

Understanding and Preventing Climate Breakdown

Fabian Dablander

28th July, 2022

Outline

Part I: The Bigger Picture

Part II: Climate Emergency

}

25 min

Part III: Current Climate Policy

Part IV: Climate Revolution

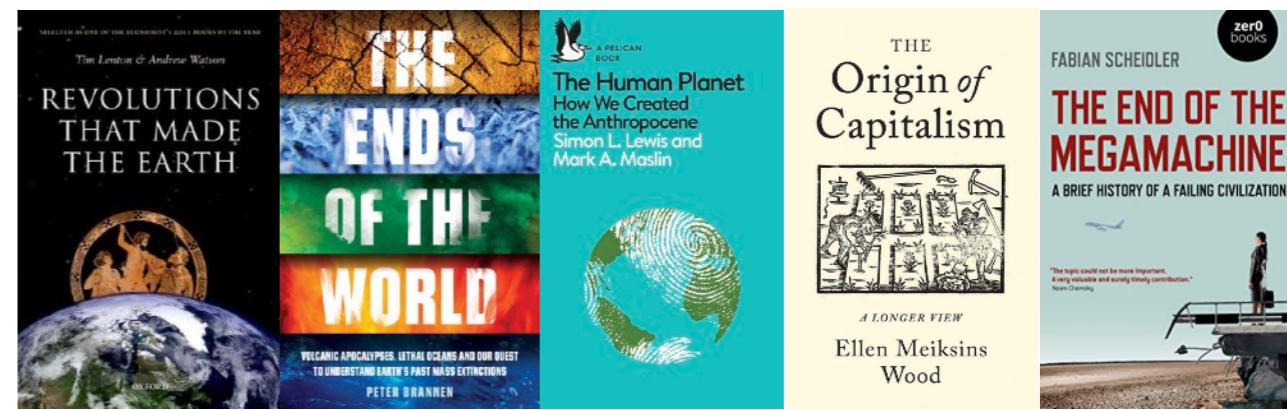
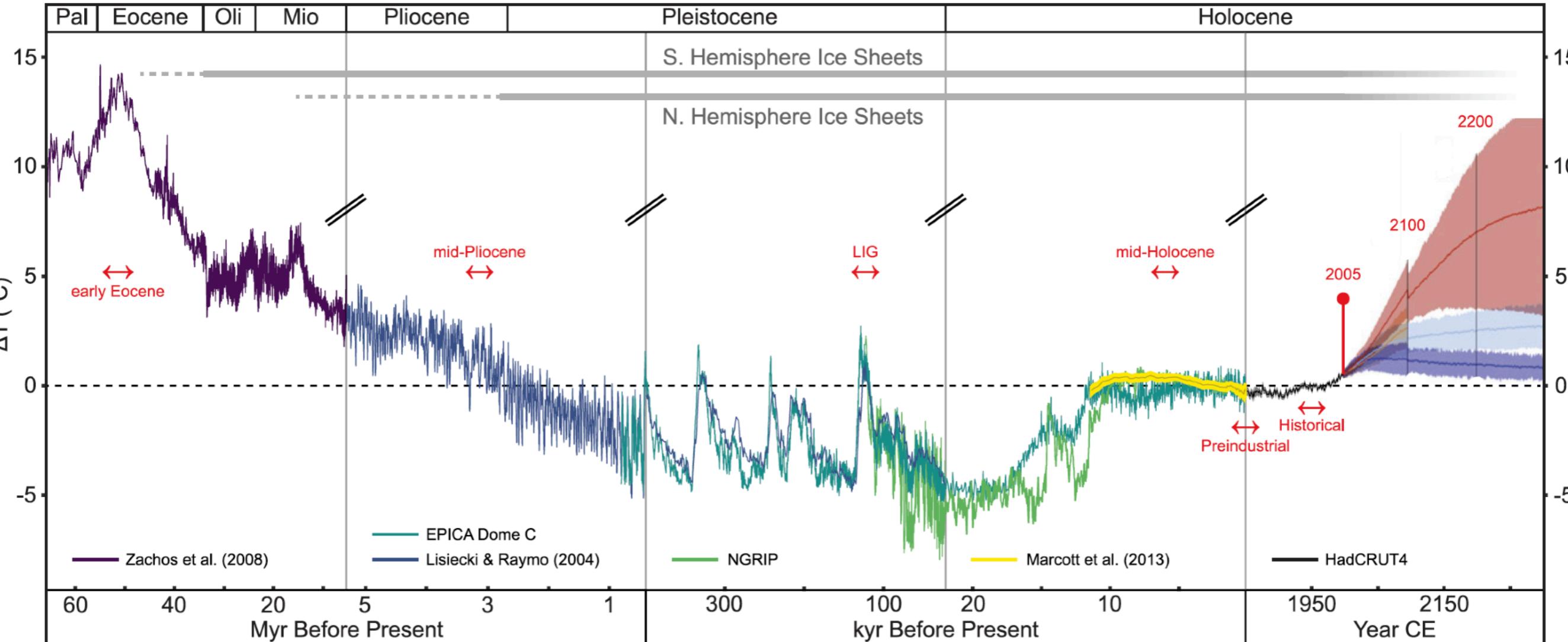
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25 min

Part V: Discussion

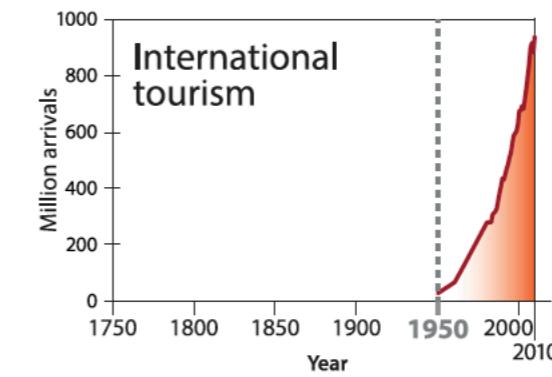
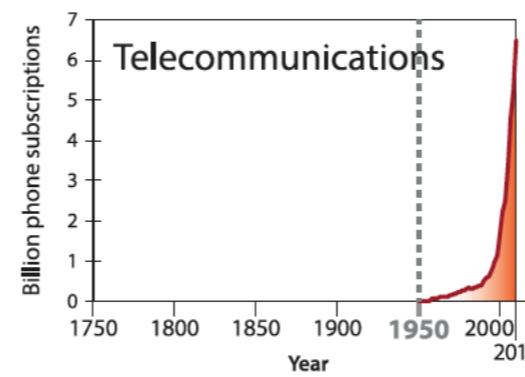
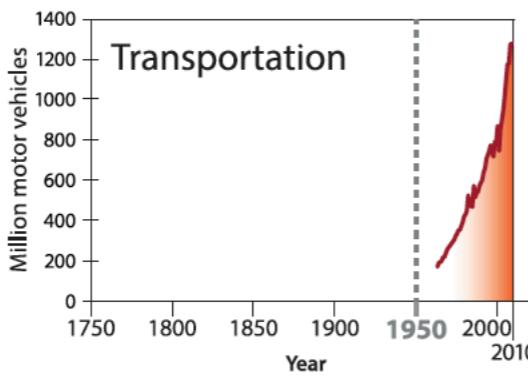
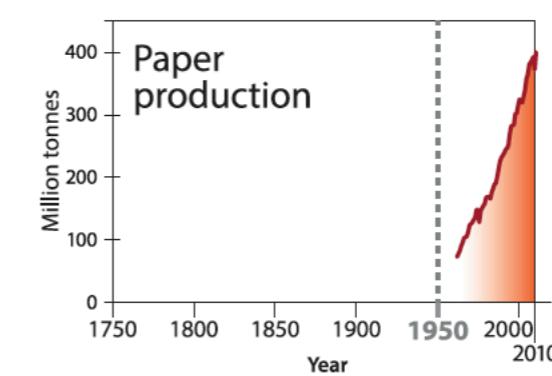
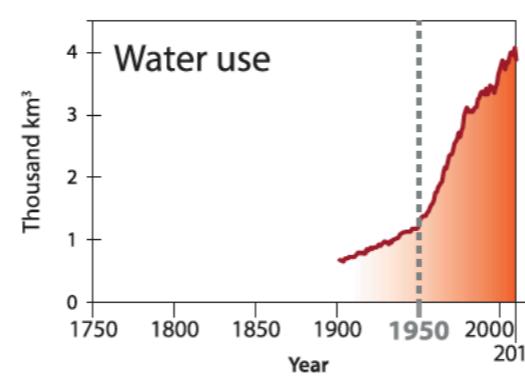
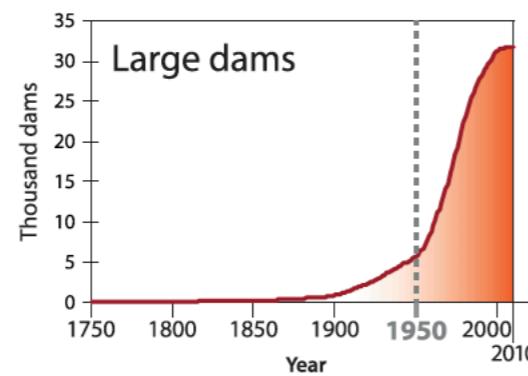
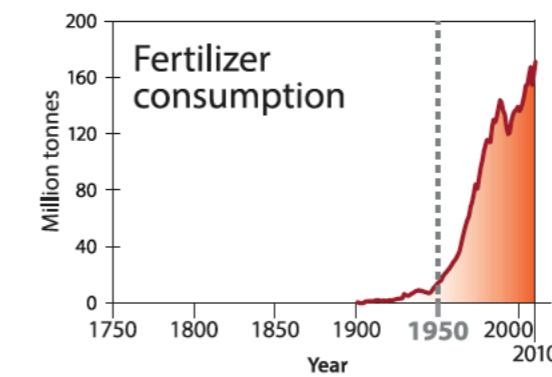
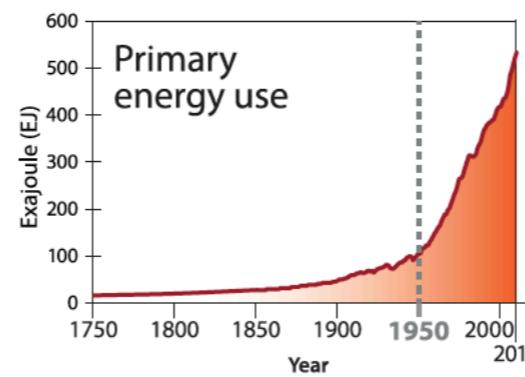
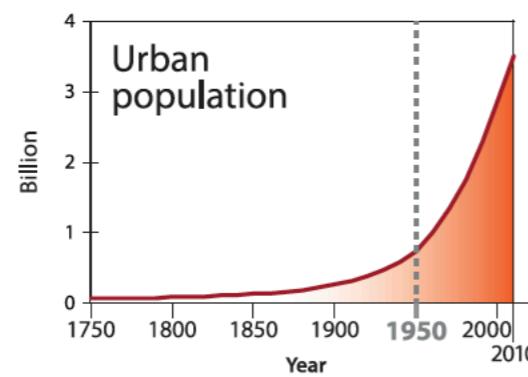
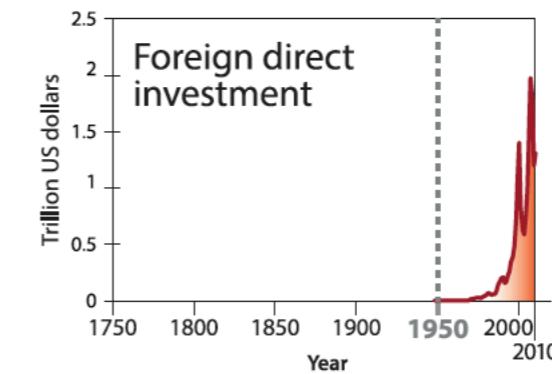
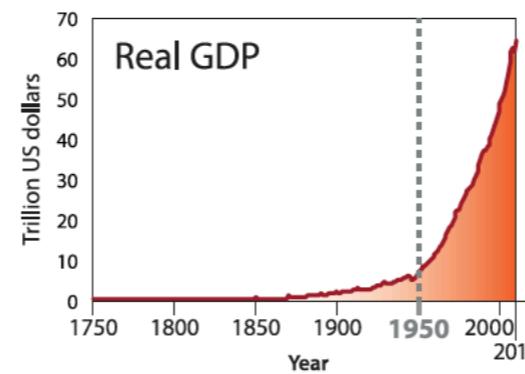
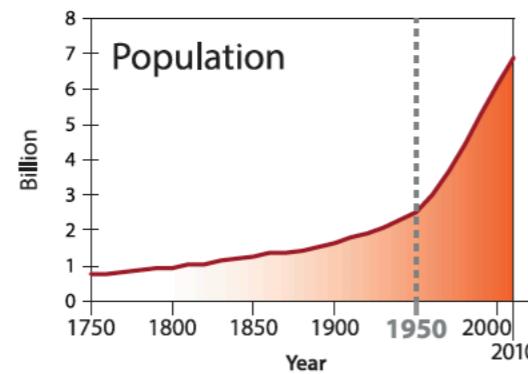
Part I: The Bigger Picture



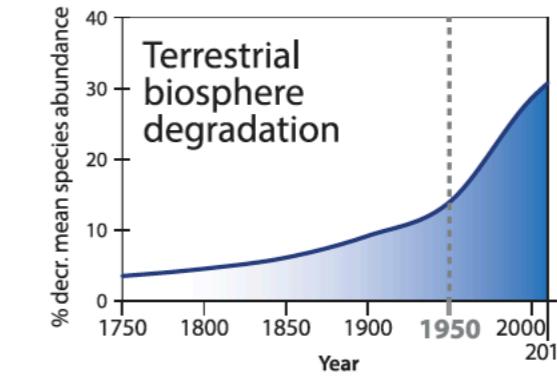
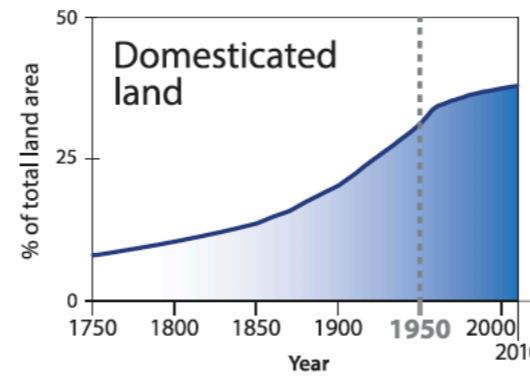
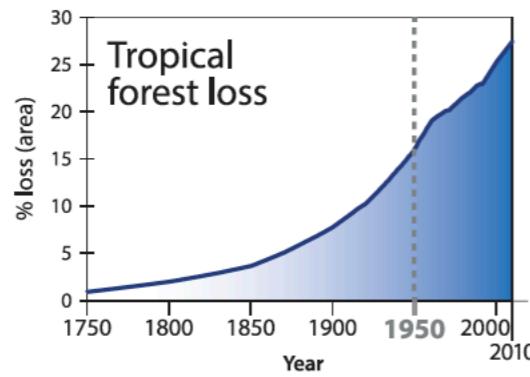
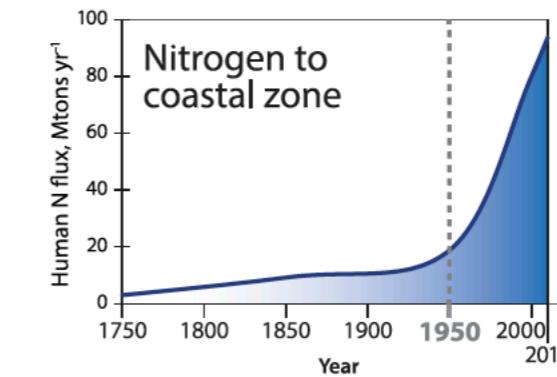
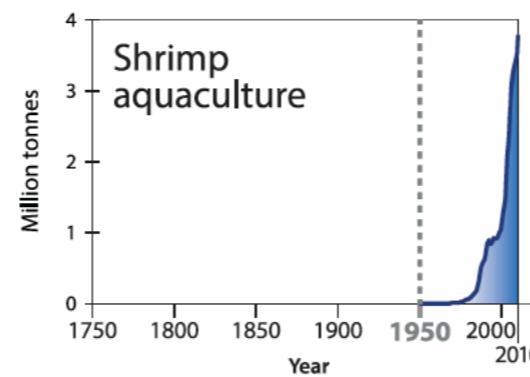
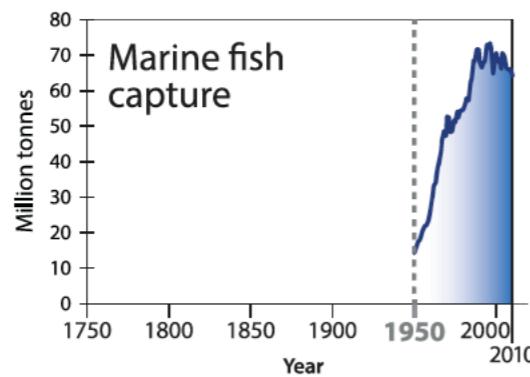
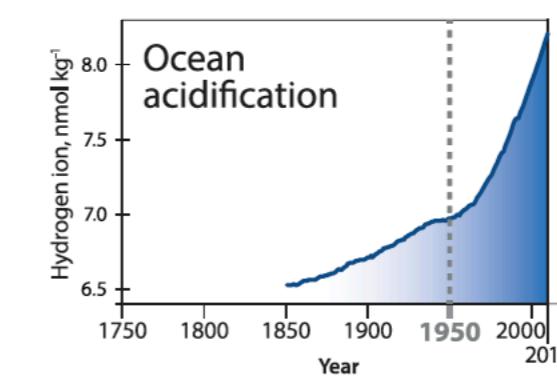
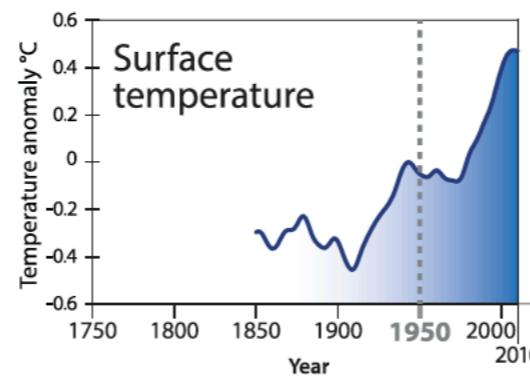
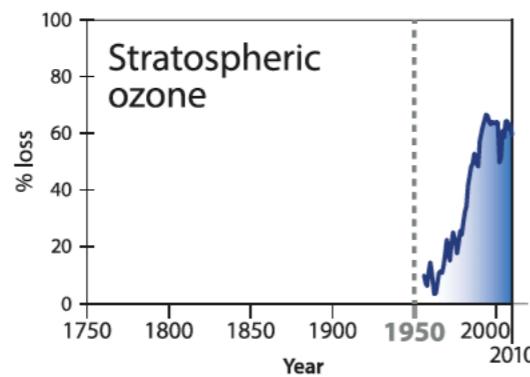
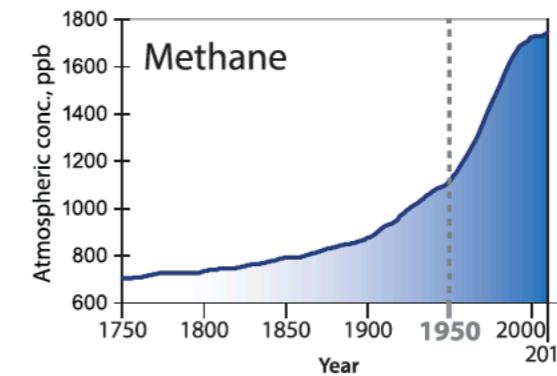
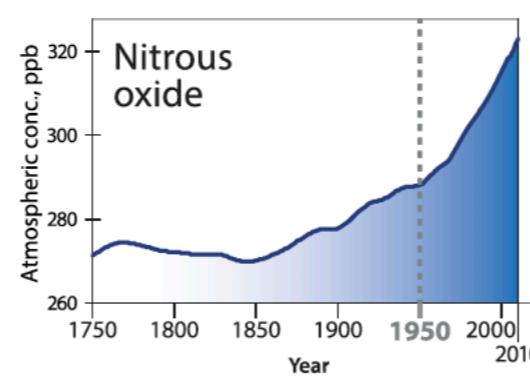
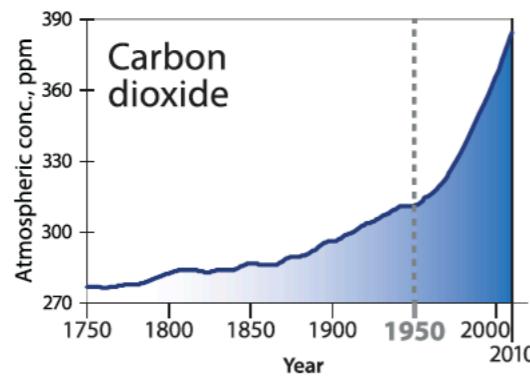


