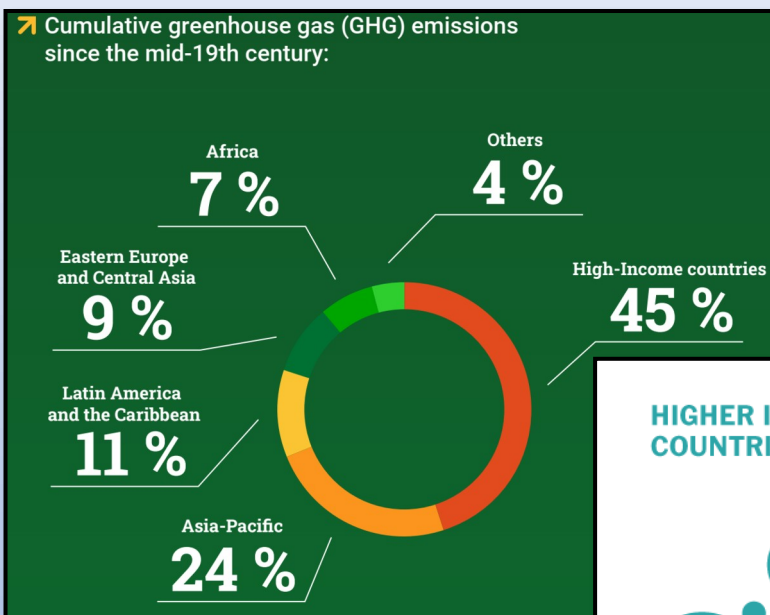
Sources:

www.unep.org/news-and-stories/story/what-you-need-know-about-cop27-loss-and-damage-fund

H#8: Loss & Damage

COP 27 – Egypt 2022

Historical Responsibility on the Agenda



Source:

www.linkedin.com/pulse/how-cop27-agenda-could-shape-future-social-impact-employee-ellis

www.afd.fr/en/ressources/coping-climate-change-africa-numbers

H#8: Loss & Damage

COP 27 – Egypt 2022

Liability on the Agenda

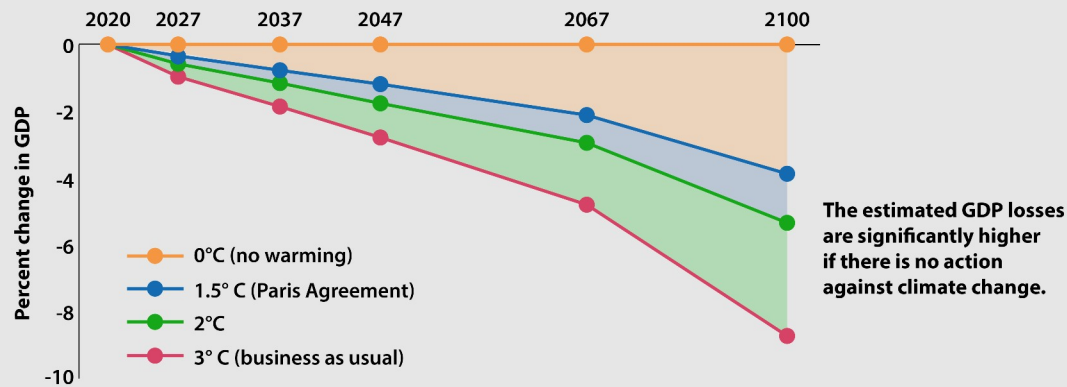


H#8: Loss & Damage

COP 27 – Egypt 2022

Disconnects Remain

Projected Impact of Climate Change on Sub-Saharan Africa's GDP



Source: Kompas, Pham, and Che 2018



Source:

lccad.net/daily-star-articles/everything-you-need-to-know-about-the-loss-and-damage-fund/

africacenter.org/spotlight/how-global-warming-threatens-human-security-in-africa/