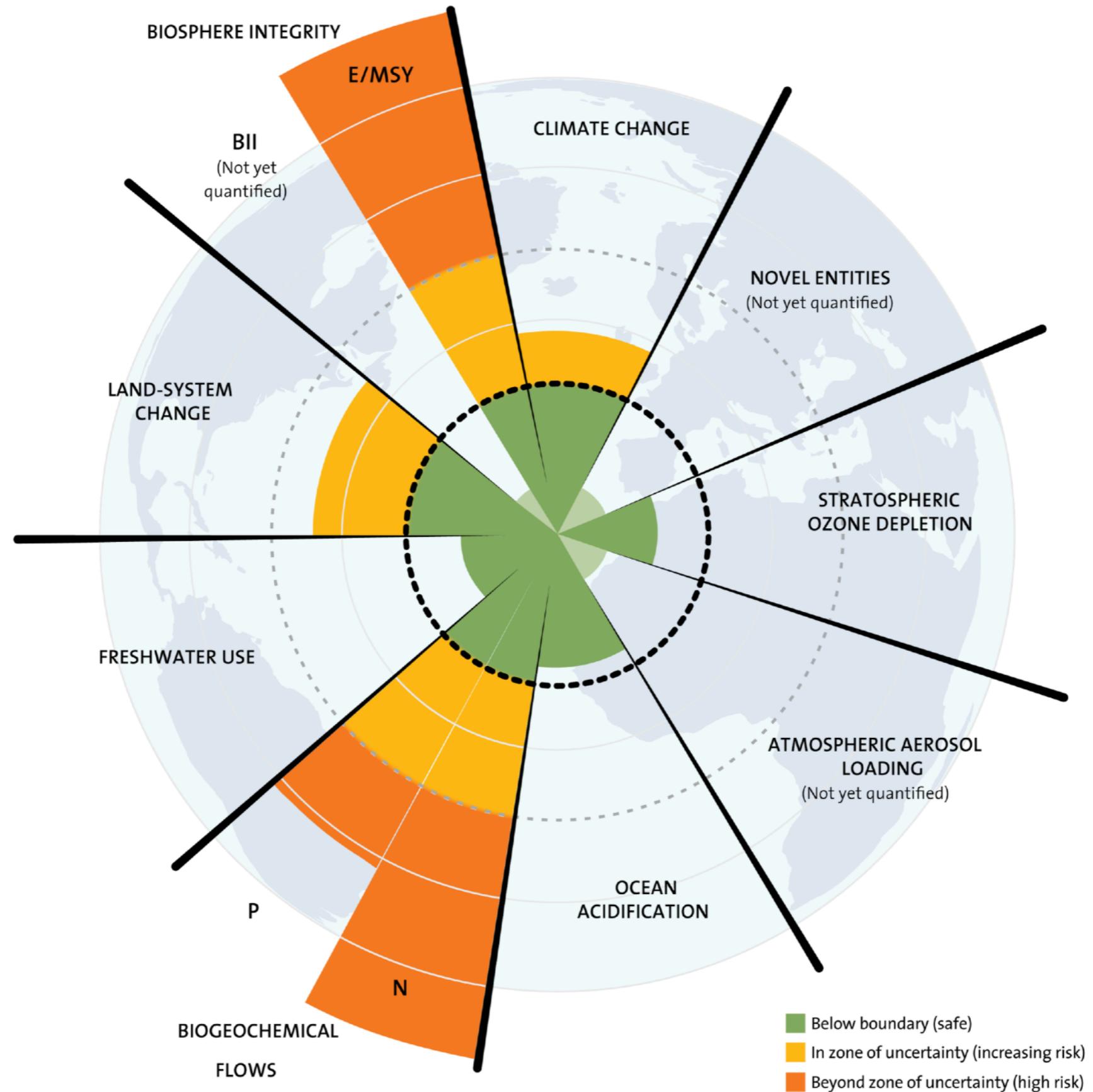
Burke et al. (2018); Brannen (2021); United Nations (2021)

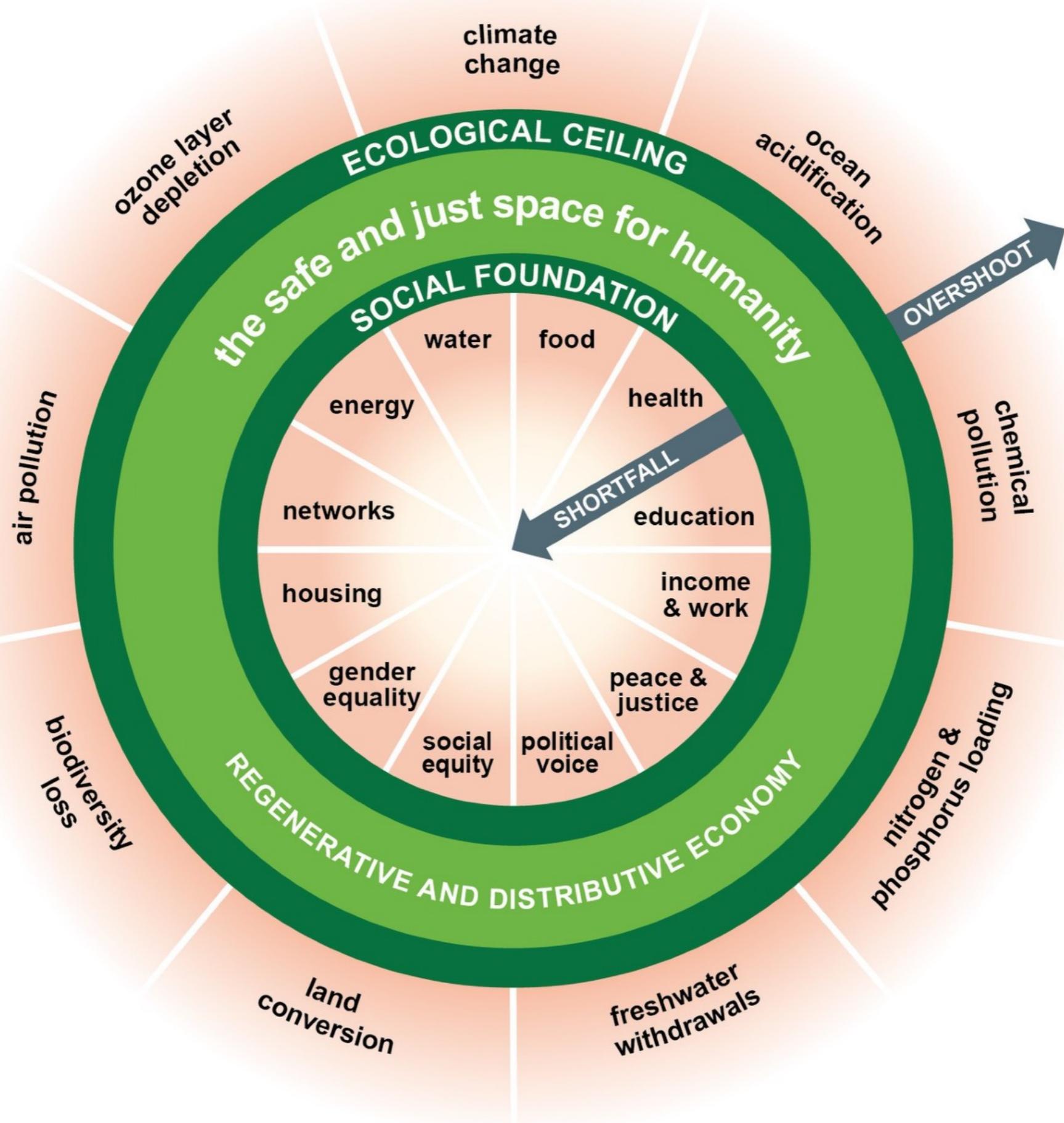
Socio-economic trends



Earth system trends







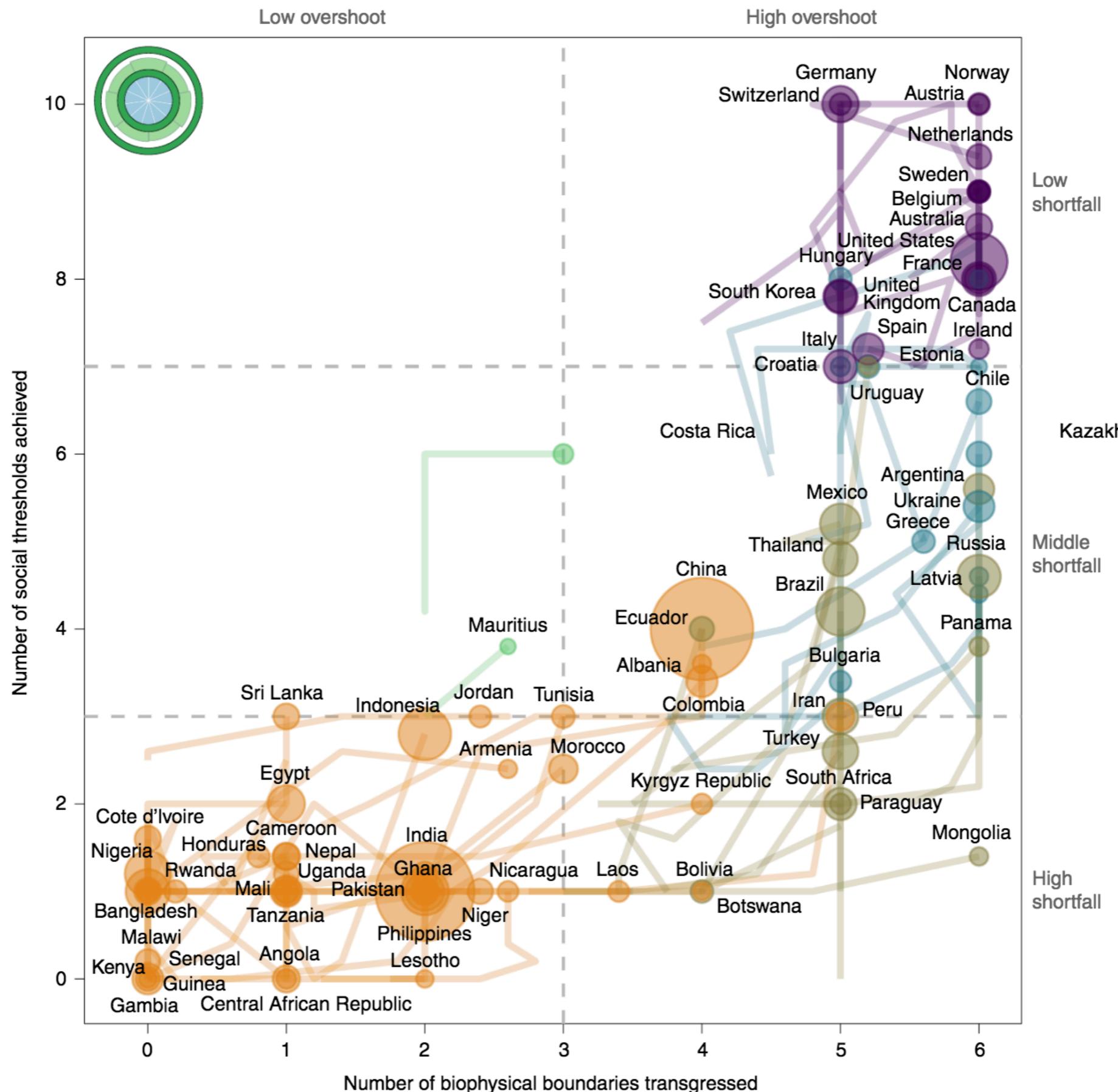
DOUGHNUT ECONOMICS

Seven Ways to Think Like a
21st-Century Economist



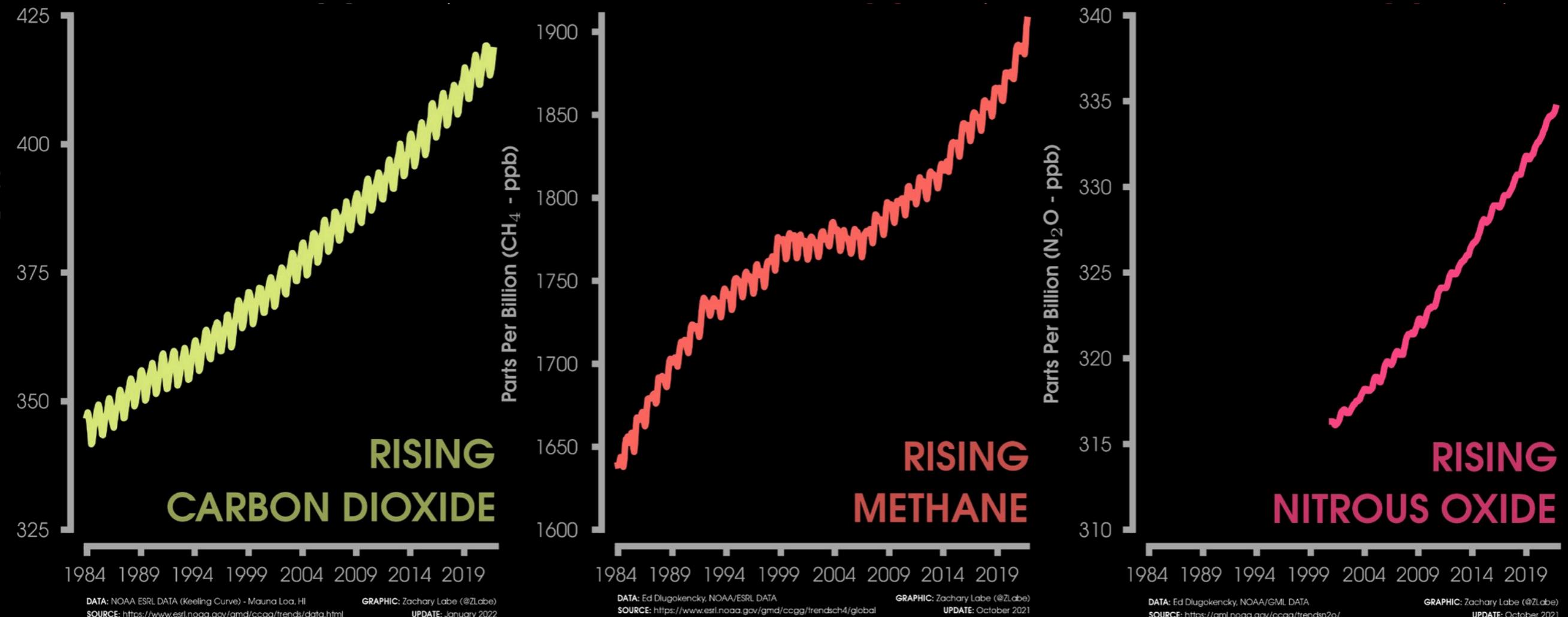
KATE RAWORTH

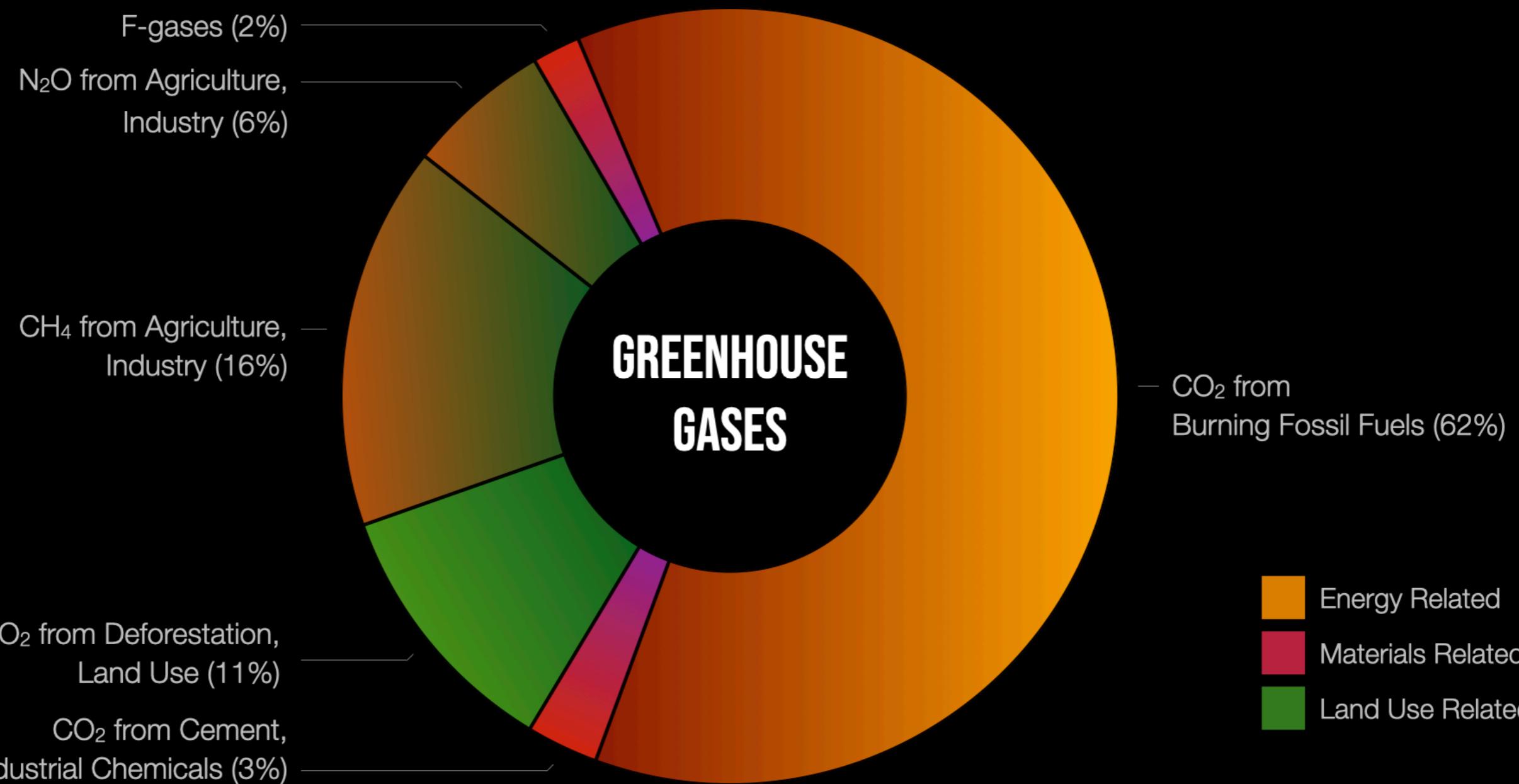
"I read this book with the excitement that the people of his day must have read John Maynard Keynes's General Theory. It is brilliant, thrilling and revolutionary." George Monbiot



Part II:

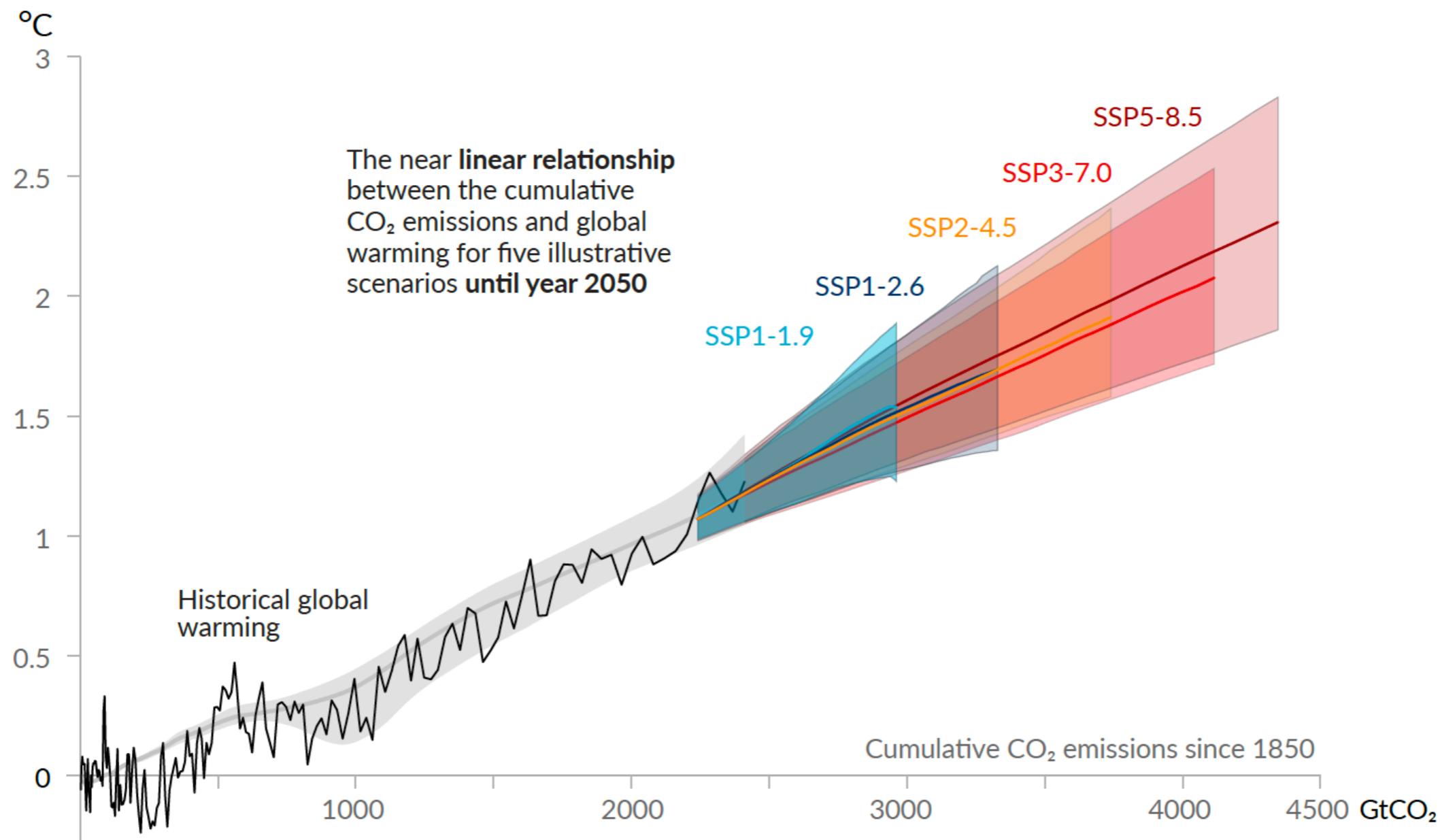
Climate Emergency





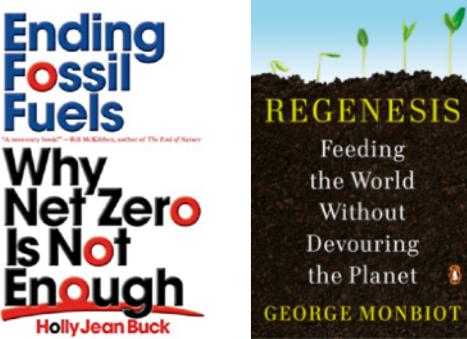
Every tonne of CO₂ emissions adds to global warming