H#8: Loss & Damage

COP 29 – Baku 2024

Frameworks Remain in Place

Call to Action on
the road to COP29

ACT2025
Allied for Climate Transformation

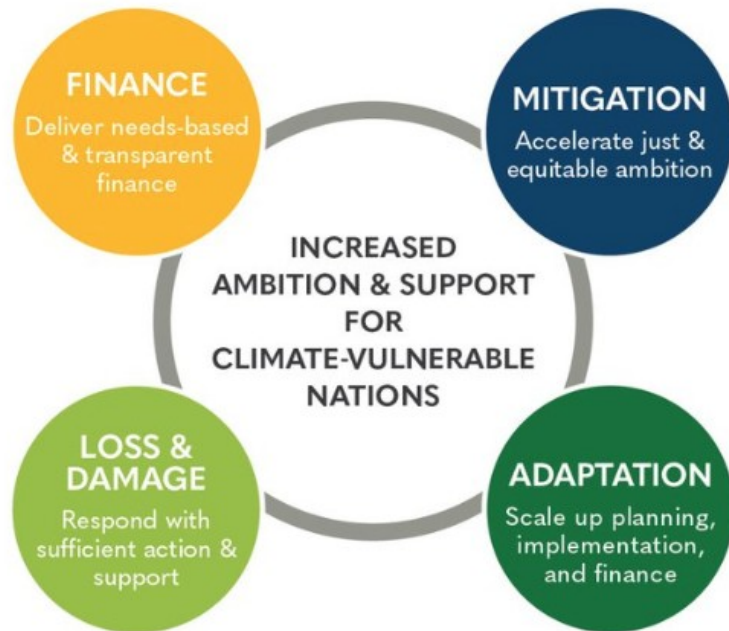
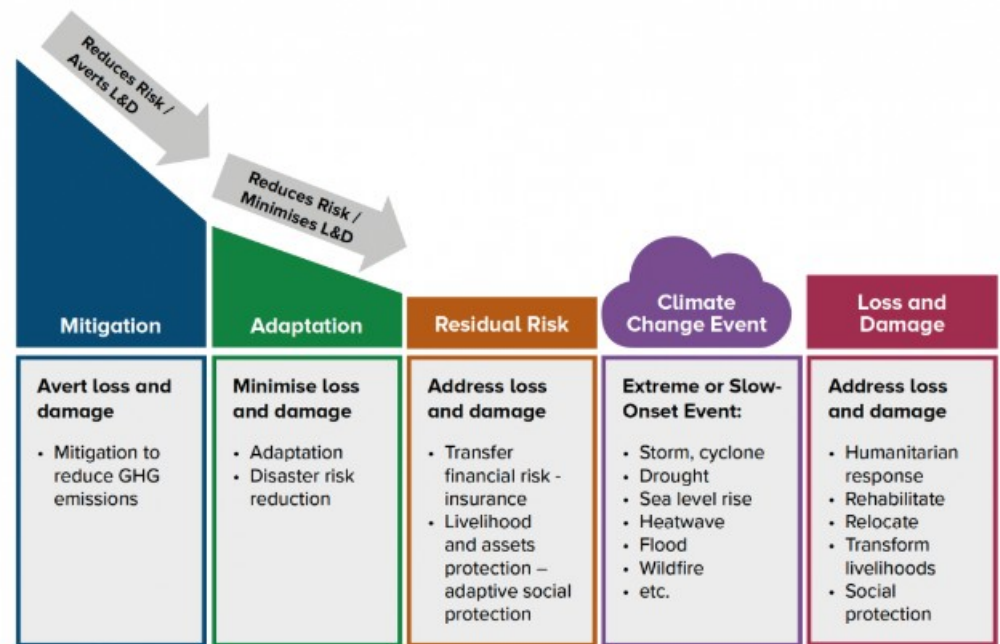


Figure 2: A continuum of measures to avert, minimise and address loss and damage ^[71]



After the last climate disaster, is before the next climate disaster

H#8: Loss & Damage

COP 29 – Baku 2024

The Journey Continues



United Nations
Climate Change

COP29 UN Climate Conference Agrees to Triple Finance to Developing Countries, Protecting Lives and Livelihoods

L&D Available/Yr USD: 100B → 300B

24 November 2024

Share the a

It's unfortunate that the fossil fuel industry and the petrostates have seized control of the COP process to an unhealthy degree.

Al Gore Nov 2024



CENTER FOR CLIMATE
AND ENERGY SOLUTIONS

OUR WORK BUSINESS ENGAGEMENT POLICY HUB

Blog » January 8, 2025

Adaptation, Loss & Damage at COP29: Some Progress Made, Much Remains

Source:

unfccc.int/news/cop29-un-climate-conference-agrees-to-triple-finance-to-developing-countries-protecting-lives-and
www.c2es.org/2025/01/adaptation-loss-damage-at-cop29-some-progress-made-much-remains/

H#8: Loss & Damage

COP 30 – Belem 2025

The Journey Continues (again)

Most significant outcome ... completion of the 3rd review Warsaw International Mechanism for L&D.

L&D Collaboration, 11 Nov 2025

No commitment to scaleup L&D support.

Fund for Responding to L&D: (FRLD)

- *Turning decisions into delivery*
- *1st proposal call (USD250M).*
- *Proposal guidance.*

ICJ ruling on state CC responsibility to shape FRLD.

Source:

www.lossanddamagecollaboration.org/resources/what-happened-on-loss-and-damage-in-week-one-of-cop-30

www.undp.org/geneva/blog/next-chapter-loss-and-damage-after-cop30-building-systems-countries-and-communities-need

H#9: Human Rights Challenges

Canada: 2021

ENVironnement JEUnesse v. Canada

Background:

Class action, GoC failure to act on CC
constituted violation of human rights of Quebec residents <35y.o.

Ruling:

Dismissed. Quebec residents <35y.o. arbitrary, does not meet
requirements for class action. No ruling on CC inaction & human
rights.



[https://climatelitigation.miraheze.org/wiki/ENVironnement JEUnesse v. Canada](https://climatelitigation.miraheze.org/wiki/ENVironnement_JEUnesse_v._Canada)

<https://enjeu.qc.ca/justice-eng/>

H#9: Human Rights Challenges

Europe: 2024

Senior Swiss women prevail in landmark climate case at Europe's human rights court

In a separate case, 6 Portuguese youth lose their bid to hold European governments responsible

Thomson Reuters · Posted: Apr 09, 2024 7:32 AM EDT | Last Updated: April 9



Rosmarie Wydler-Walti, left, and Anne Mahrer, right, of the Swiss group Senior Women for Climate Protection, attend the hearing of the court ahead of Tuesday's ruling in Strasbourg, France. (Christian Hartmann/Reuters)

Source: <https://www.cbc.ca/news/world/european-human-rights-court-climate-1.7167866>

Accessed 8 Sept 24

The European Court of Human Rights (ECHR) ruled on Tuesday in favour of a group of elderly Swiss women who had argued that their government's inadequate efforts to combat climate change put them at risk of dying during heat waves.

H#9: Human Rights Challenges

International: 2025

 [About](#) [Our Work](#) [Articles](#) [Publications](#) [Events](#) [Newsroom](#) [Donate](#)

DEEP DIVE

Historic International Court of Justice Opinion Confirms States' Climate Obligations

The International Court of Justice has delivered its much-anticipated advisory opinion on states' obligations to tackle climate change, confirming that international law requires states to prevent significant harm to the climate—and failure to do so can trigger legal responsibility.

By Lukas Schaugg, Natalie Jones, Jeffrey Qi on July 28, 2025

Selected Findings

Warming must $<1.5^{\circ}\text{C}$

States must regulate fossil production & consumption, & prevent environmental harm

Climate change is a human rights problem

State responsibility applies (i.e. not just international law)

H#11: CC & Health

An Overview

How does climate change affect physical, mental and community health?

Climate impacts



Air pollution



Forest fires



Rising sea level



Temperature increases



Extreme weather phenomena



Droughts



Physical health



- Changes in physical fitness at activity level.
- Increase in heat-related episodes.
- Rise in allergies.
- Increased exposure to waterborne diseases.