Global surface temperature increase since 1850-1900 (°C) as a function of cumulative CO₂ emissions (GtCO₂)

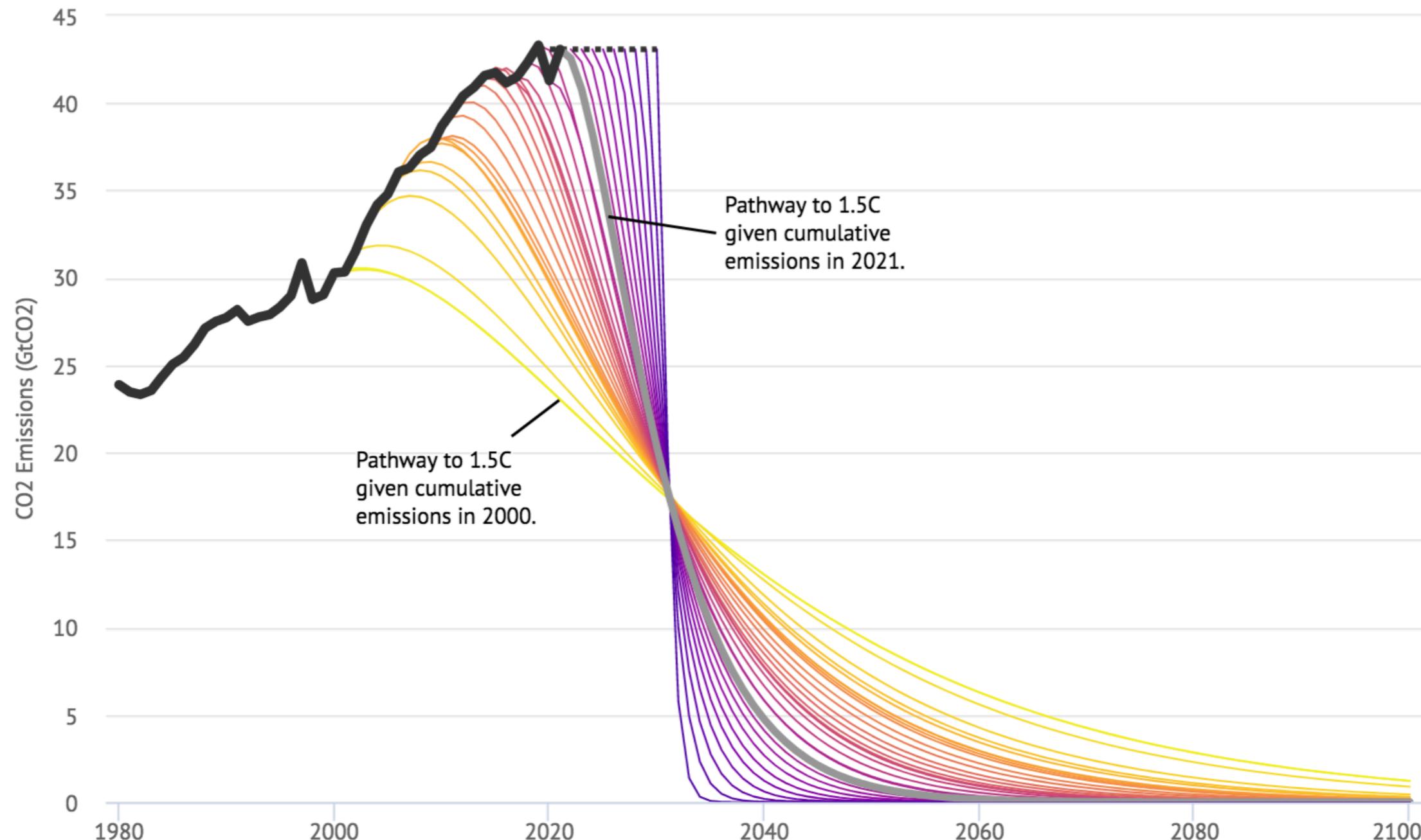


Global warming between 1850–1900 and 2010–2019 (°C)	Historical cumulative CO ₂ emissions from 1850 to 2019 (GtCO ₂)
1.07 (0.8–1.3; <i>likely</i> range)	2390 (\pm 240; <i>likely</i> range)

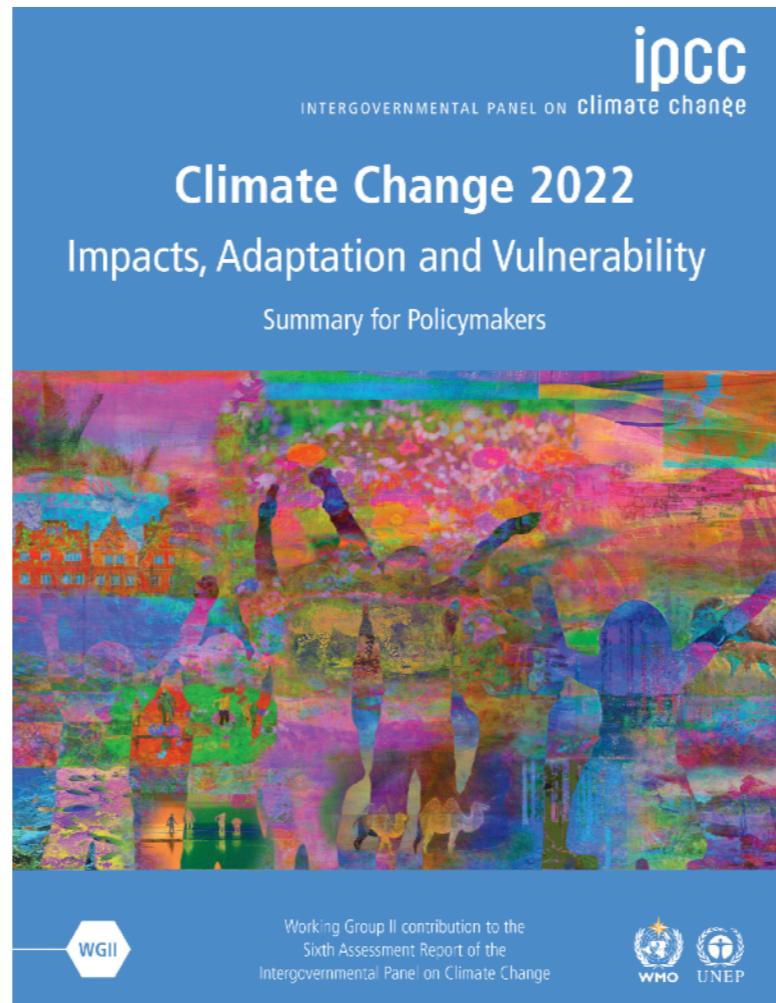
Approximate global warming relative to 1850–1900 until temperature limit (°C)*(1)	Additional global warming relative to 2010–2019 until temperature limit (°C)	Estimated remaining carbon budgets from the beginning of 2020 (GtCO ₂)					Variations in reductions in non-CO ₂ emissions*(3)
		17%	33%	50%	67%	83%	
1.5	0.43	900	650	500	400	300	Higher or lower reductions in accompanying non-CO ₂ emissions can increase or decrease the values on the left by 220 GtCO ₂ or more
1.7	0.63	1450	1050	850	700	550	
2.0	0.93	2300	1700	1350	1150	900	

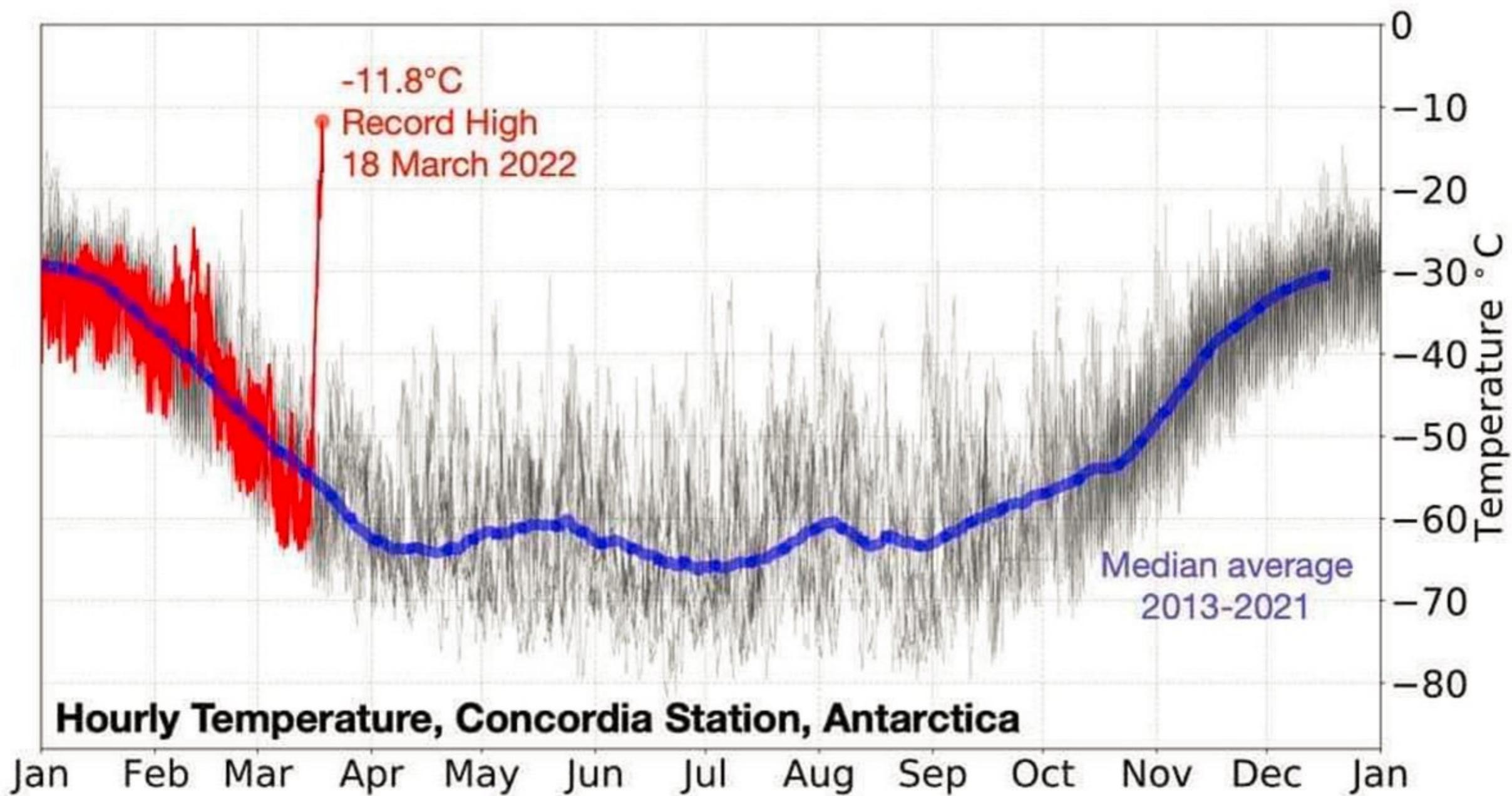


Limiting warming to 1.5C is increasingly difficult without large-scale negative emissions



Climate impacts emerge earlier and are worse than anticipated





Canadian inferno: northern heat exceeds worst-case climate models

Source
[Mann Podcast](#)

Scientists fear heat domes in North America and Siberia indicate a new dimension to the global crisis

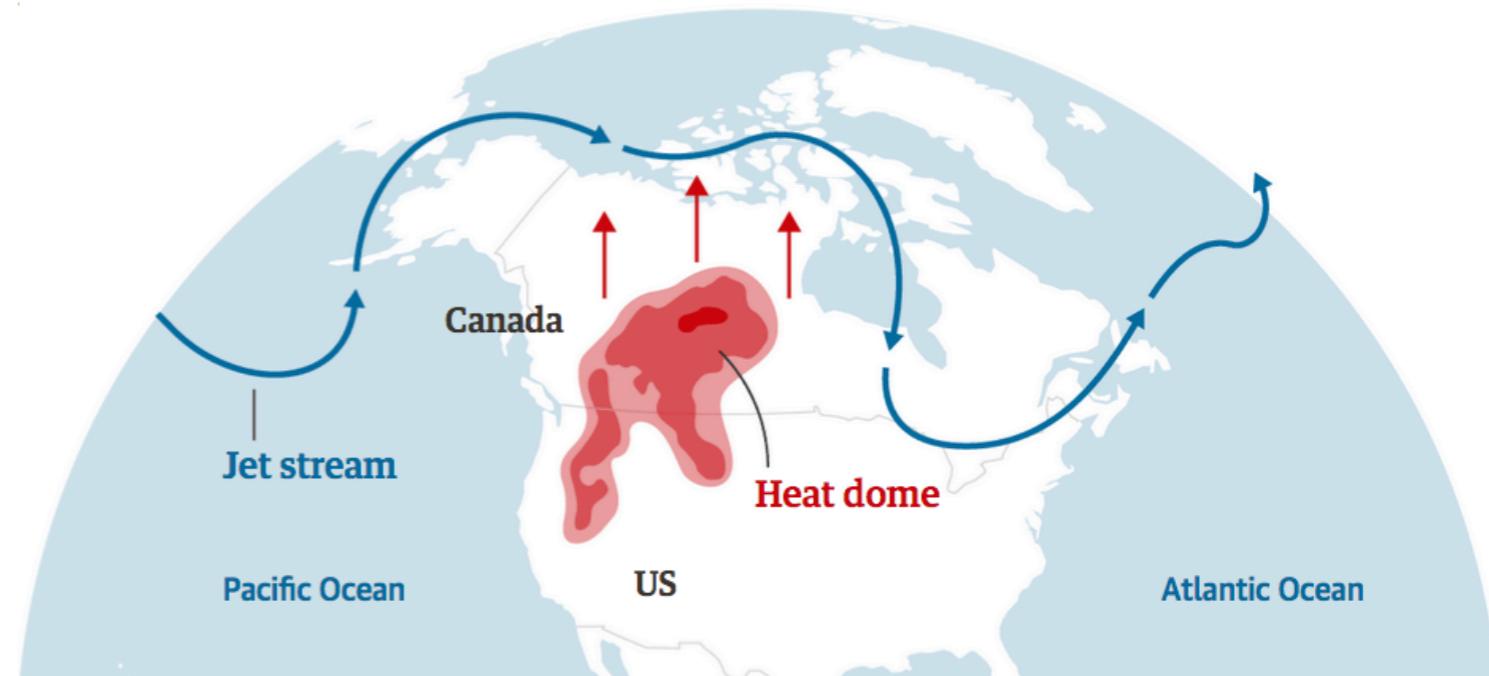
Jonathan Watts

 @jonathanwatts

Fri 2 Jul 2021 16.28 BST

“[T]here is something else going on with this heatwave, and indeed, with many of the very persistent weather extremes we’ve seen in recent years in the US, Europe, Asia and elsewhere, where the models aren’t quite capturing the impact of climate change.”

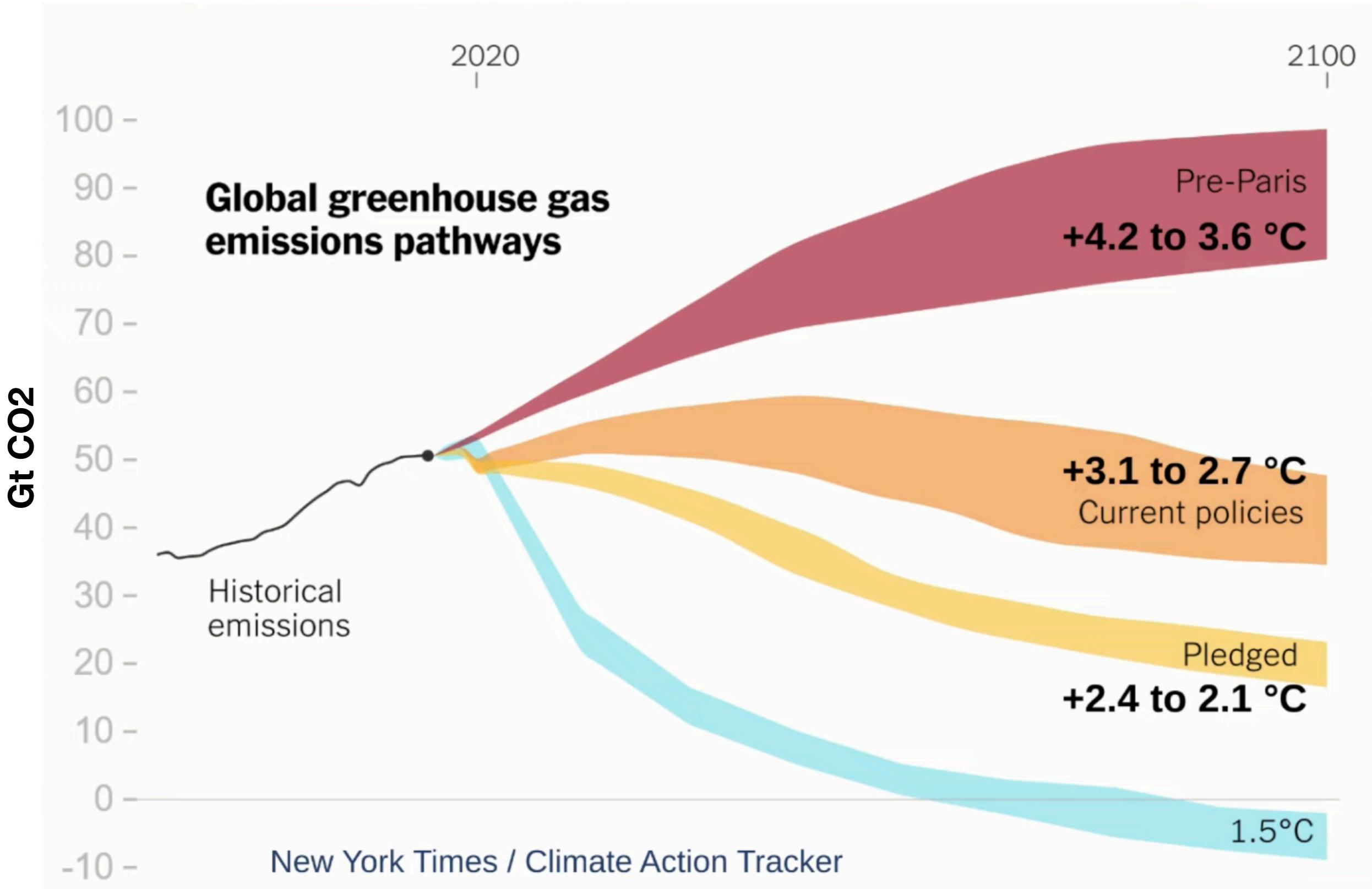
- Michael Mann



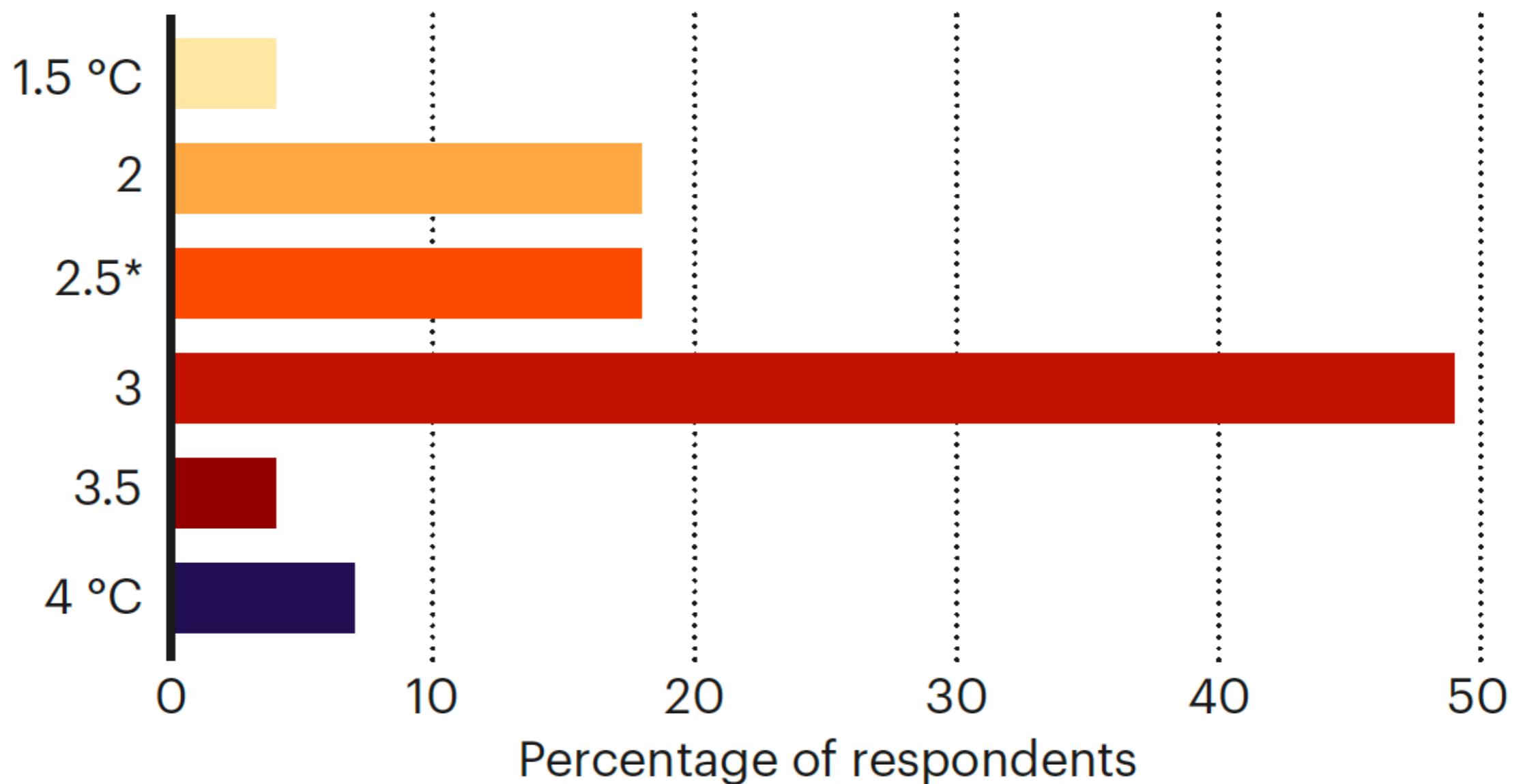
“The recent extreme weather anomalies were not represented in global computer models that are used to project how the world might change with more emissions.”

- Johan Rockström

[Fisher et al. \(2021\)](#)
[McSweeney \(2019\)](#)



How much warming above pre-industrial times do you think is likely by 2100?



*Includes 2 responses between 2.7 °C and 2.75 °C;
2.5 °C and 3.5 °C were write-in answers.

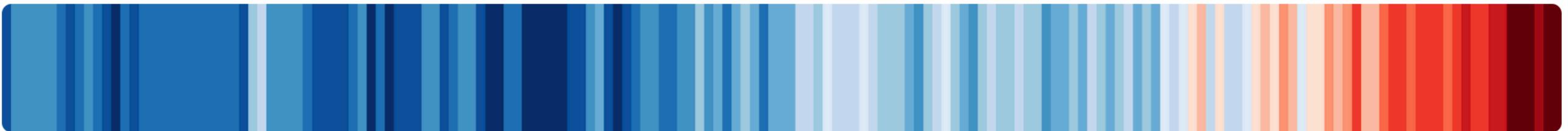
The Uninhabitable Earth

Famine, economic collapse, a sun that cooks us: What climate change could wreak — sooner than you think.

By David Wallace-Wells

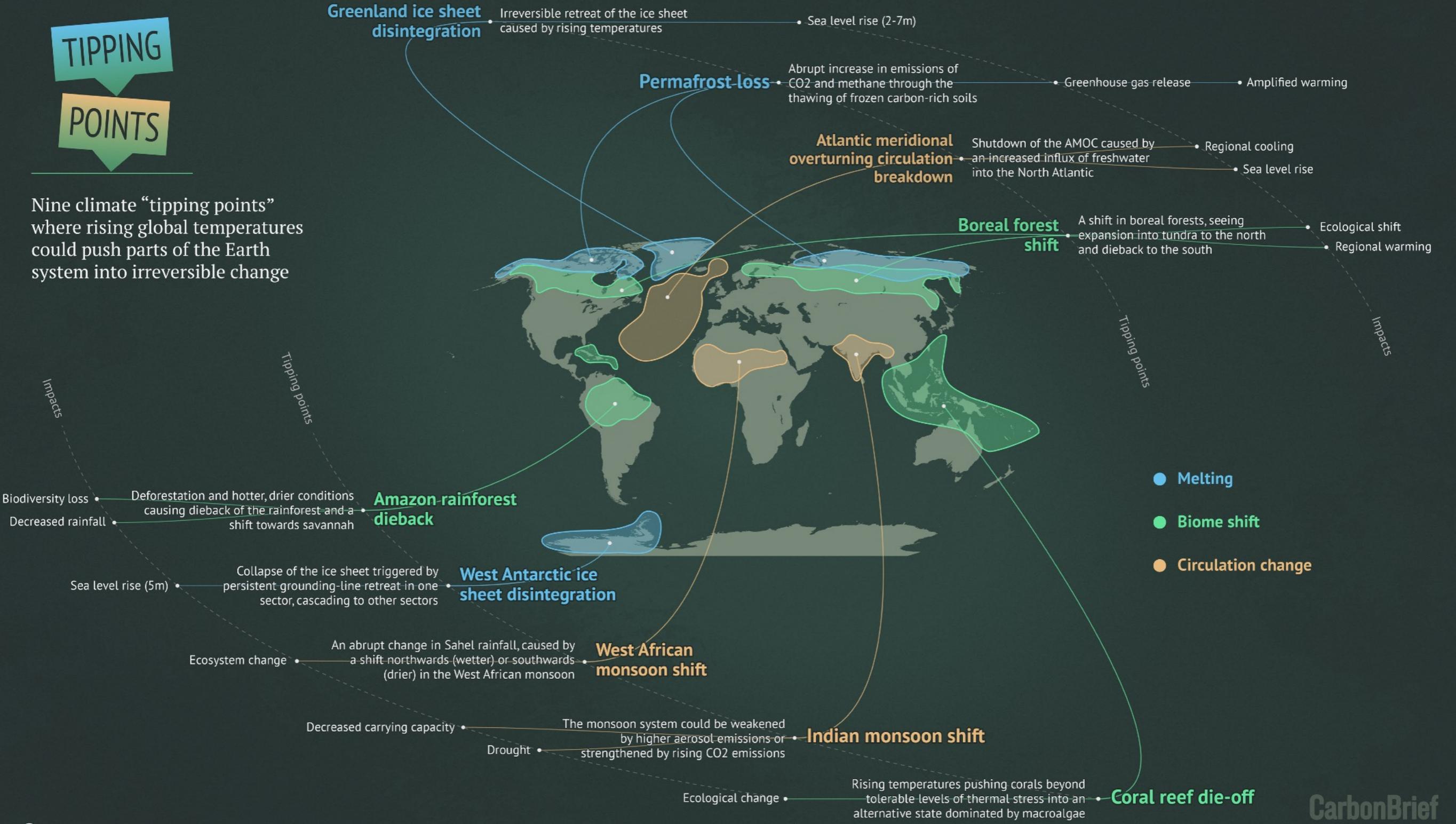


The Barely Inhabitable Earth: Climate Impacts under Business as Usual

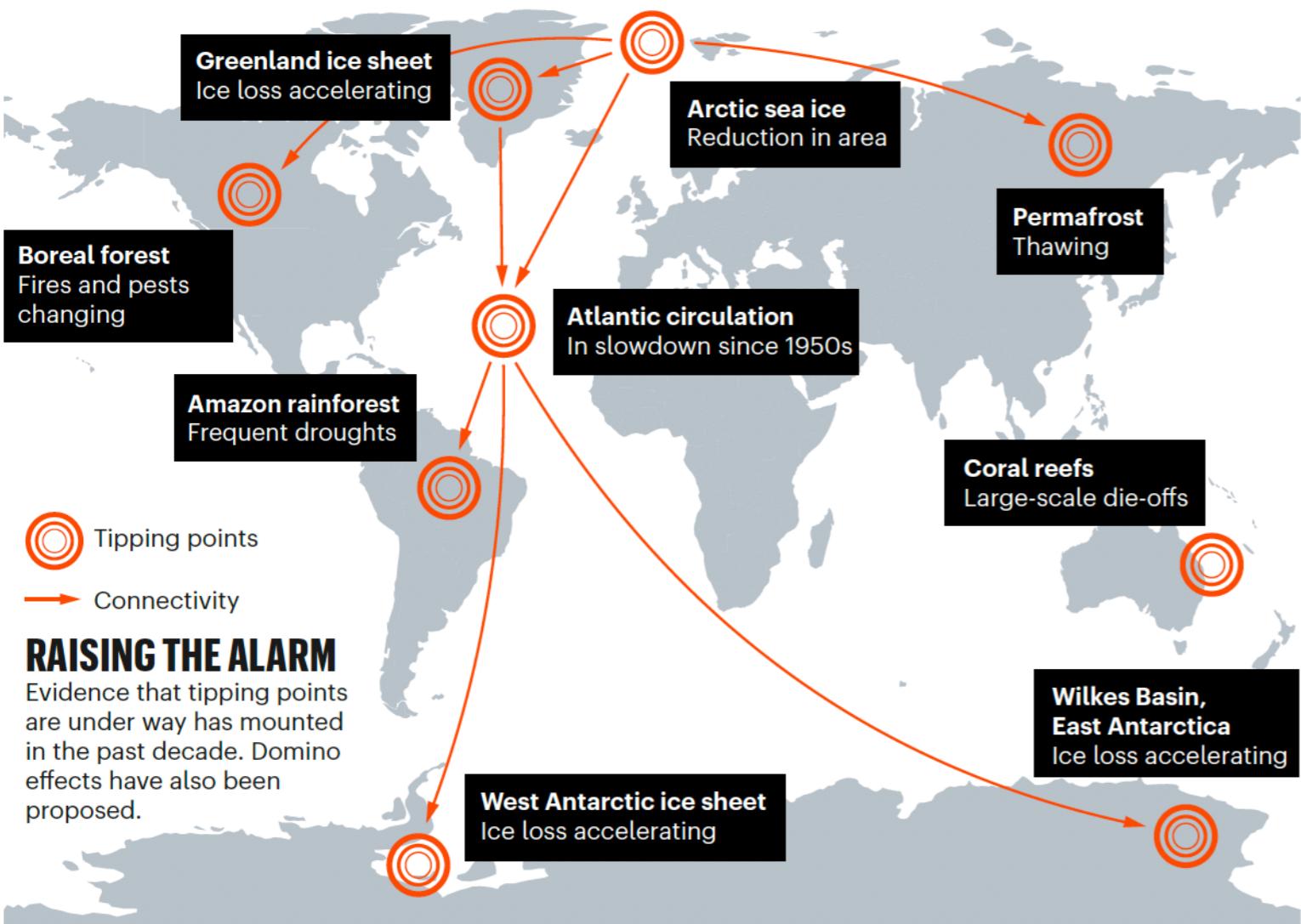


TIPPING POINTS

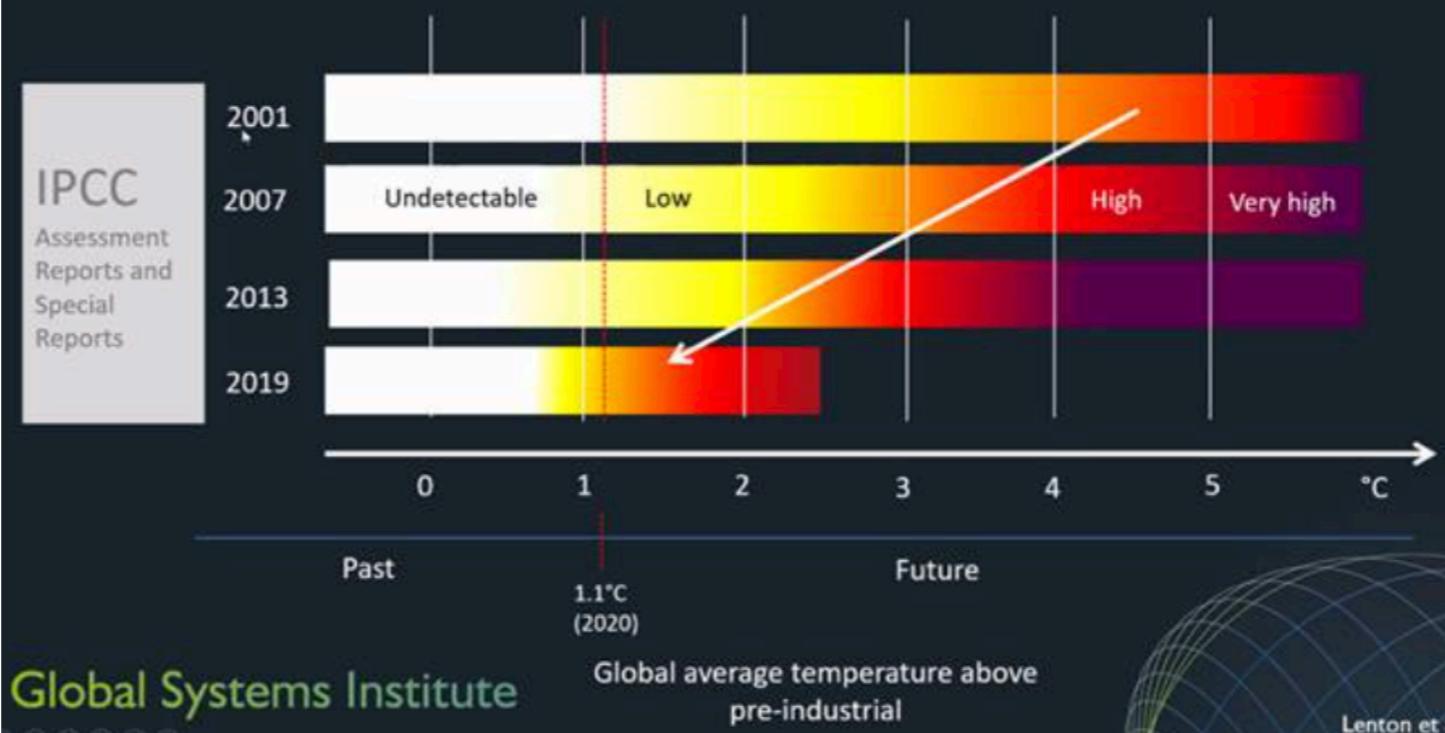
Nine climate “tipping points” where rising global temperatures could push parts of the Earth system into irreversible change



Source



Changing risk assessment of tipping points

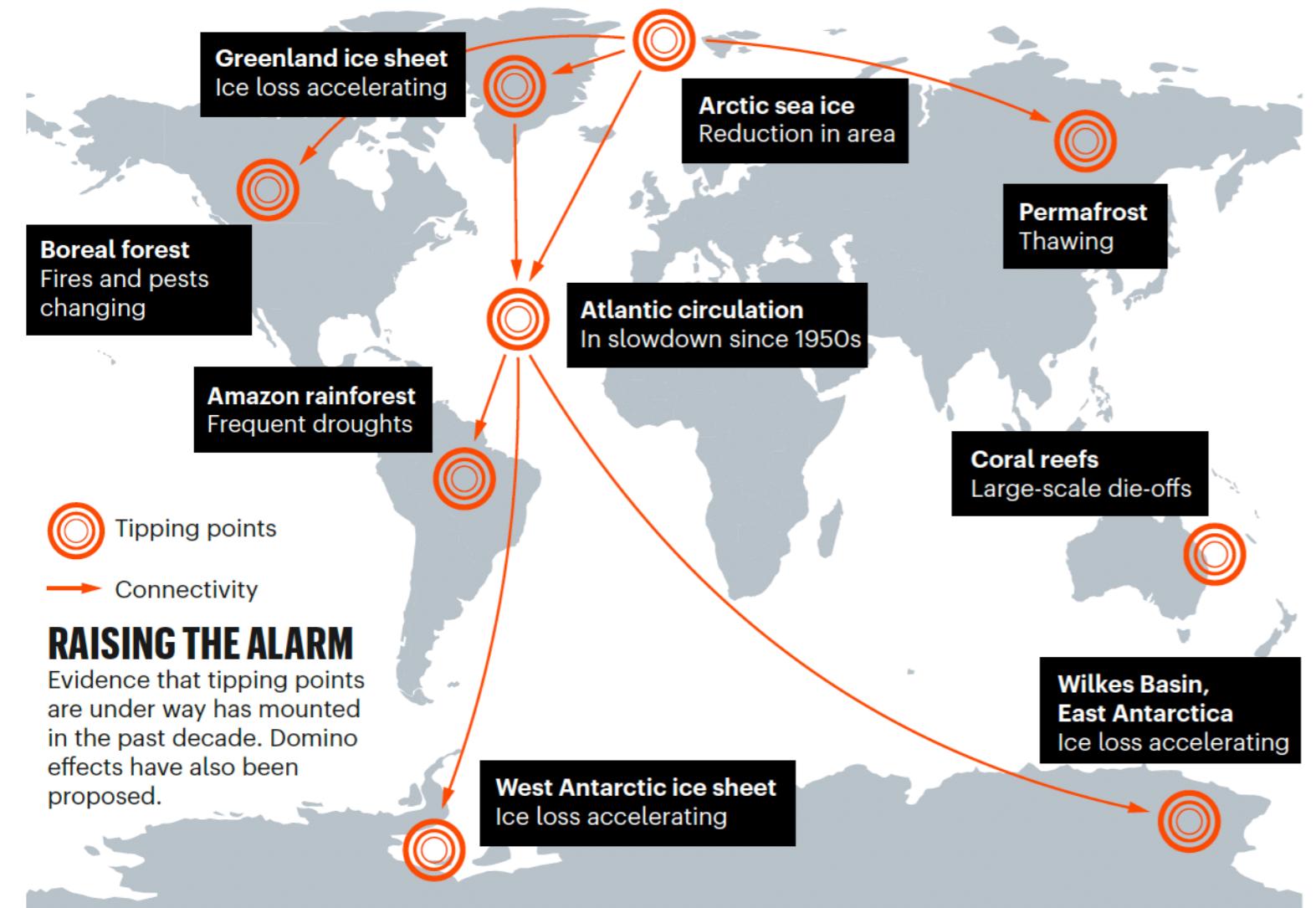


Ritchie et al. (2020)

Lenton et al. (2019)

Wunderling et al. (2021)

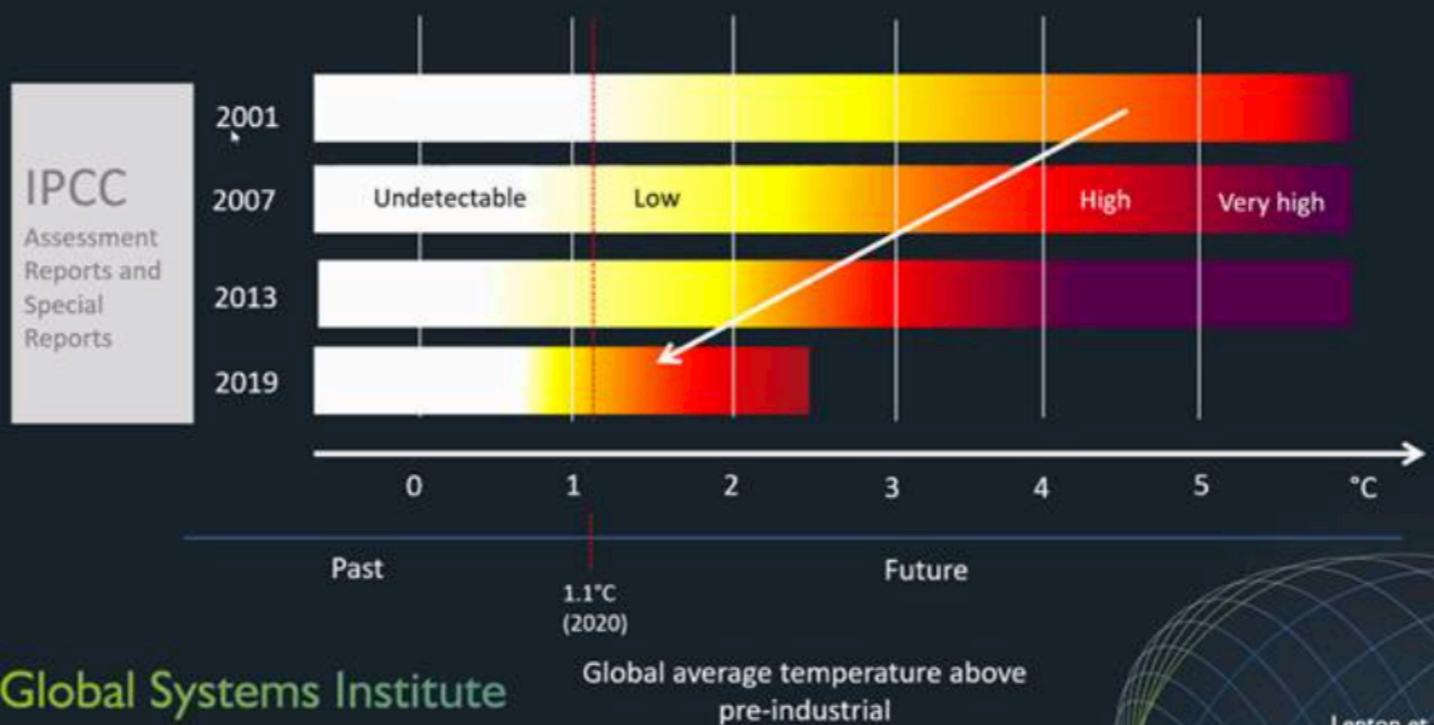
McKay et al. (under review)



“The evidence from tipping points alone suggests that we are in a state of planetary emergency.”