Mental health



- Stress, anxiety, depression, grief, feeling of loss.
- Tension in social relations.
- Substance abuse.
- Post-traumatic stress disorders.

Community health



- Increase in interpersonal aggression.
- Increasing violence and crime.
- Increased social instability.
- Reduction of social cohesion.

Source: US Global Change Research Program.



Mental Health
Commission
of Canada

Commission de
la santé mentale
du Canada

Search...

About

News

Training

Events

Blog

[Home](#) > [Resources](#) > Understanding and Coping with Eco-Anxiety

Understanding and Coping with Eco-Anxiety

Apr 21, 2023

Sources:

<https://mentalhealthcommission.ca/resource/understanding-and-coping-with-eco-anxiety/>

<https://www.iberdrola.com/social-commitment/what-is-ecoanxiety>

yaleclimateconnections.org

Photo by MB 7 Sep 22

H#11: CC & Mental Health

Reminder: Anxiety is Not New



<https://www.youtube.com/watch?v=qfZVu0alU0I>

EVE OF DESTRUCTION

By Barry McGuire
1965



The Eastern world, it is explodin',
Violence flarin', bullets loadin'.
You're old enough to kill, but not for votin',
You don't believe in war -- but what's that gun you're totin'?
An' even the Jordan river has bodies floatin'.
But you tell me, over and over and over again, my friend,
Ah, you don't believe we're on the eve of destruction.
Don't you understand what I'm tryin' to say,
An' can't you feel the fears I'm feelin' today?

Powerlessness

If the button is pushed, there's no runnin' away,
There'll be no one to save, with the world in a grave.
Take a look around you, boy, it's bound to scare you, boy.
An' you tell me, over and over and over again, my friend,
Ah, you don't believe we're on the eve of destruction.
Yeah, my blood's so mad feels like coagulatin',
I'm sittin' here just contemplatin'.

Failure of gov't

I can't twist the truth, it knows no regulation,
Handful of senators don't pass legislation,
An' marches alone can't bring integration
When human respect is disintegratin',
This whole crazy world is just too frustratin'.

An' you tell me, over and over and over again, my friend,
Ah, you don't believe we're on the eve of destruction.
Think of all the hate there is in Red China,
Then take a look around to Selma, Alabama.

Known
crisis met
with
inaction &
denial

Ah, you may leave here for four days in space,
But when you return it's the same ol' place,
The poundin' of the drums, the pride an' disgrace.
You can bury your dead, but don't leave a trace.
Hate your next-door neighbor, but don't forget to say grace,
An' tell me, over and over and over again, my friend,
You don't believe we're on the eve of destruction,
No, no, you don't believe we're on the eve of destruction.

H#11: CC & Mental Health

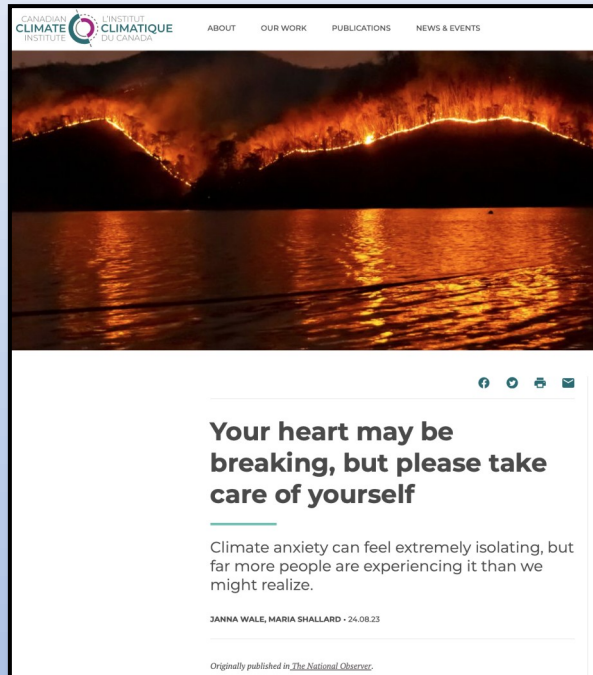
What is climate anxiety?