- Lenton et al. (2019)

Changing risk assessment of tipping points

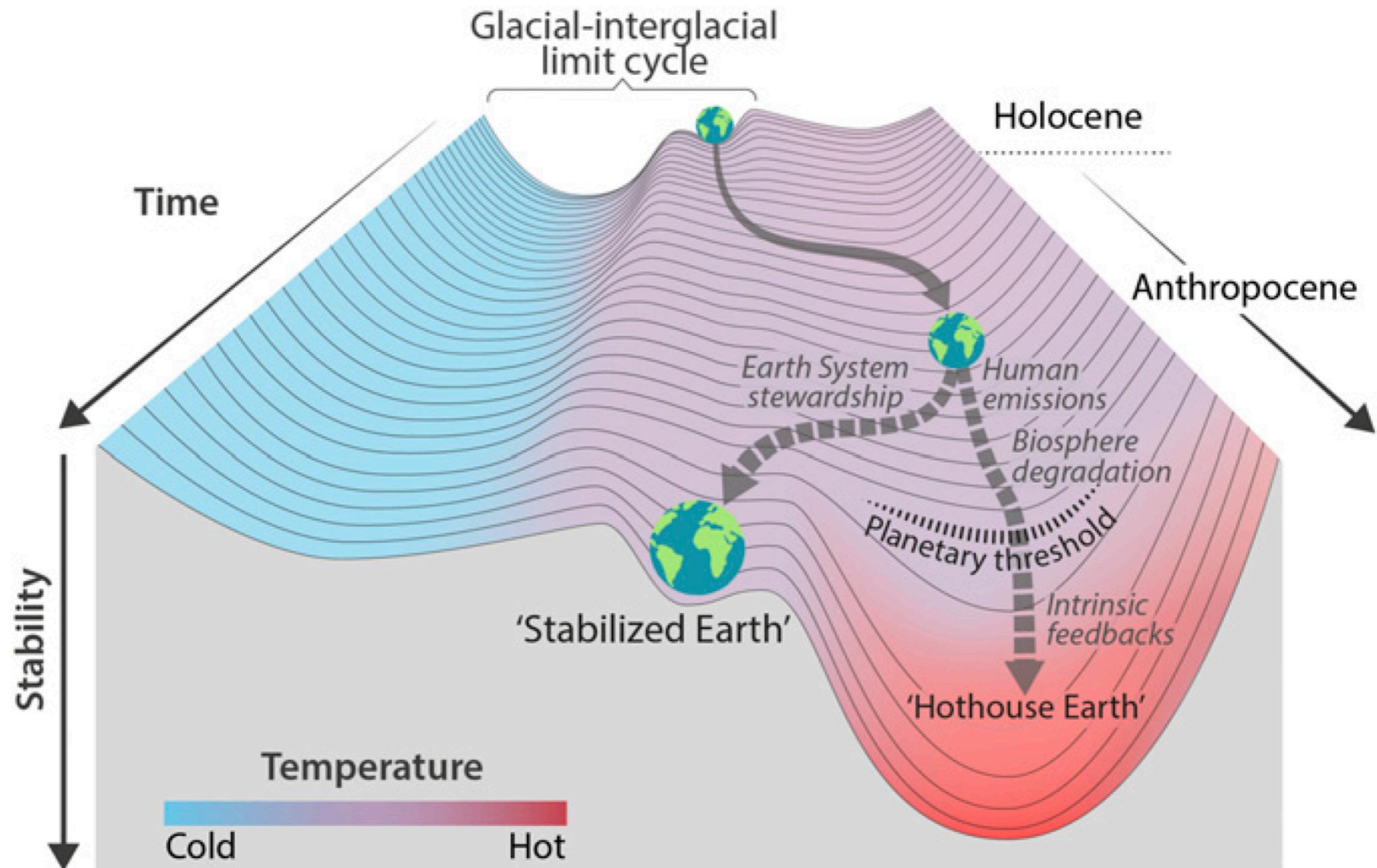


Ritchie et al. (2020)

Lenton et al. (2019)

Wunderling et al. (2021)

McKay et al. (under review)



[Steffen Podcast](#)
[Rockström Podcast](#)

Climate Change 2022

Impacts, Adaptation and Vulnerability

Summary for Policymakers



“Any further delay in concerted anticipatory global action on adaptation and mitigation will miss a brief and rapidly closing window of opportunity to secure a liveable and sustainable future for all.”

“What we do over the next three to four years, I believe, is going to determine the future of humanity.”

Sir David King (2021)



Part III:

Current Climate Policy

Fossil Fuelled Lies

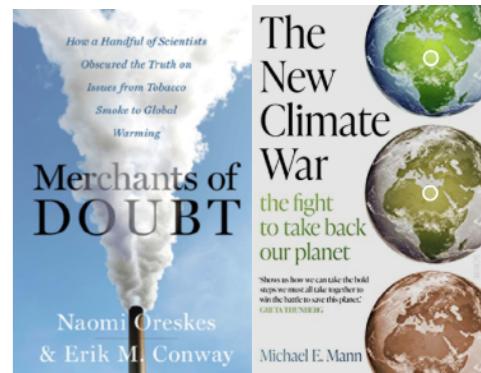
[Franta Talk](#)
[Franta Interview](#)
[The Corporation](#)

Society's Understanding & Actions

Big Oil's Understanding & Actions



[Franta \(2018a,b\)](#); [Franta \(2021a,b\)](#); [Farrell \(2016\)](#); [Supran & Oreskes \(2017,2021a,b\)](#);
[McKibben \(2015\)](#); [Bonneuil et al. \(2021\)](#); [Franta & Supran \(2017\)](#)

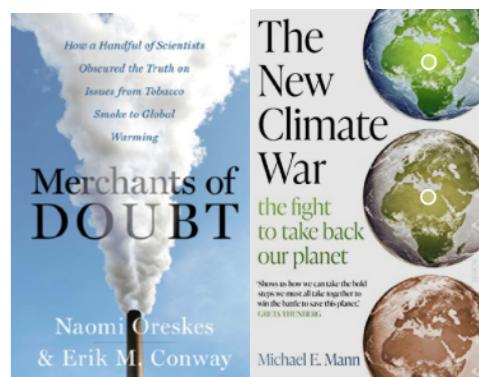


Fossil Fuelled Lies

Society's Understanding & Actions

- 1960: Keeling shows increase in CO₂
- 1965: Environmental Report Lyndon Johnson
- 1970s: Cooling or Warming? Warming!
- 1988: Hansen testifies before Congress
- 1988: IPCC forms
- 1992: UNFCCC
- 1997: Kyoto Protocol signed
- 2015: Paris Agreement

Big Oil's Understanding & Actions



Fossil Fuelled Lies

Franta [Talk](#)
Franta [Interview](#)
[The Corporation](#)

Society's Understanding & Actions

- 1960: Keeling shows increase in CO₂
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- 2015: Paris Agreement

Big Oil's Understanding & Actions

- 1959: Edward Teller warns Big Oil
- 1965: President of API warns Big Oil
- 1979-83: Exxon internal research programme
- 1980: API argues for tripling coal
- 1987: IPIECA Strategy meeting
 - Emphasise uncertainties
 - Stress the cost of action
 - Focus on policies that do not threaten fossil fuels
 - Insist on 'detection before action'
- 1989-2002: Global Climate Coalition
- 2000-now: Greenwashing



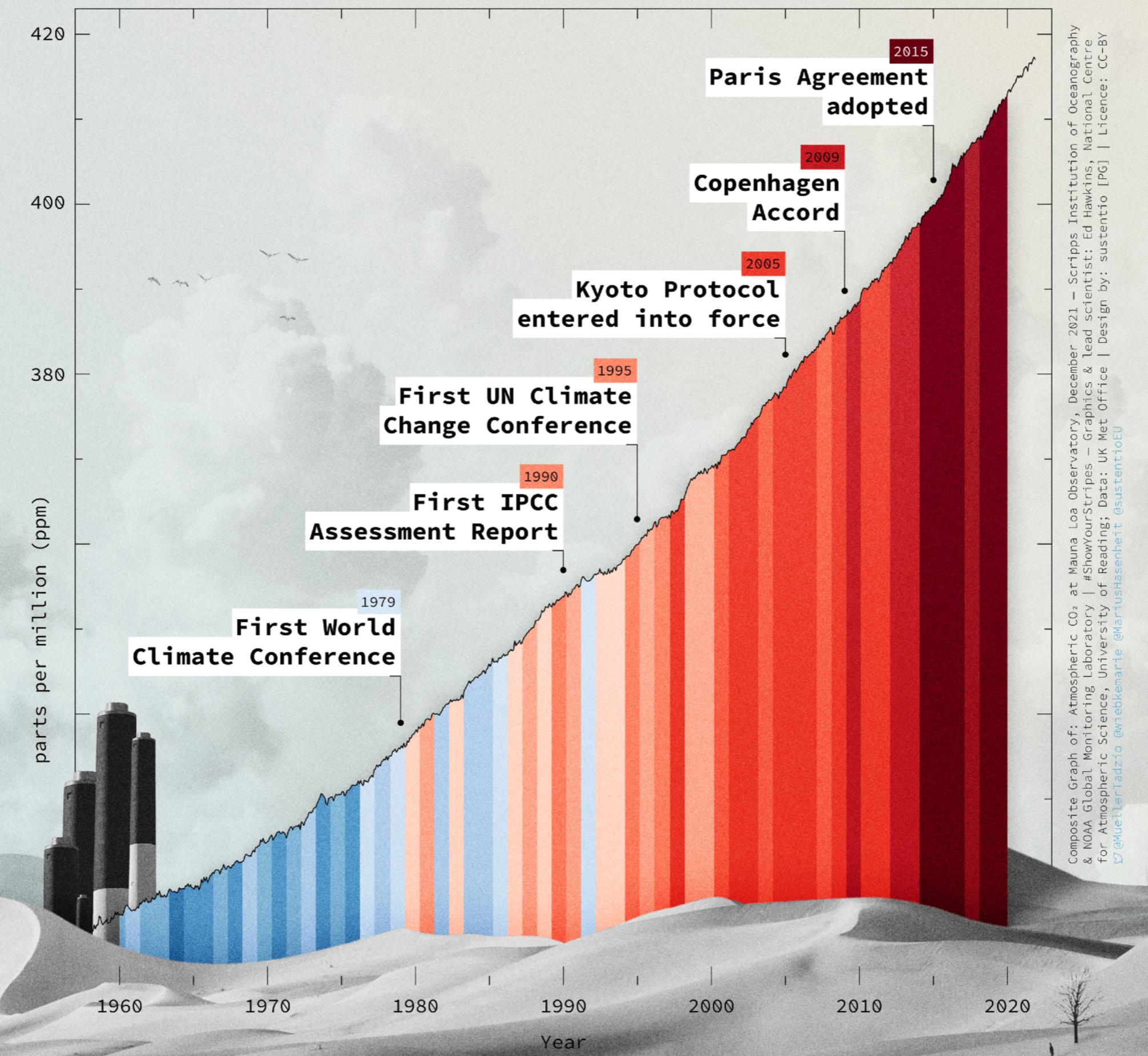
Exclusive: Oil and gas majors are planning scores of vast projects that threaten to shatter the 1.5C climate goal. If governments do not act, these firms will continue to cash in as the world burns

by **Damian Carrington** and **Matthew Taylor**



Trends in Atmospheric CO₂ vs Global Temperature Change

#climateINACTIONstripes

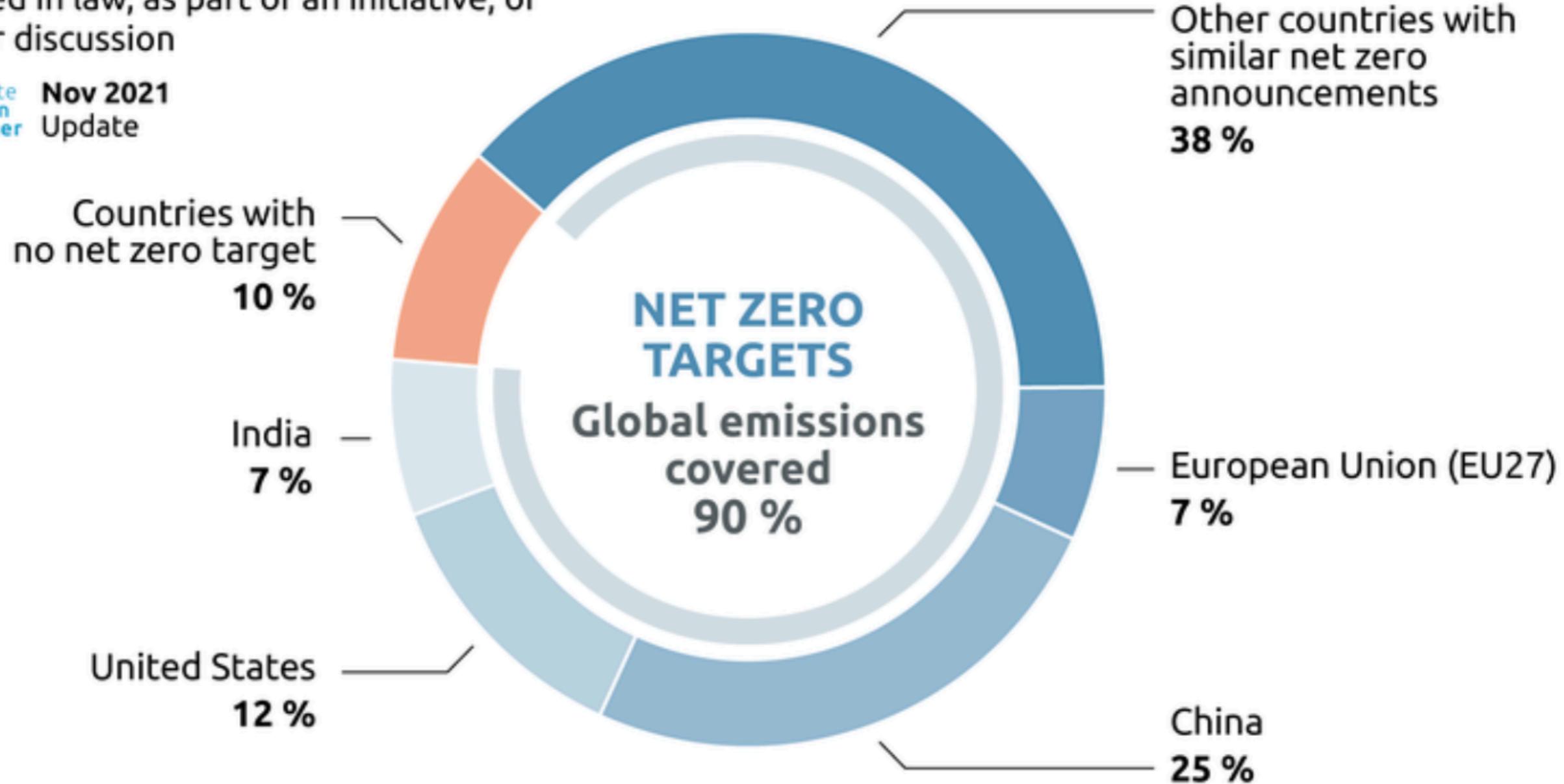


Composite Graph of: Atmospheric CO₂ at Mauna Loa Observatory, December 2021 – Scripps Institution of Oceanography & NOAA Global Monitoring Laboratory | #ShowYourStripes | Graphics & lead scientist: Ed Hawkins, National Centre for Atmospheric Science, University of Reading; Data: UK Met Office | Design by: sustentio [P6] | Licence: CC-BY
✉ @MuellerIradzio @wiebkekarrie @Mariushasenheit @sustentioEU

Net zero emissions target announcements

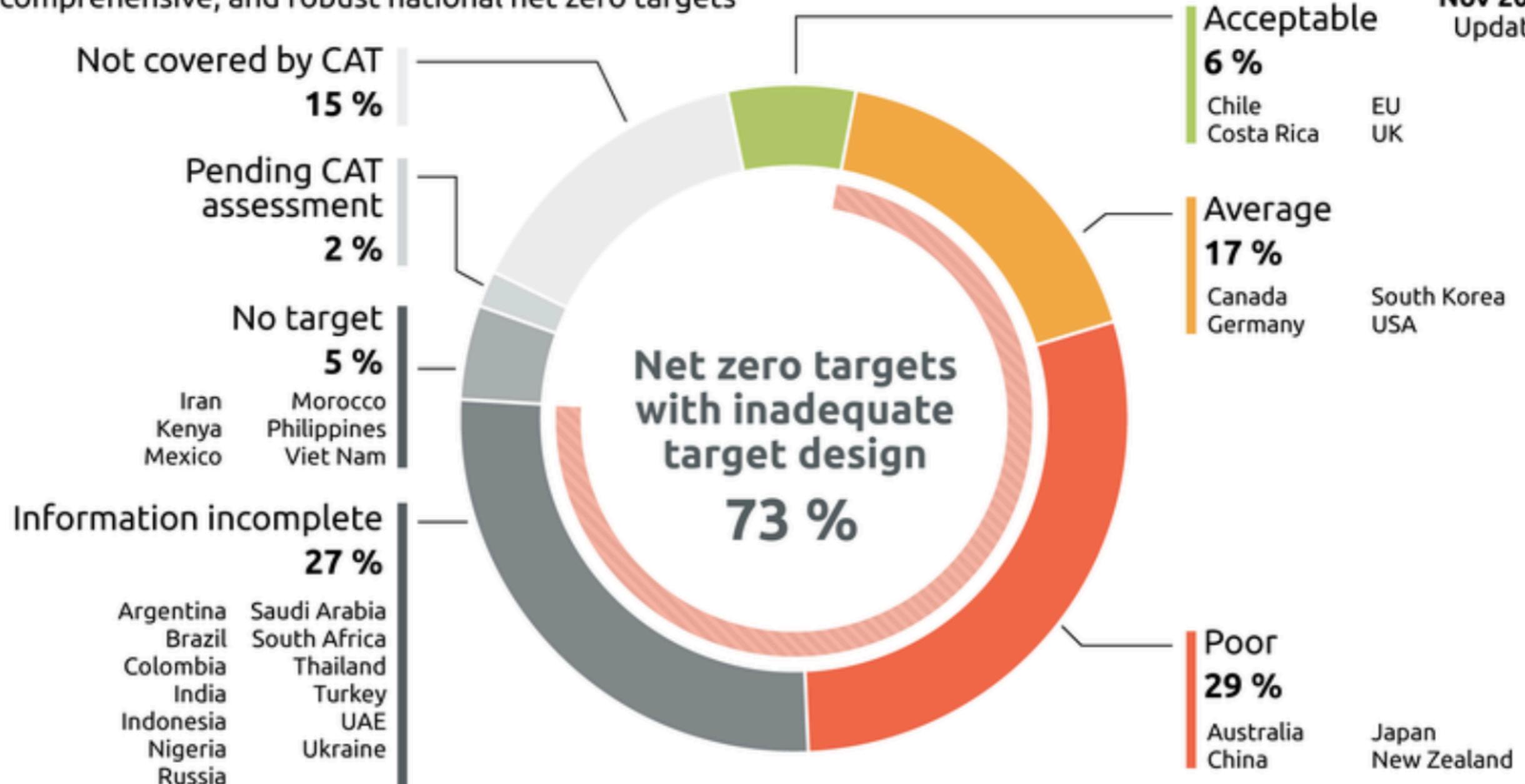
Agreed in law, as part of an initiative, or under discussion

Climate Action Tracker Nov 2021 Update



Net zero target design - mostly inadequate to date

Evaluation of the quality of net zero targets using the CAT's design blueprint for transparent, comprehensive, and robust national net zero targets





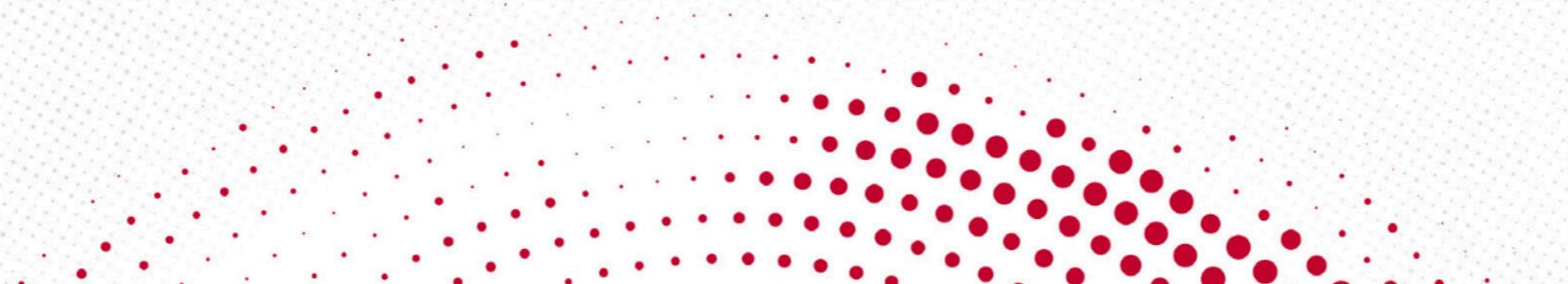
Energy & Climate
INTELLIGENCE UNIT



NET ZERO STOCKTAKE 2022

Assessing the status and trends of net zero target setting across countries, sub-national governments and companies.

June 2022

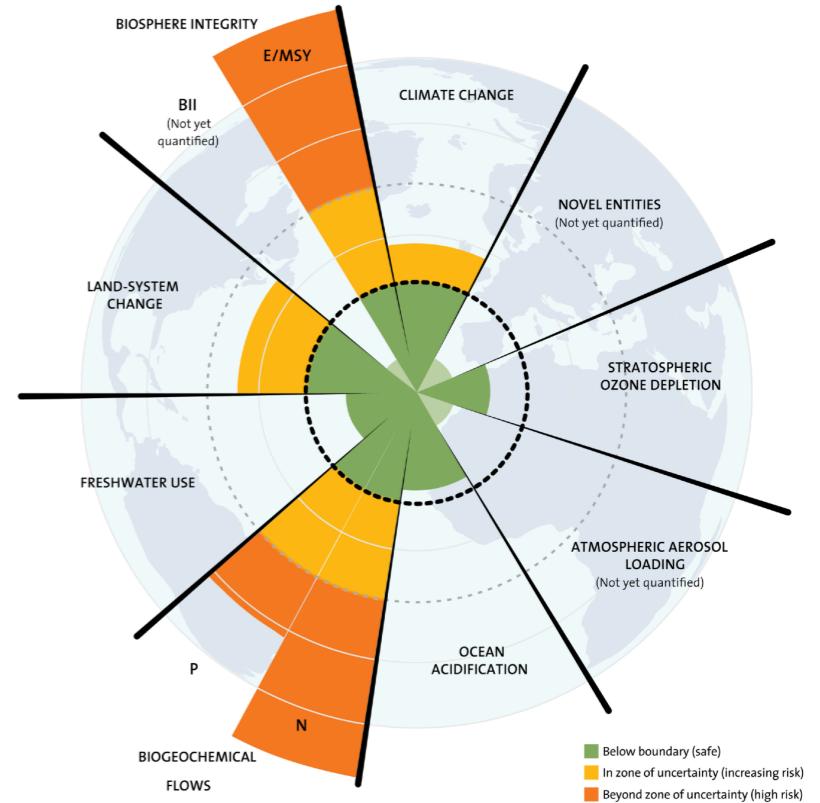
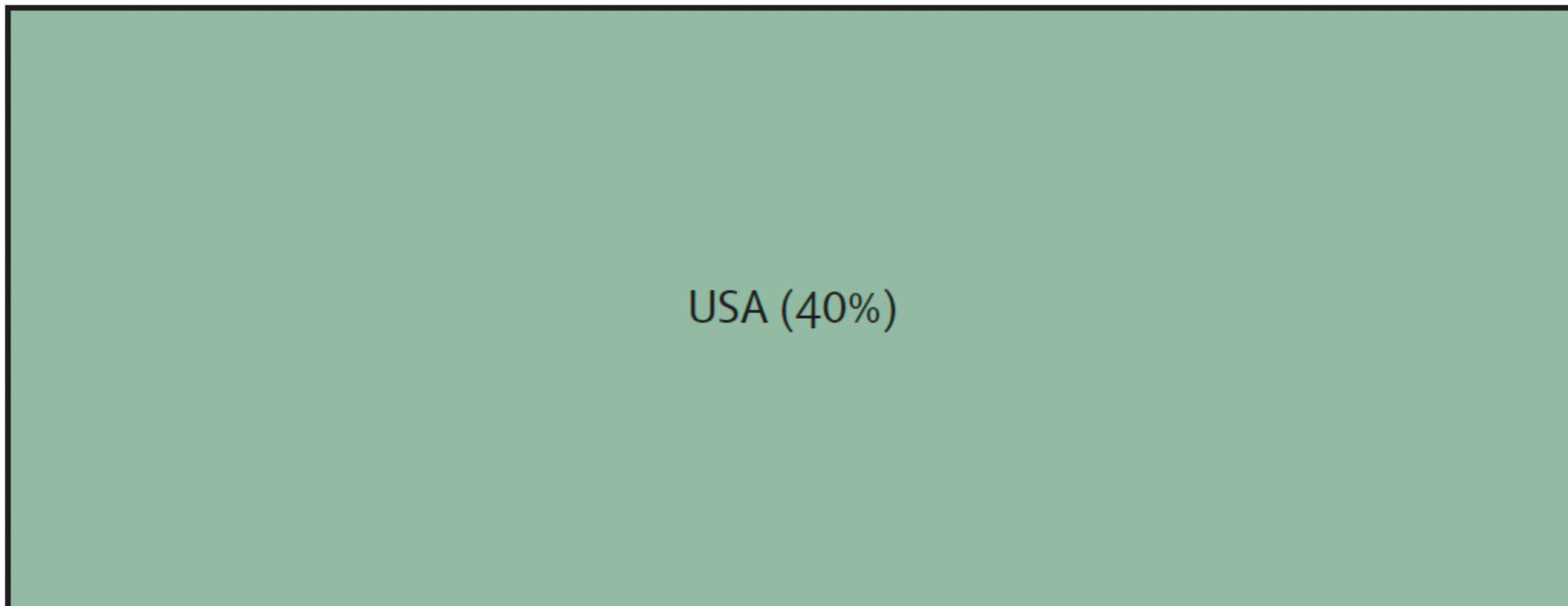


**Four Reasons why
Net zero by 2050 is
woefully inadequate**

Why net zero by 2050 is woefully inadequate

1. There is no carbon budget left for rich nations

Responsibility for climate breakdown



Mittal & Bassey Event

CLIMATE COLONIALISM

Anuradha Mittal

Founder and Director of
Oakland Institute CA

Nnimmo Bassey

Former Chair of Friends of Earth International,
Director, Home of Mother Earth Foundation

Oxford Climate Society Online Events

Mon 25 Jan | 18:00 UTC | OCS YouTube Livestream



OXFORD CLIMATE SOCIETY



PEOPLE

4 October 2021 7:00

In-depth Q&A: What is 'climate justice'?



Climate
Reparations

Why net zero by 2050 is woefully inadequate

2. Gives us a mere 50% chance of staying within 1.5°C

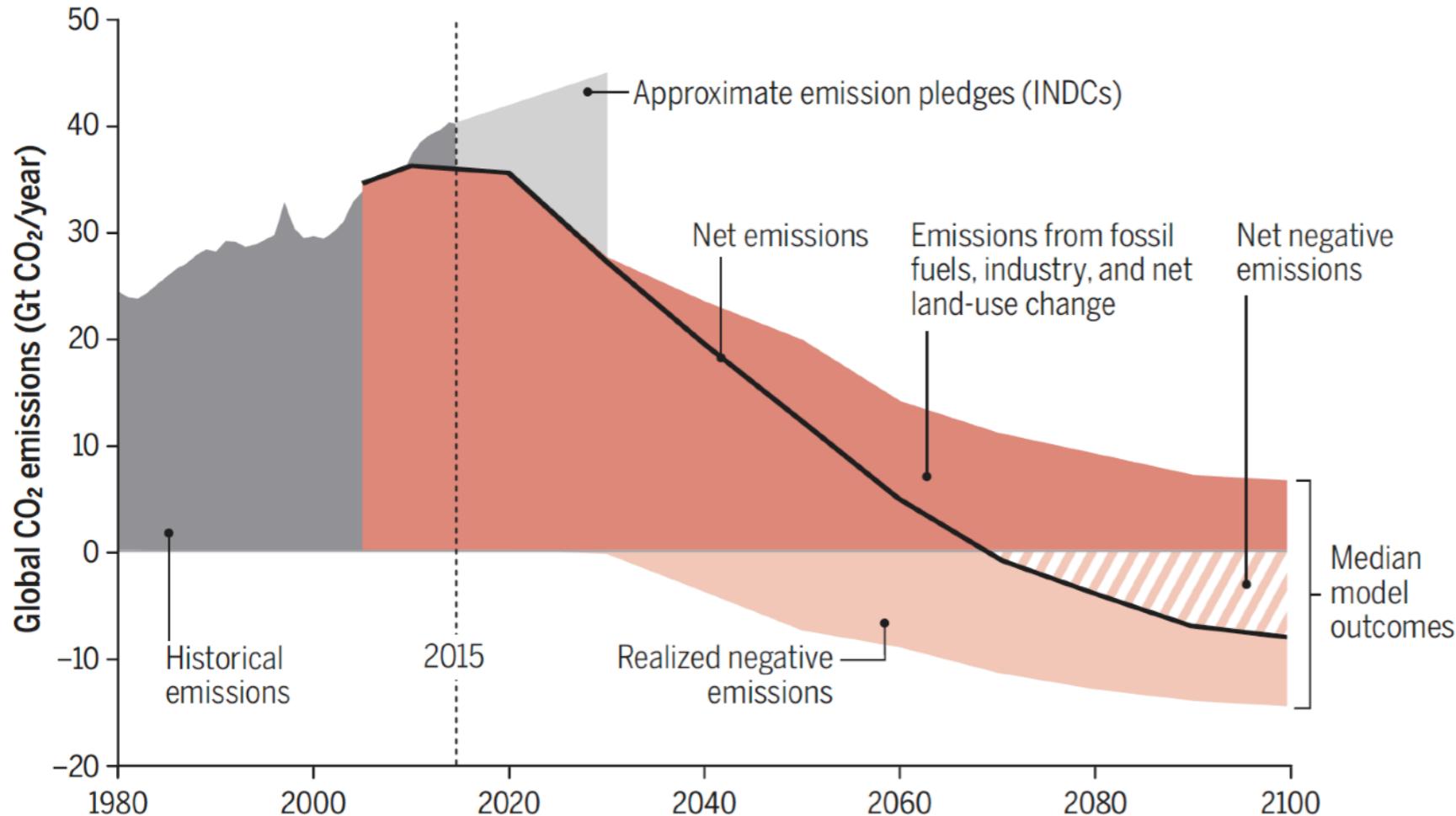
Why net zero by 2050 is woefully inadequate

3. Relies on negative emissions technology that is unproven at scale

No quick fixes

Modelers generally report net carbon emissions, unintentionally hiding the scale of negative emissions. Separating out the positive CO₂ emissions from fossil fuel combustion, industry, and land-use change reveals the scale of negative CO₂ emissions in the model scenarios (16). INDCs, Intended Nationally Determined Contributions.

[Peters Talk](#)
[Anderson Talk](#)
[Anderson Interview](#)



“Negative-emission technologies are not an insurance policy, but rather an unjust and high-stakes gamble.”

- Anderson & Peters (2016)

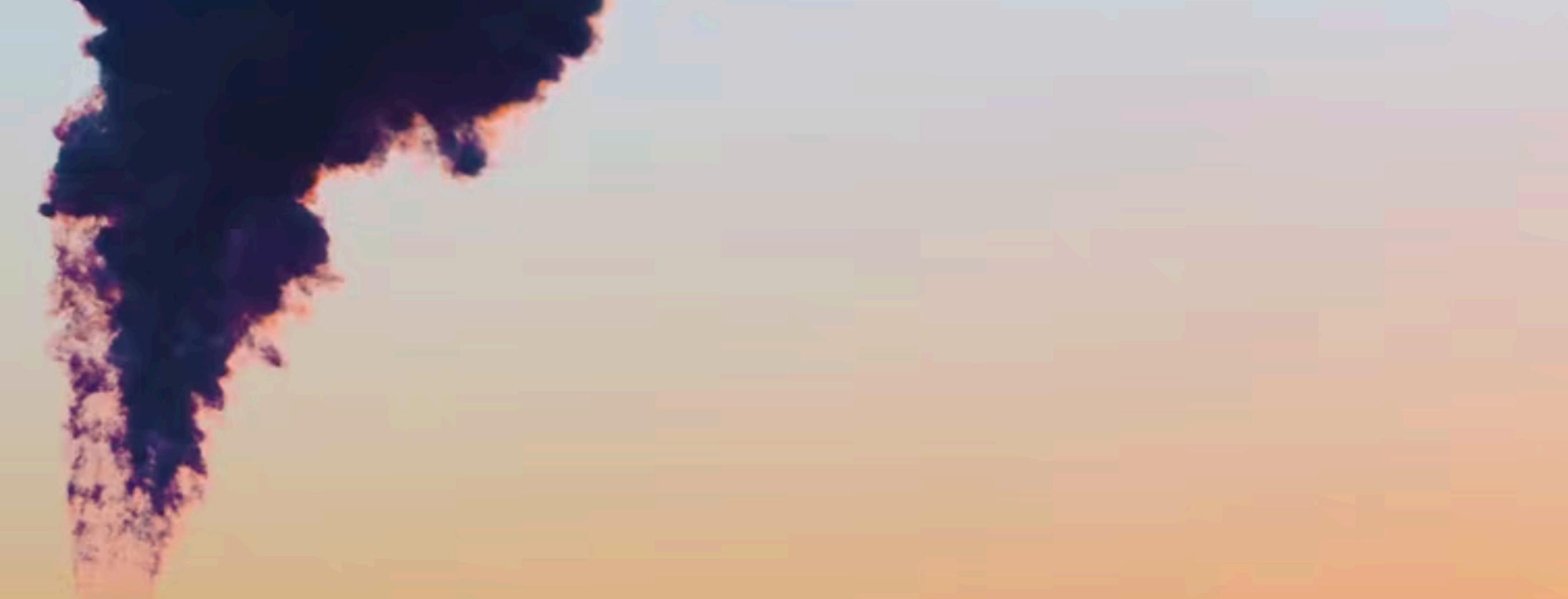


[Hickman \(2016\)](#)

[Sen & Dabi \(2021\)](#)

[Carbon Brief](#)

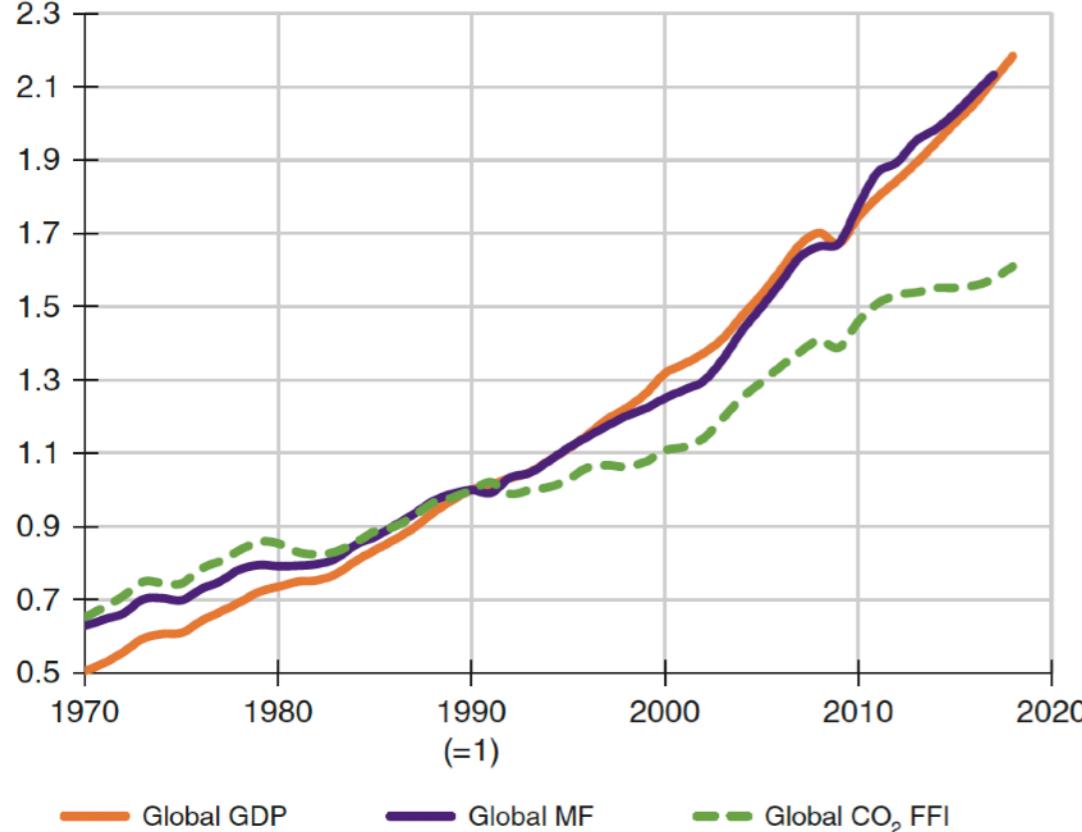
[Hausfather \(2022\)](#)



Climate scientists: concept of net zero is a dangerous trap

Published: April 22, 2021 12.25am EDT

“Current net zero policies will not keep warming to within 1.5°C because they were never intended to. They were and still are driven by a need to protect business as usual, not the climate.”

**ECONOMICS**

Unraveling the claims for (and against) green growth

Can the global economy grow indefinitely, decoupled from Earth's limitations?

By Tim Jackson¹ and Peter A. Victor²

Comment | Published: 04 August 2021

Urgent need for post-growth climate mitigation scenarios

Jason Hickel , Paul Brockway, Giorgos Kallis, Lorenz Keyßer, Manfred Lenzen, Aljoša Slameršak, Julia Steinberger & Diana Ürge-Vorsatz

Nature Energy 6, 766–768 (2021) | Cite this article

2218 Accesses | 1476 Altmetric | Metrics

PAPER • OPEN ACCESS

A systematic review of the evidence on decoupling of GDP, resource use and GHG emissions, part II: synthesizing the insights

Helmut Haberl¹ , Dominik Wiedenhofer^{1,9} , Doris Virág^{1,9} , Gerald Kalt¹ , Barbara Plank¹ , Paul Brockway² , Tomer Fishman³ , Daniel Hausknost⁵ , Fridolin Krausmann¹ , Bartholomäus Leon-Gruchalski⁴ , Andreas Mayer¹ , Melanie Pichler¹ , Anke Schaffartzik^{1,6} , Tânia Sousa⁷ , Jan Streeck¹ and Felix Creutzig⁸ — Hide full author list

Published 11 June 2020 • © 2020 The Author(s). Published by IOP Publishing Ltd

[Environmental Research Letters, Volume 15, Number 6](#)

Citation Helmut Haberl et al 2020 Environ. Res. Lett. 15 065003

Is Green Growth Possible?

Jason Hickel^a and Giorgos Kallis^b

^aAnthropology, Goldsmiths, University of London, London, UK; ^bICREA and ICTA-UAB, Universitat Autònoma de Barcelona, Barcelona, Spain

ABSTRACT

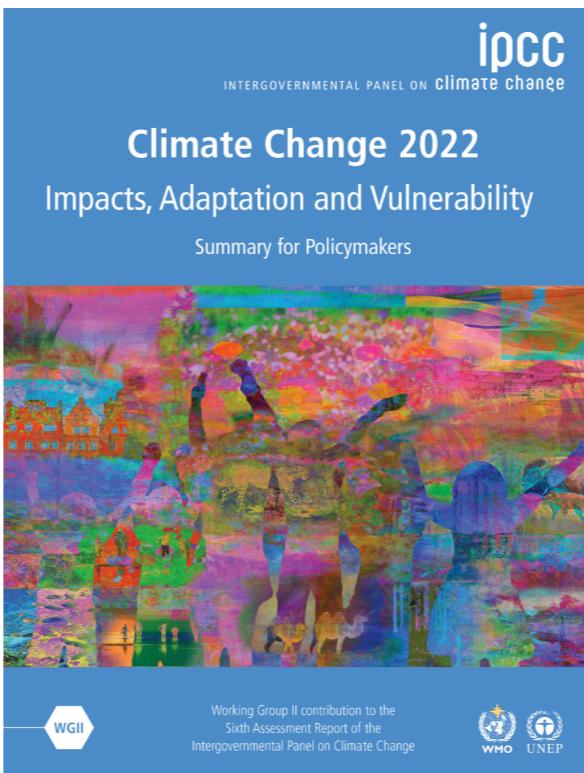
The notion of green growth has emerged as a dominant policy response to climate change and ecological breakdown. Green growth theory asserts that continued economic expansion is compatible with our planet's ecology, as technological change and substitution will allow us to absolutely decouple GDP growth from resource use and carbon emissions. This claim is now assumed in national and international policy, including in the Sustainable Development Goals. But empirical evidence on resource use and carbon emissions does not support green growth theory. Examining relevant studies on historical trends and model-based projections, we find that: (1) there is no empirical evidence that absolute decoupling from resource use can be achieved on a global scale against a background of continued economic growth, and (2) absolute decoupling from carbon emissions is highly unlikely to be achieved at a rate rapid enough to prevent global warming over 1.5°C or 2°C, even under optimistic policy conditions. We conclude that green growth is likely to be a misguided objective, and that policymakers need to look toward alternative strategies.

KEYWORDS

Sustainable development; ecological economics; green growth; degrowth; decoupling

Why net zero by 2050 is woefully inadequate

4. Climate impacts are worse than predicted and accelerating

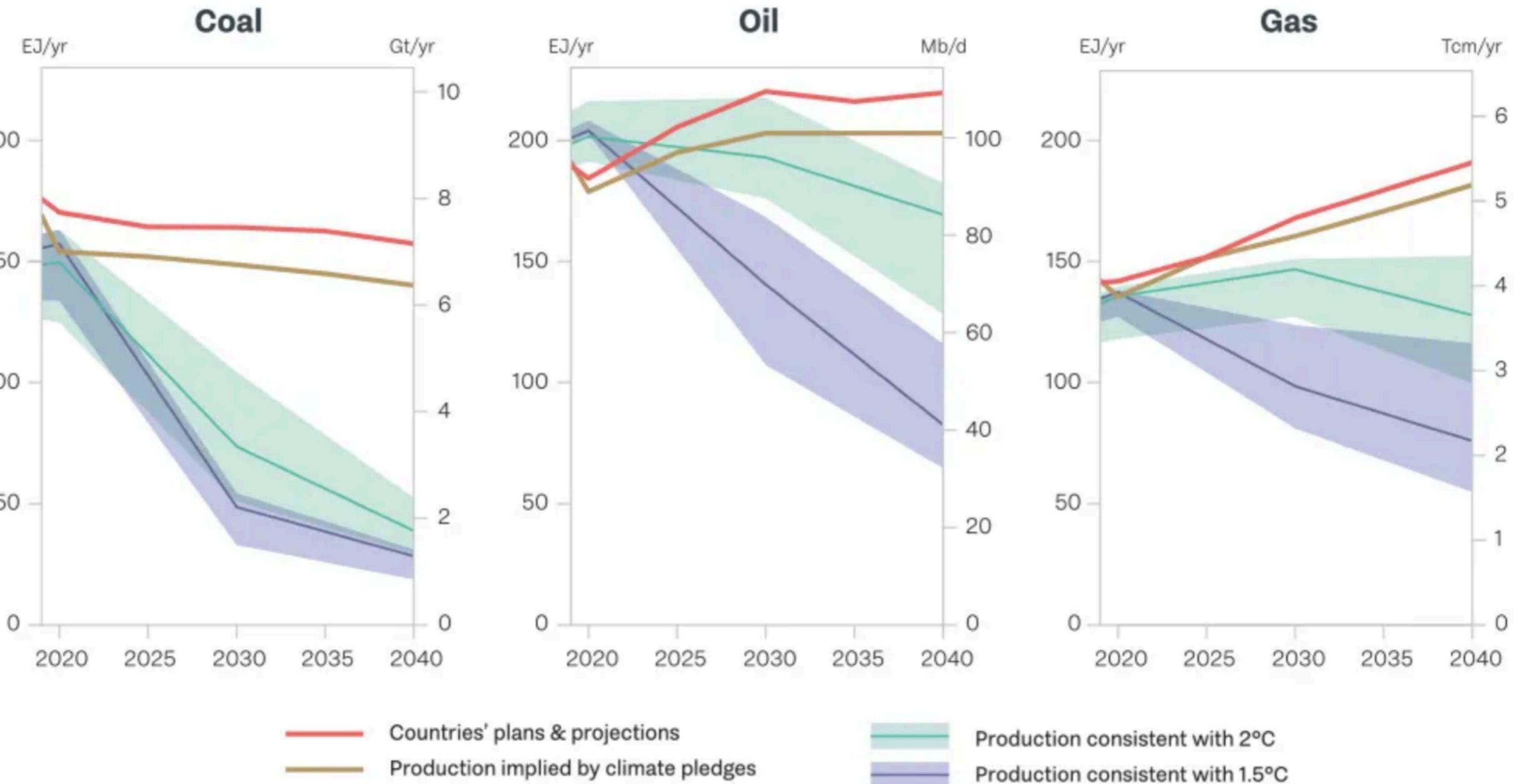


“If governments are serious about the climate crisis,
there can be no new investments in oil, gas and coal,
from now – from this year.”

Fatih Birol (2021)



“Governments plan to produce more than twice the amount of fossil fuels in 2030 than would be consistent with limiting warming to 1.5°C.”



The Production Gap

Governments' planned fossil fuel production remains dangerously out of sync with
Paris Agreement limits

Report

XR Cambridge Thread



Extinction Rebellion

@ExtinctionR

"The truly dangerous radicals are the countries that are increasing the supply of fossil fuels."

Which countries is the Secretary General of the UN referring to here?

Brace yourselves.

[Tweet übersetzen](#)



António Guterres
@antonio_guterres

Climate activists are sometimes depicted as dangerous radicals.

But the truly dangerous radicals are the countries that are increasing the production of fossil fuels.

Investing in new fossil fuels infrastructure is moral and economic madness.

11:46 AM · Apr 5, 2022 · Twitter Web App

6:54 nachm. · 13. Apr. 2022 · Twitter Web App

1.448 Retweets 104 Zitierte Tweets 3.524 „Gefällt mir“-Angaben

...

United States
United Kingdom

Germany
The Netherlands

Norway

Turkey

Cyprus

Canada

Australia

New Zealand

Russia

Brazil

Mexico

Japan

China

India

Nigeria

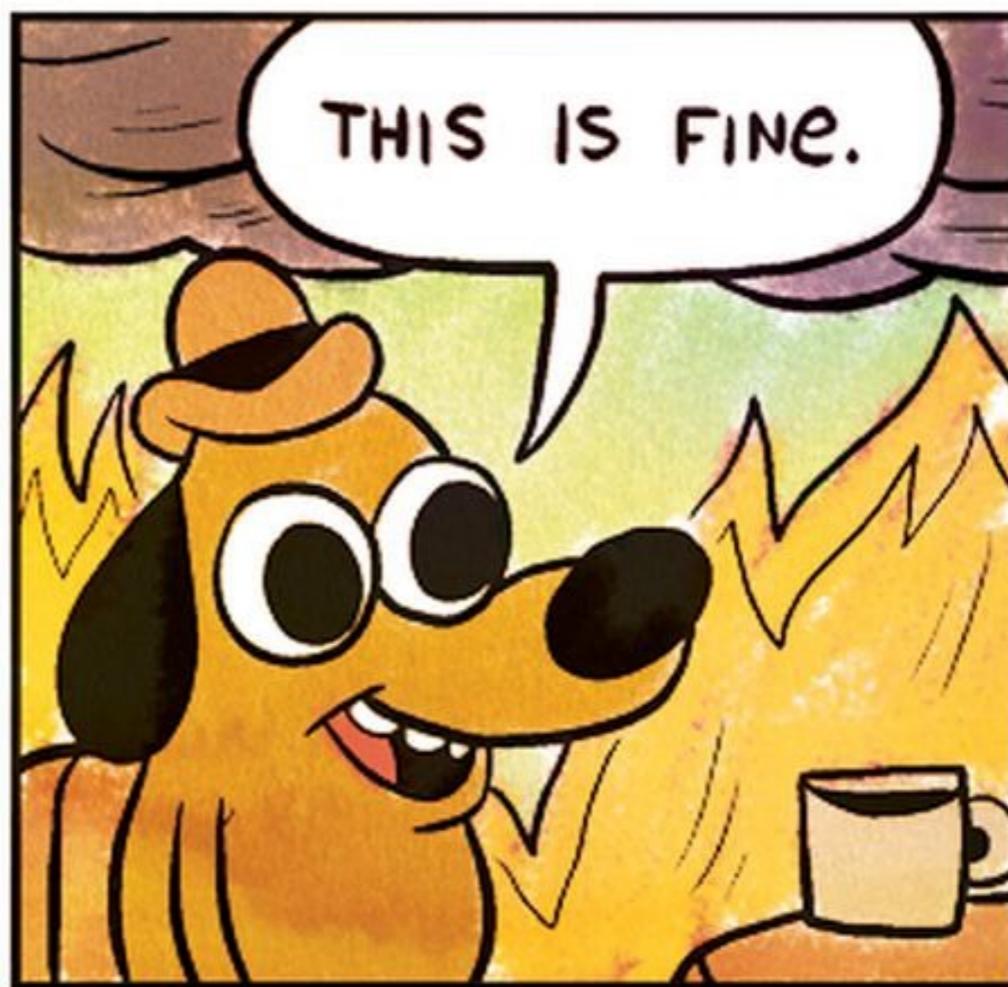
Uganda

Egypt

Morocco

...

[Source](#)



UN Warns of ‘Total Societal Collapse’ Due to Breaching of Planetary Boundaries

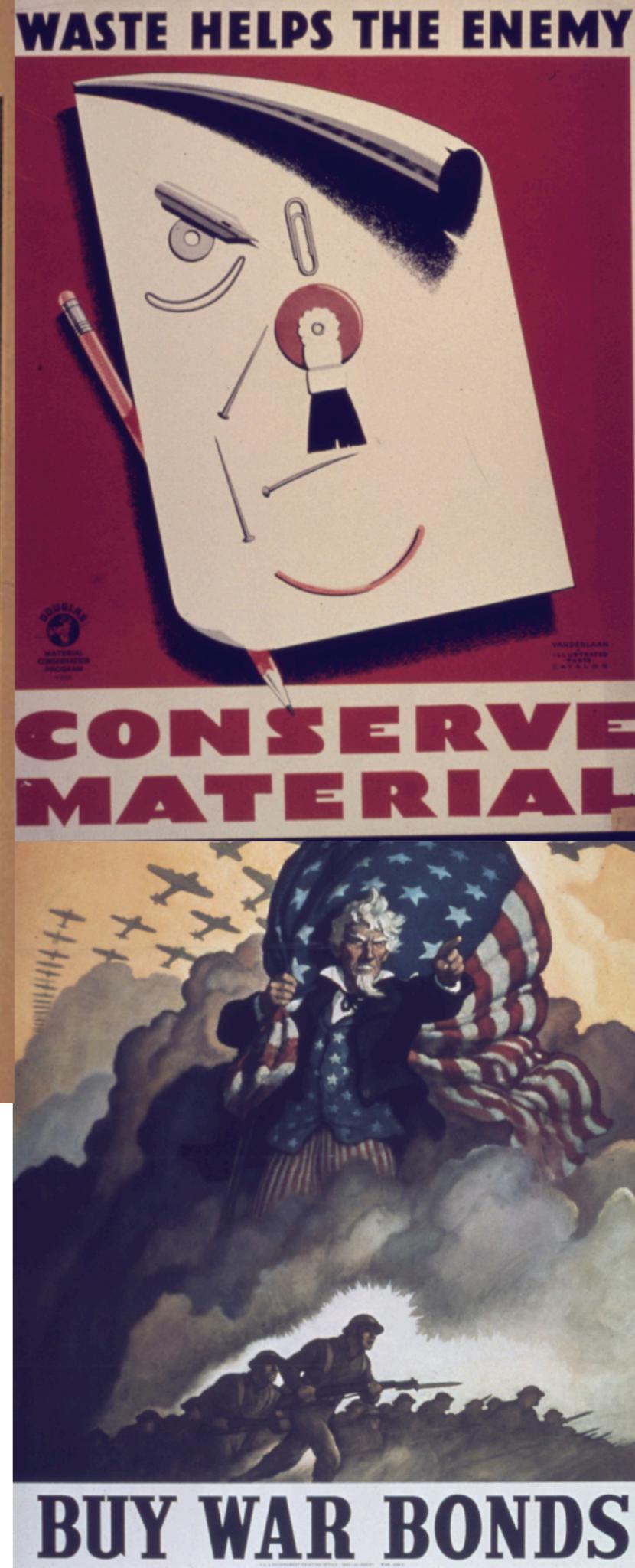
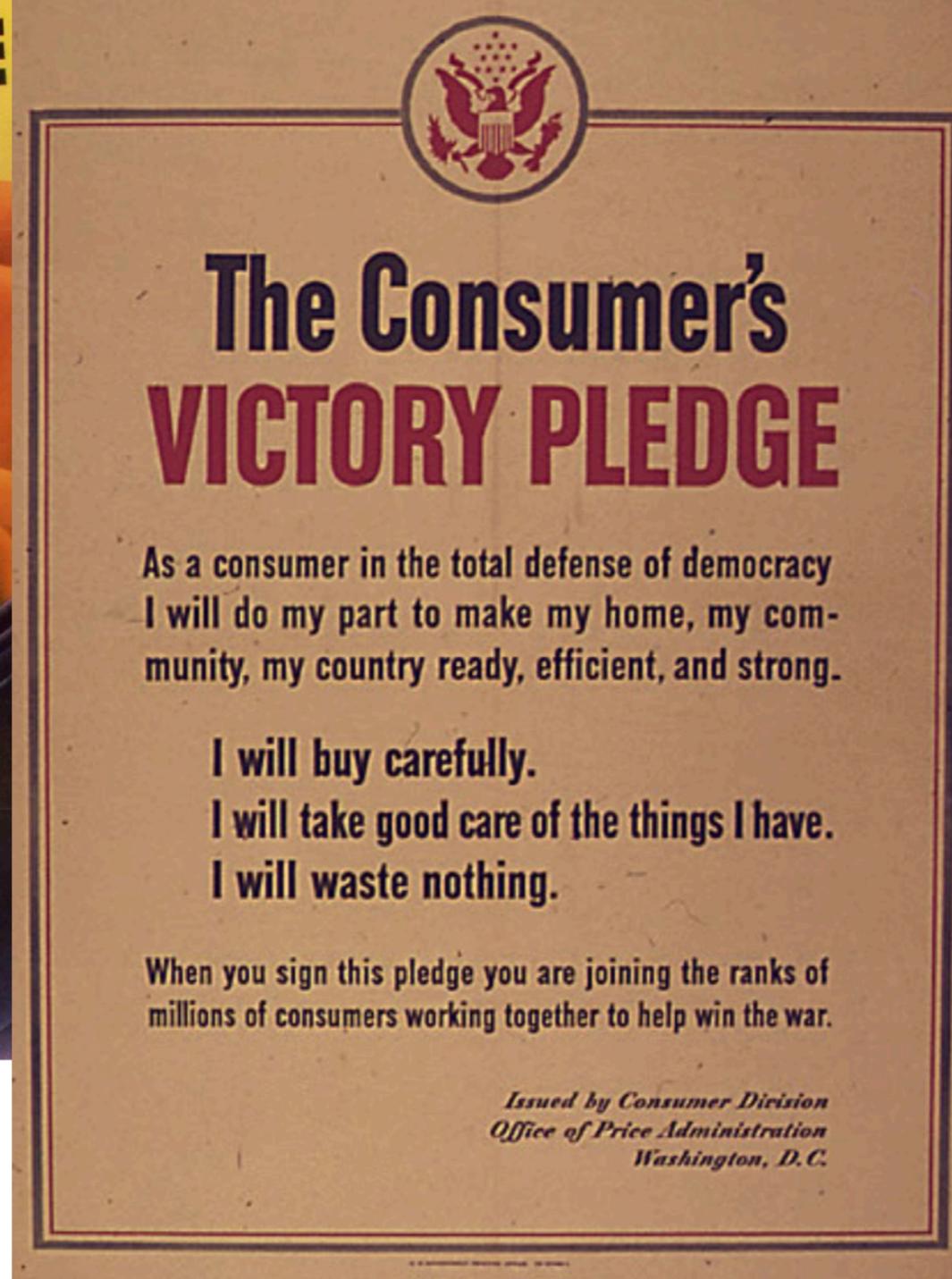
Nafeez Ahmed
26 May 2022



We need to shift
into emergency
mode



Source



Government spending rose 10 fold from 1940 to 1945
National speed limit of 35 mph to conserve fuel, car sharing
Manufacturing of cars, construction of new homes banned
Rationing of gasoline, meat, butter, sugar etc.
Income taxes of up to 94%

Tipping positive change

Timothy M. Lenton

Sensitive intervention points in the post-carbon transition

We must exploit socioeconomic tipping points and amplifiers

By J. D. Farmer^{1,2,3}, C. Hepburn^{1,4}, M. C. Ives^{1,4}, T. Hale⁵, T. Wetzer^{1,6,7}, P. Mealy^{1,4,8}, R. Rafatay¹, S. Srivastav^{1,4}, R. Way^{1,4}

points") (3), such that a relatively small change can trigger a larger change that becomes irreversible (4), where nonlinear

Social tipping dynamics for stabilizing Earth's climate by 2050

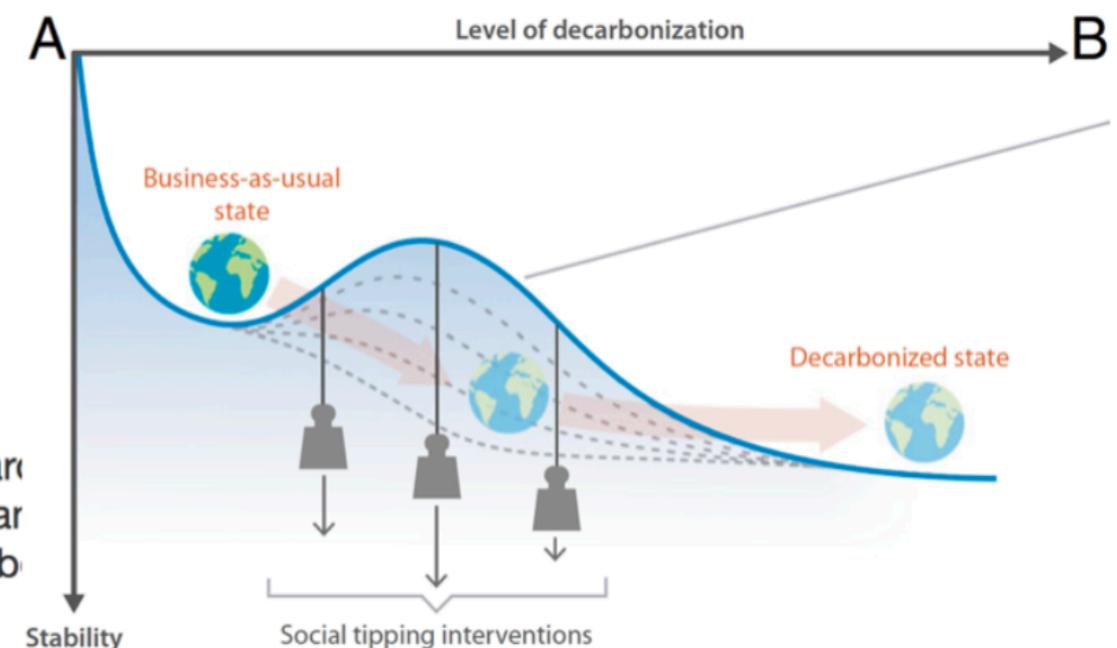
Ilona M. Otto, Jonathan F. Donges, Roger Cremades, Avit Bhowmik, Richard Wolfgang Lucht, Johan Rockström, Franziska Allerberger, Mark McCaffrey, Sylvan Alex Lenferna, Nerea Morán, Detlef P. van Vuuren, and Hans Joachim Schellnhub

Sensitive intervention points to achieve net-zero emissions

Report of the Policy Advisory Group* of the Committee on Climate Change

9 December 2020

Cameron Hepburn, Tera Allas, Laura Cozzi, Michael Liebreich, Jim Skea, Lorraine Whitmarsh, Giles Wilkes and Bryony Worthington

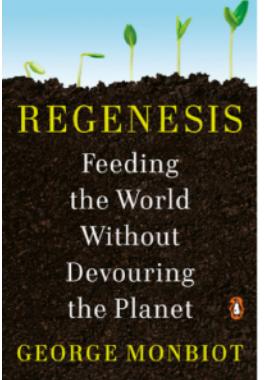


Part V:

Climate Revolution

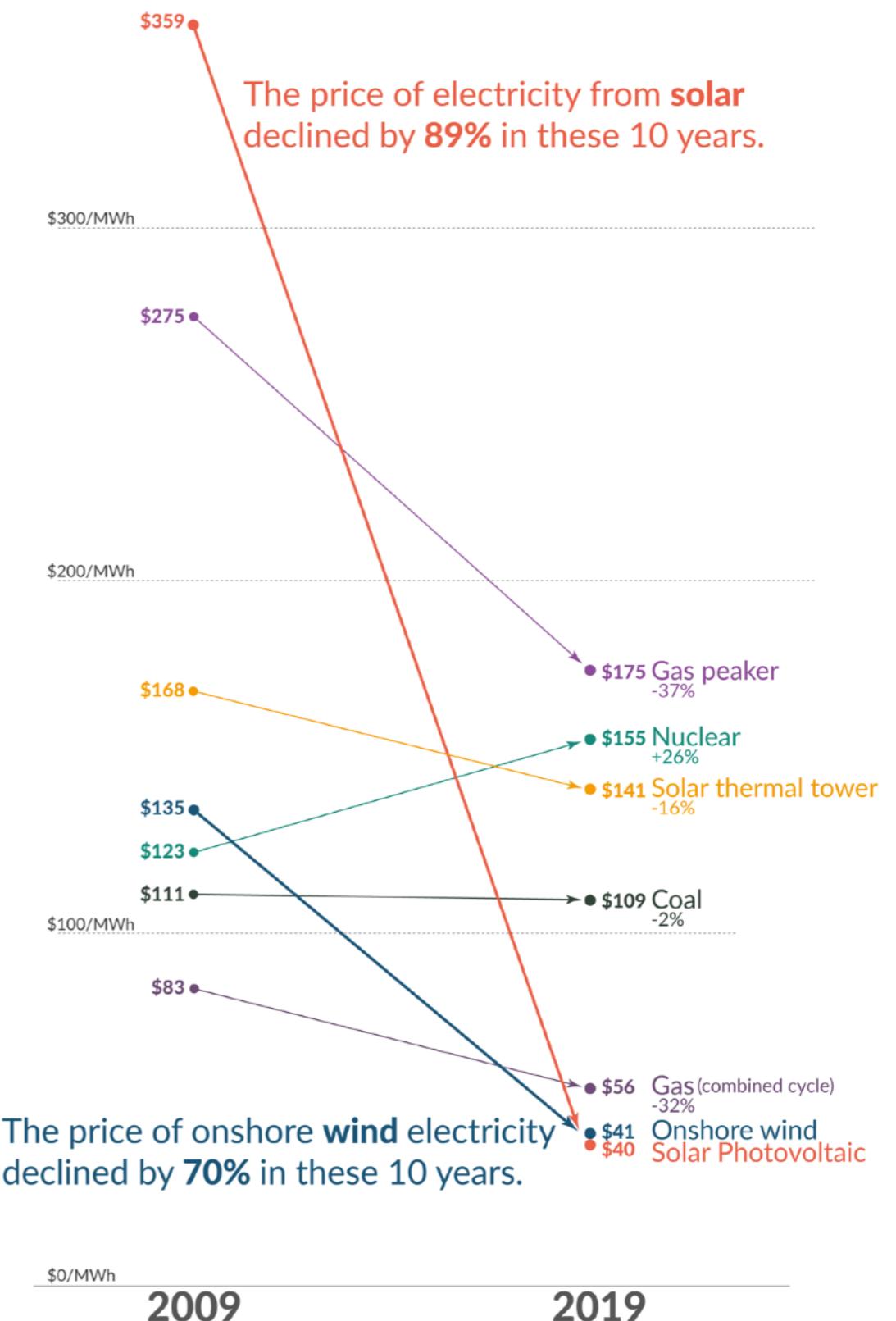
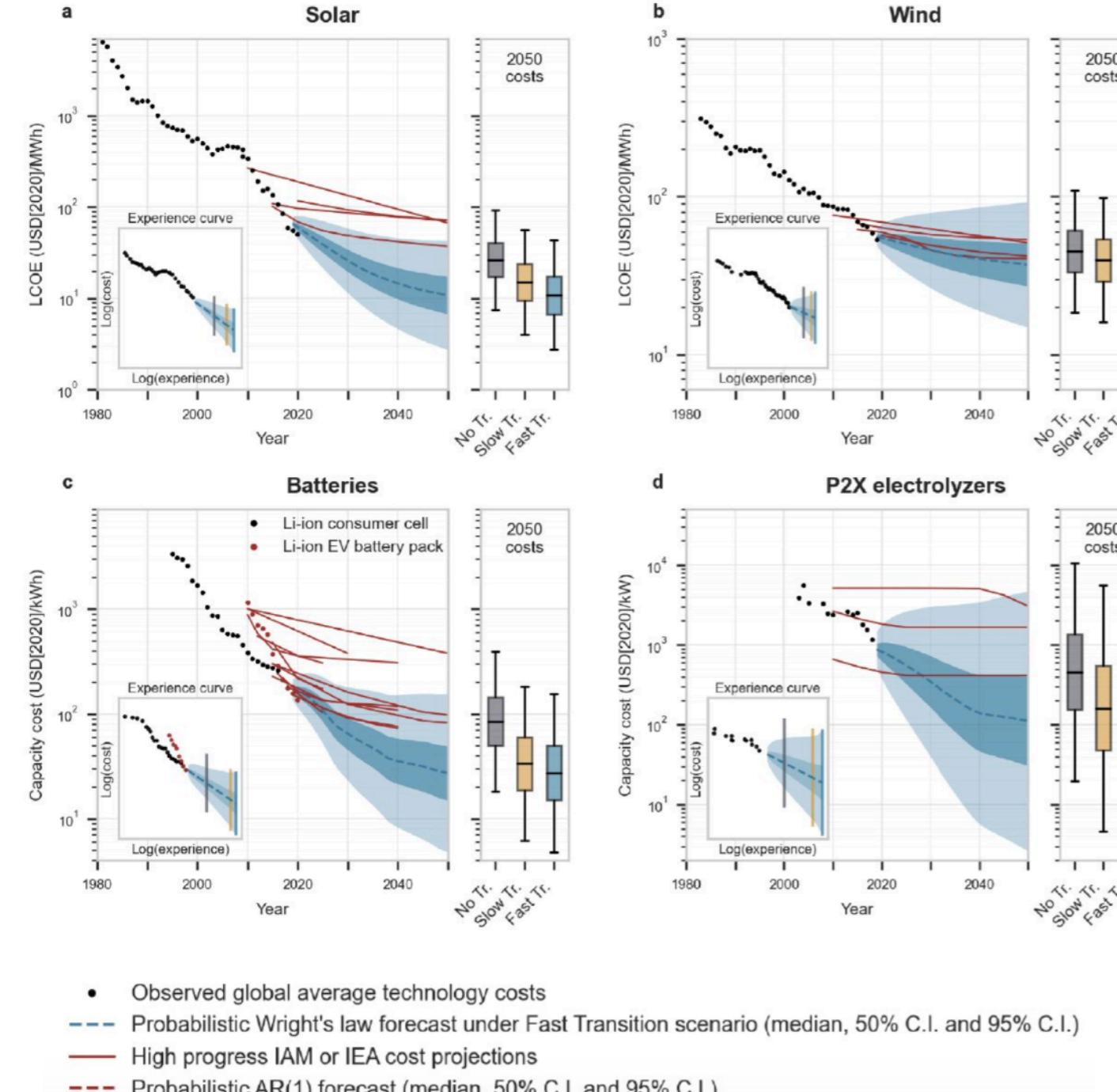
It's easy to feel pessimistic about the climate. But we've got two big things on our side