... a chronic fear of environmental doom. This fear can stem from direct experience of extreme weather events and environmental change (e.g., floods, forest fires, hurricanes, drought) or exposure to climate change information through news media and other sources.

Source: <https://mentalhealthcommission.ca/resource/understanding-and-coping-with-eco-anxiety/>

H#11: CC & Mental Health

Climate Anxiety & Grief are Real: Let's Talk



Source: <https://climateinstitute.ca/climate-anxiety/>
Accessed: 8 Sep 24



Accessed: 8 Sep 24



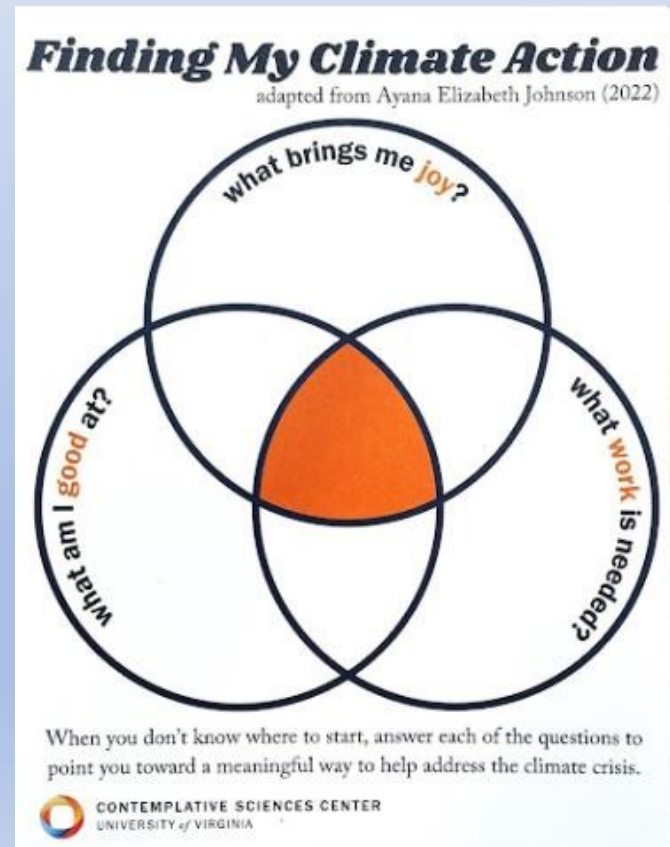
Source: <https://www.nature.com/articles/d41586-024-00998-6>
Accessed: 8 Sept 24

H#11: CC & Mental Health

Keeping Climate Anxiety at Bay

1. Shift Vocabulary: *Climate compassion*
2. Acknowledge Your Emotions: *Anxiety is not inherently bad*
3. Self-care is Essential: *Journaling, Physical activity, Connecting with others, etc*
4. Community Builds Resilience: *Join a (climate) club*
5. Be Prepared: *Evacuation plan*

6. Retain Hope



Anthropocene Now: Cumulative Effects of Gloom



Climate Hope Catalogue is Growing

Five reasons for hope in the climate crisis

April 22, 2025 | By Oxfam



www.oxfamamerica.org/explore/issues/climate-action/five-reasons-for-hope-in-the-climate-crisis



[Our Work](#) [Experts](#) [Take Action](#) [Stories](#)

davidsuzuki.org/what-you-can-do/ten-reasons-hopeful-about-climate-action/

[What you can do](#) > [Climate change basics](#) > Ten reasons to be hopeful about climate action

Ten reasons to be hopeful about climate action

We face daunting global challenges. Here are eight reasons to be hopeful

The Guardian

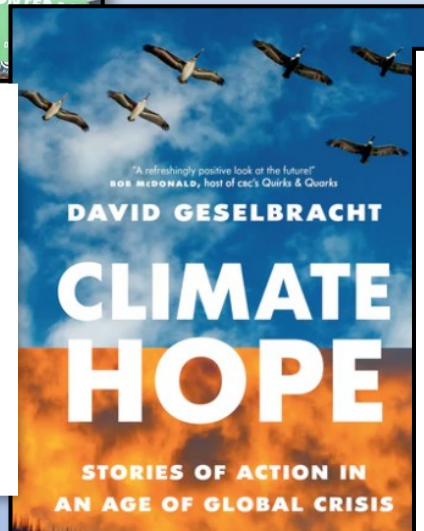
John D Boswell

Tue 29 Jul 2025 15:00 BST

[Share](#)

Although the trends can be hard to perceive, we are making incredible progress on global poverty, health, longevity and climate change

www.theguardian.com/commentisfree/ng-interactive/2025/jul/29/global-future-challenges-optimism



THE MEDIUM

[NEWS](#) [OPINION](#) [FEATURES](#) [ARTS](#) [SPORTS](#) [MAGAZINE](#)

themedium.ca/finding-hope-for-the-climate-around-the-world/



Illustration by Sara Li

FINDING HOPE FOR THE CLIMATE AROUND THE WORLD

Celesta Mantiogianini | April 12, 2025

NATIONAL BESTSELLER

SAVING US

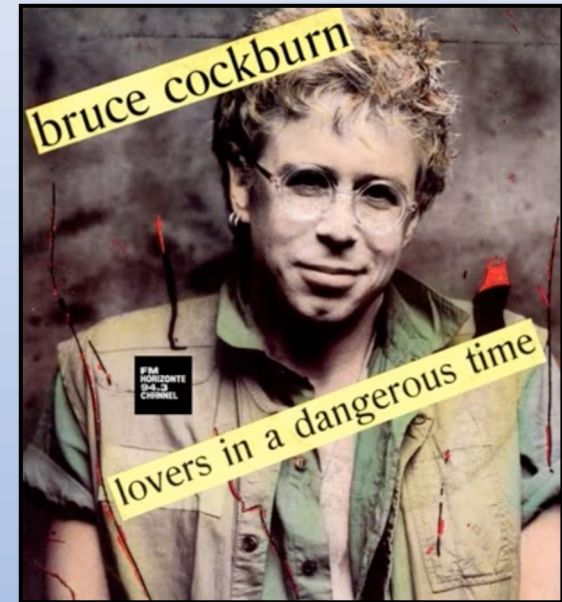
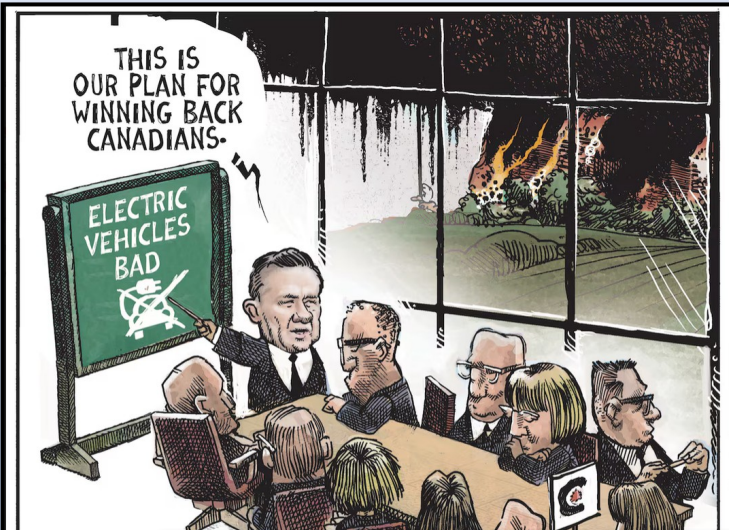
A CLIMATE SCIENTIST'S CASE FOR HOPE AND HEALING IN A DIVIDED WORLD