Bill McKibben

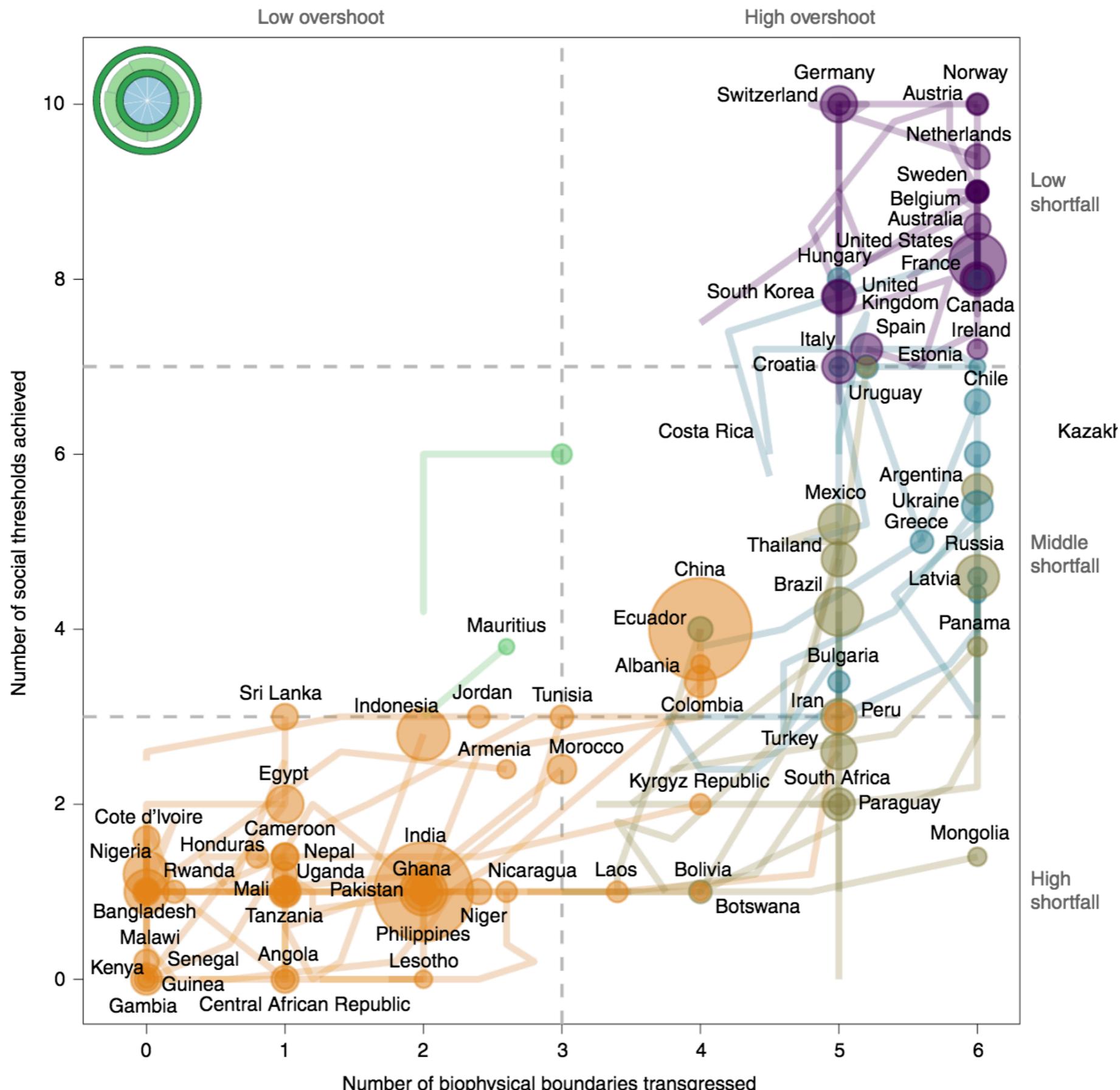


The price of electricity from new power plants
Electricity prices are expressed in 'levelized costs of energy' (LCOE).
LCOE captures the cost of building the power plant itself as well as the ongoing costs for fuel and operating the power plant over its lifetime.

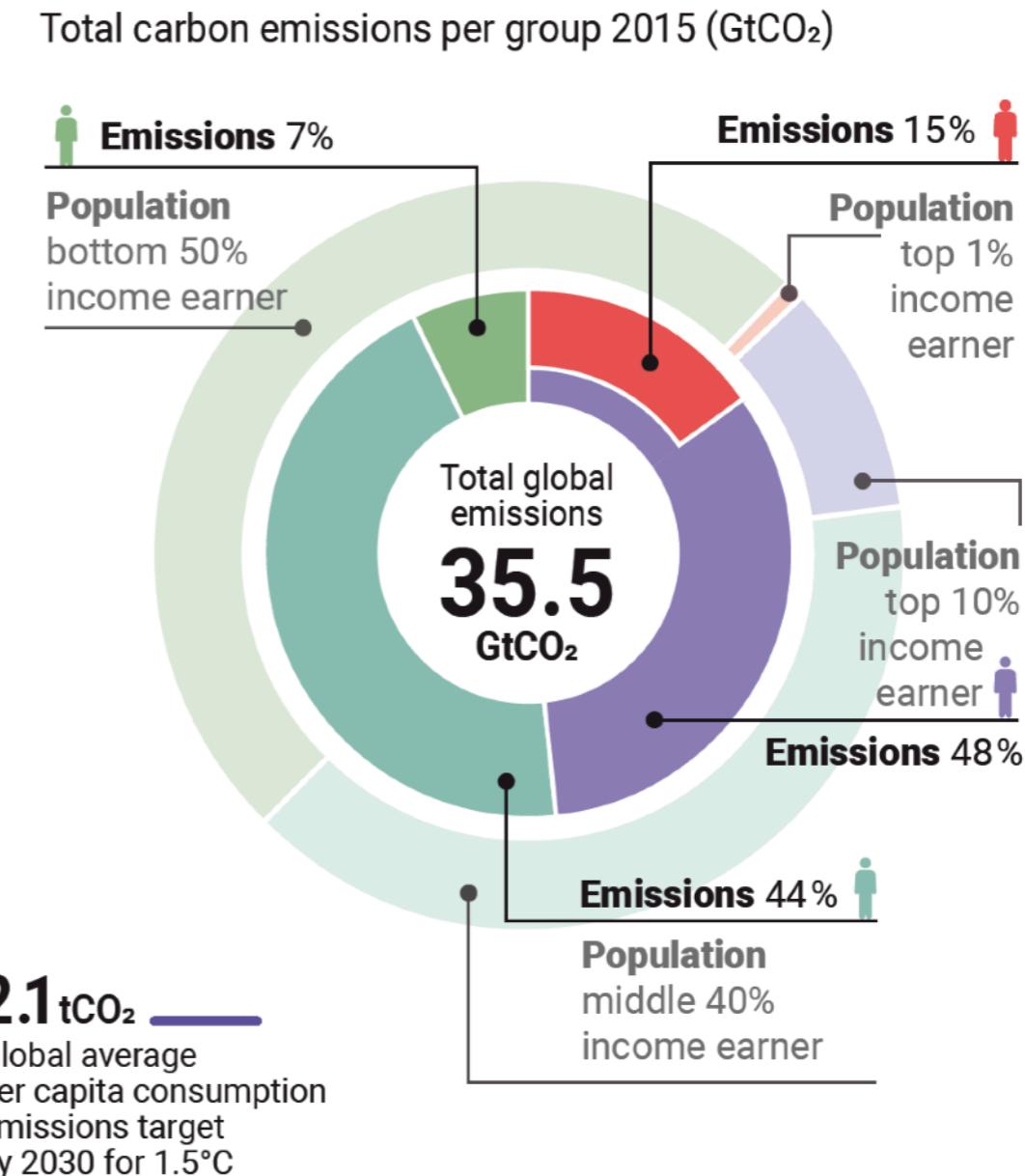
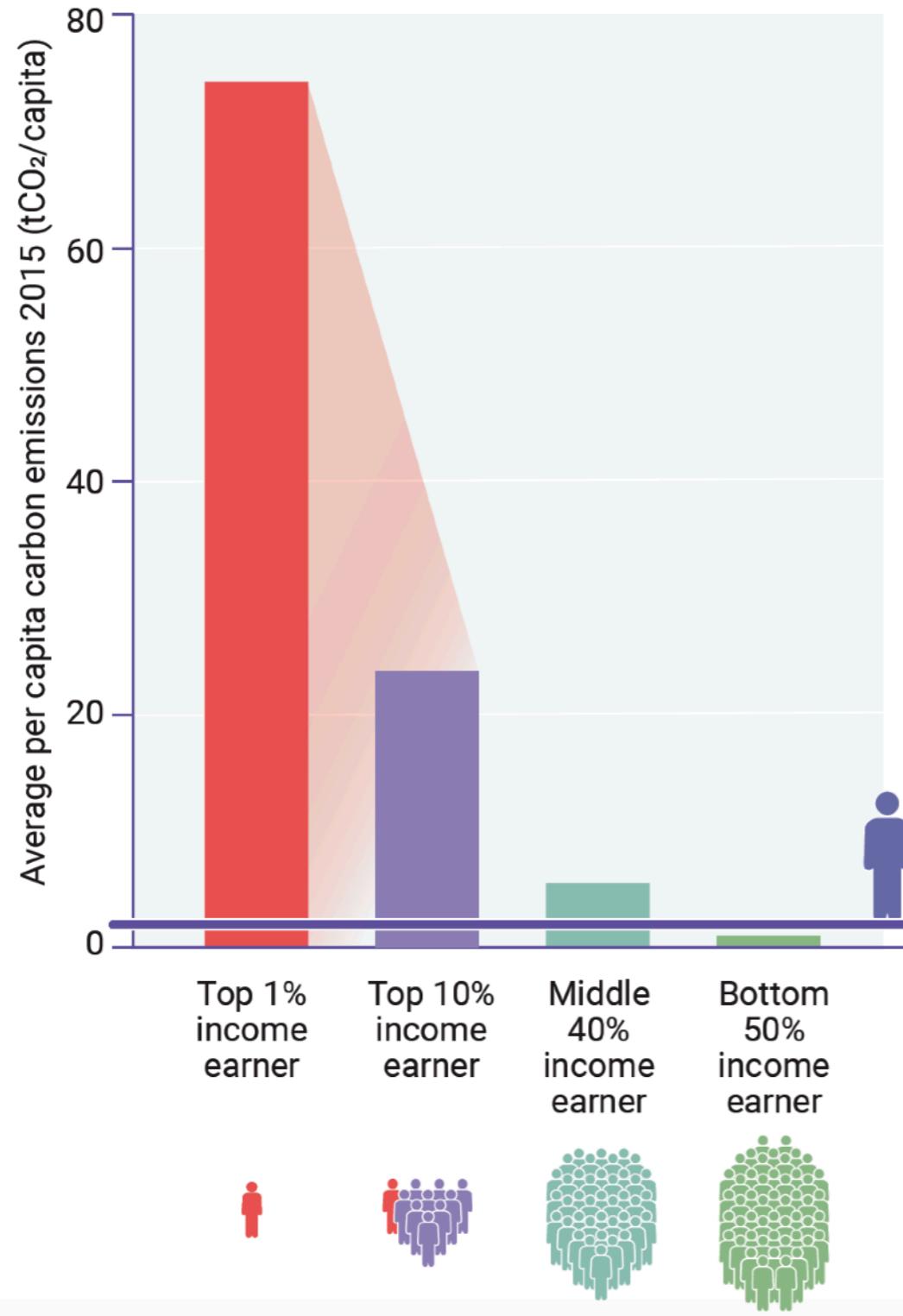
Our World in Data







Carbon Inequality



Top 1% : > 94,000 € / year
Top 10%: > 32,800 € / year

Comment | Published: 28 January 2019

Shift the focus from the super-poor to the super-rich

Ilona M. Otto , Kyoung Mi Kim, Nika Dubrovsky & Wolfgang Lucht

Nature Climate Change 9, 82–84 (2019) | [Cite this article](#)

4864 Accesses | 28 Citations | 1921 Altmetric | [Metrics](#)

Perspective | [Open Access](#) | Published: 19 June 2020

Scientists' warning on affluence

Thomas Wiedmann , Manfred Lenzen, Lorenz T. Keyßer & Julia K. Steinberger

Nature Communications 11, Article number: 3107 (2020) | [Cite this article](#)

171k Accesses | 107 Citations | 4550 Altmetric | [Metrics](#)

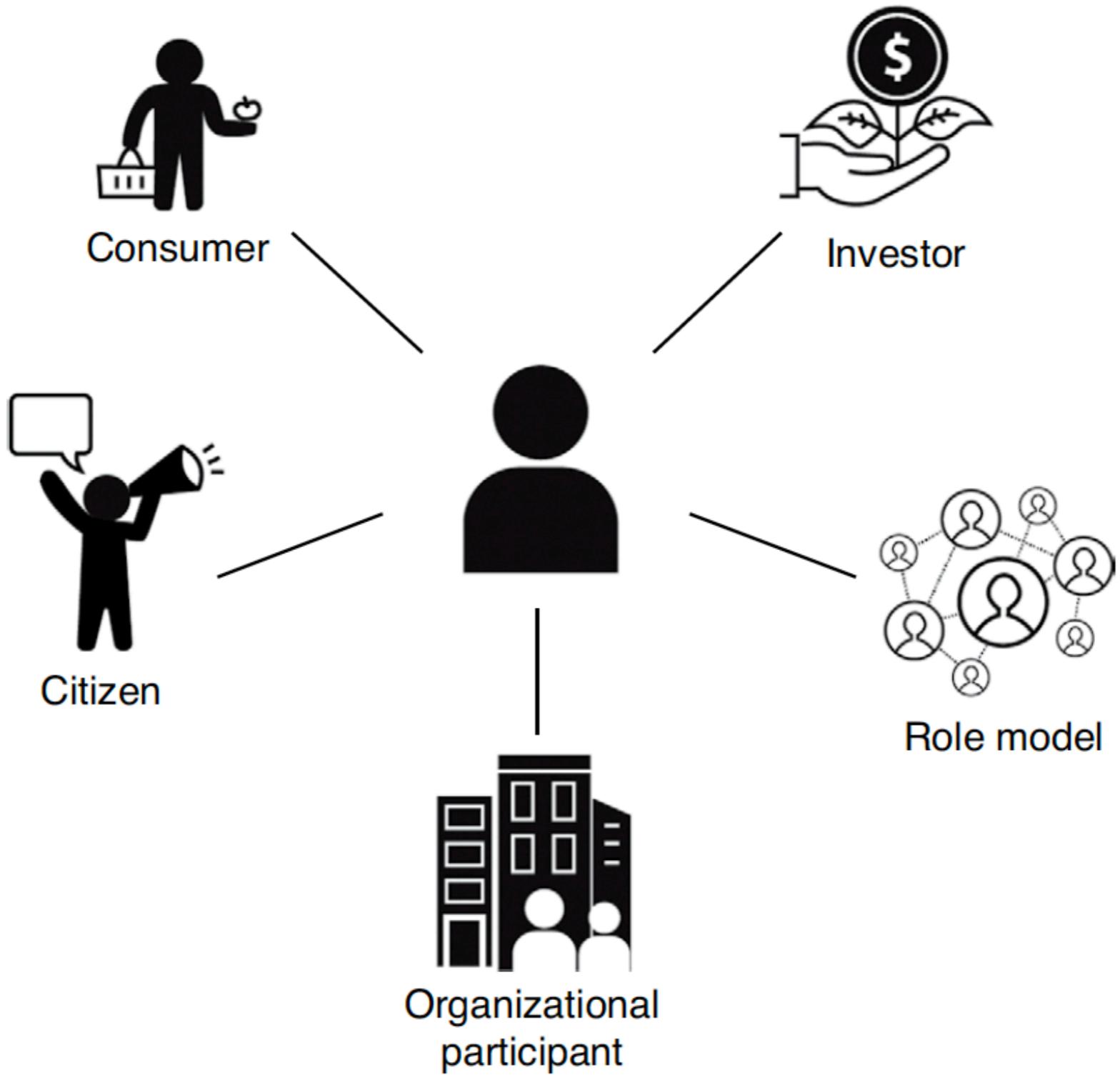
Perspective | Published: 30 September 2021

The role of high-socioeconomic-status people in locking in or rapidly reducing energy-driven greenhouse gas emissions

Kristian S. Nielsen , Kimberly A. Nicholas, Felix Creutzig, Thomas Dietz & Paul C. Stern

Nature Energy 6, 1011–1016 (2021) | [Cite this article](#)

12k Accesses | 671 Altmetric | [Metrics](#)





Carbon Footprint Reduction

- Stop or lower air travel
- Stop driving petrol cars
- Reduce your meat consumption, especially beef
- Talk about it!

An Audacious Toolkit: Actions Against Climate Breakdown (Part 3: I is for Individual)



Julia Steinberger Nov 26, 2018 · 15 min read



Your Personal Action Guide for the Environment

Solving our biggest environmental problems will require huge changes in policy and business practice. But it turns out that our personal actions can help too, if we focus on the right things. Here are some places to start.



Dr. Jonathan Foley [Follow](#) [Email](#)
Apr 22, 2020 · 14 min read ★





Investor



Organizational participant

- Divestment (Personal & Organizational)
- Donations to environmental organizations
- Influence through position / status



Organize lectures / workshops

High-level interventions

(Reduce meat in cafeteria, at parties,
disincentivize flights, etc.)

....

Comment | [Published: 15 March 2021](#)

Changing scientific meetings for the better

[Sarvenaz Sarabipour](#) , [Aziz Khan](#), [Yu Fen Samantha Seah](#), [Aneth D. Mwakilili](#), [Fiona N. Mumoki](#), [Pablo J. Sáez](#), [Benjamin Schwessinger](#), [Humberto J. Debat](#) & [Tomislav Mestrovic](#)

[Nature Human Behaviour](#) 5, 296–300 (2021) | [Cite this article](#)

7822 Accesses | 4 Citations | 249 Altmetric | [Metrics](#)

Sustainability at the UvA

We integrate sustainability into study programmes and conduct research on sustainability issues. We have also adopted a sustainable approach to our operations.



Citizen



Role model

- Vote
- Talk about the climate crisis (**urgency and agency**)
- Contagion of low-carbon lifestyle (social norm shift)



Citizen



Role model

- Vote
- Talk about the climate crisis (**urgency and agency**)
- Contagion of low-carbon lifestyle (social norm shift)

Civil Resistance

Civil Resistance

- Method to change the status quo using a diverse set of nonviolent, noninstitutional actions (strikes, protests, occupations, boycotts, etc.)



Fridays for Future



End Fossil: Occupy!

Opinion
Climate crisis

We're occupying schools across the world to protest climate inaction

Youth activists involved in End Fossil: Occupy!

We can't keep sitting in school, pretending everything is all right, and studying as if the planet wasn't on fire



Extinction Rebellion



Extinction Rebellion

WHY WE ARE HERE?

OUR DEMANDS.

1. TELL THE TRUTH.

Governments must tell the truth by declaring a climate and ecological emergency, working with other institutions to communicate the urgency for change.

2. ACT NOW.

Governments must act now to halt biodiversity loss and reduce greenhouse gas emissions to net zero by 2025.

3. GO BEYOND POLITICS.

Governments must create and be led by the decisions of a Citizens' Assembly on climate and ecological justice.

84 COUNTRIES

1185 GROUPS

151 UPCOMING EVENTS

A GLOBAL MOVEMENT.

Join our global and politically non-partisan movement where we use non-violent direct action to persuade governments to act justly on the climate and ecological emergency.

Civil Disobedience Climate Movements

- Fridays for Future
- Extinction Rebellion
- Sunrise Movement
- Indigenous peoples
- Letzte Generation
- Ende Gelände
- Insulate Britain
- Just Stop Oil
- Debt for Climate
- Declare Emergency
- Blockade Australia
- Save Old Growth
- Scientist Rebellion
- ...

Scientist Rebellion



Scientist Rebellion

- Global movement of scientists and academics, from PhD students to full professors
- Engage in civil disobedience
- Decentralized and horizontal organisation





Over 1000 academics in 26 countries took to the streets during 4 - 9 April



- Blocking government ministries / corporations, paper pastings
- Academic strikes, occupations, teach-ins, street theatre
- Mass arrests in multiple countries
- Global press coverage

Scientist Rebellion



Scientist Rebellion at Chase Bank Los Angeles

7.1K views • 3 months ago



Climate Ad Project

When *scientists* around the world are putting their bodies on the line to

[Subtitles](#)

Scientist Rebellion



Scientist Rebellion takes action in the Netherlands

3.8K views • 3 months ago

 Scientist Rebellion

To secure a liveable future, we need emergency action! ⏳ The scientific com



“I wish the Ring had never come to me. I wish none of this had happened.”



“So do all who live to see such times,
but that is not for them to decide.

All we have to decide is what to do
with the time that is given to us.”

Thank you!