KATHARINE HAYHOE

Moving Hope Forward: Expectations

Climate Action Pathways
will be Chaotic

Expect Tough Challenges



U.S. DEPARTMENT of ENERGY

About ▾ Our Mission ▾ New Horizons ▾ Topics ▾ Consumer Savings ▾ Services & Opportunities ▾

Home ▾ Topics ▾ Advance Energy Addition, Not Subtraction ▾ Energy Department Announces \$625 Million Investment to Reinvigorate and Expand America's Coal Industry

Energy Department Announces \$625 Million Investment to Reinvigorate and Expand America's Coal Industry

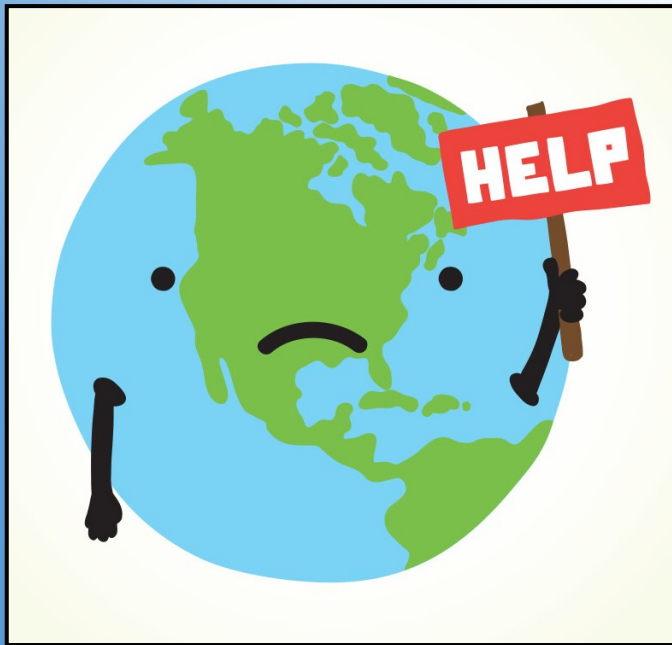
The U.S. Department of Energy today announced a \$625 million investment to expand and reinvigorate America's coal industry, aiming to boost energy production and support coal communities nationwide.

[Energy.gov](https://www.energy.gov)

September 29, 2025

*But nothing worth having comes without
some kind of fight –
Got to kick at the darkness 'til it bleeds
daylight*

*Time to:
... kick at the darkness (i.e. the Gloom)
'til it bleeds daylight (i.e. the Hope)*

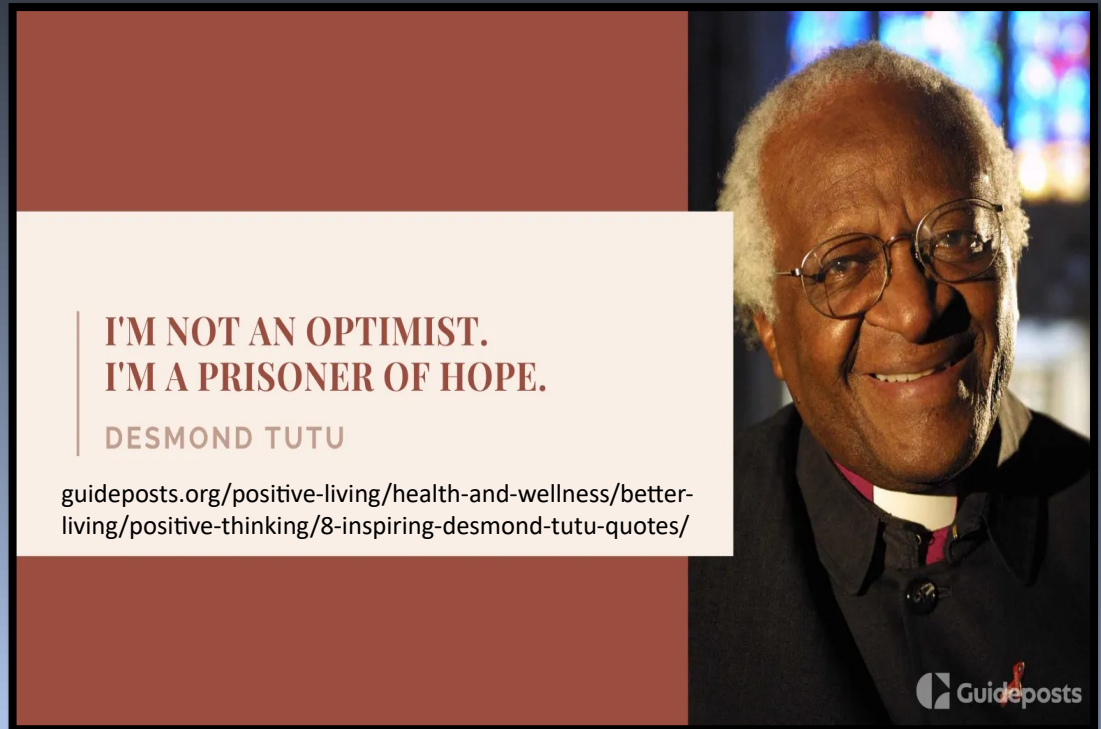
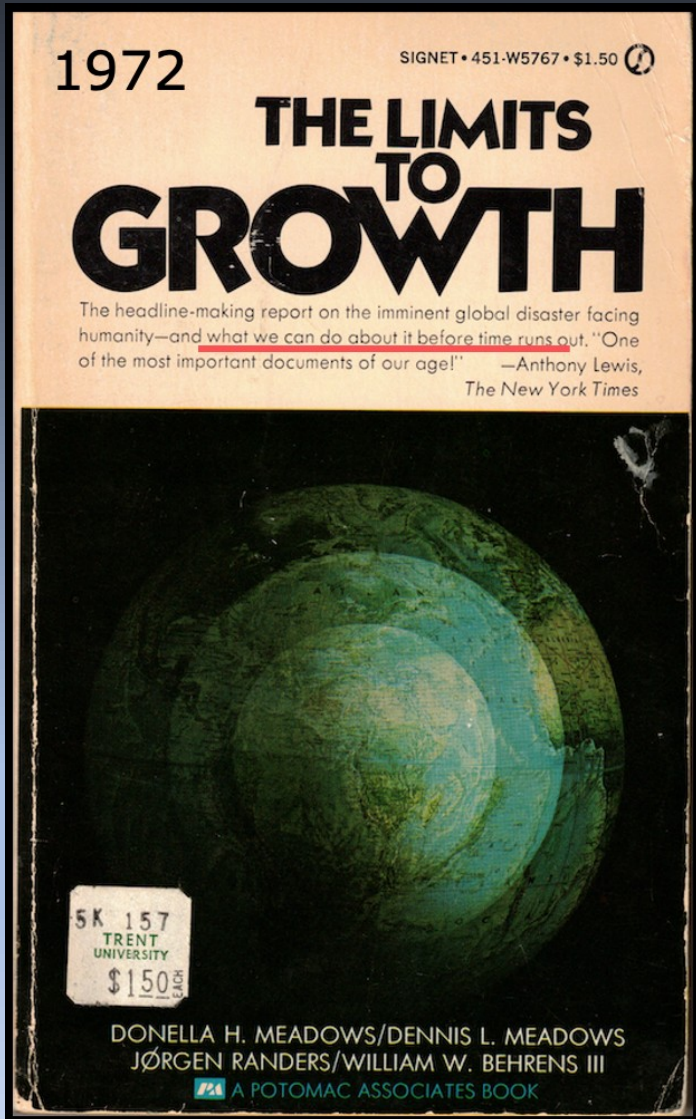


*Transitioning:
Gloom to Hope*



Mike Brklacich, Professor Emeritus
Carleton University
Ottawa, Canada
Email: mike.brklacich@carleton.ca

CLIMATE CHANGE: SEARCHING FOR PATHWAYS TO HOPE



Mike Brklacich, Professor Emeritus
Carleton University, Ottawa, Canada
Email: mike.brklacich@carleton.ca

