

Post Carbon

Landscape Architecture

Steve Austin JD | ASLA

What is Post Carbon Landscape Architecture?

Our work that continues even when there is little to no use of fossil fuels in an effort to mitigate climate change

This will require us to **REAFFIRM** what we do

And to **REFRAME** how we work

Key Points

- Climate crisis is accelerating and worsening beyond expectations
- The dramatic implications of the end of fossil fuel use for landscape architecture
- The possibilities of post carbon landscape architecture

Possible Discussion Topics



Possible Discussion Topics



How do we get started?

Opportunities? Obstacles? “Realities?”

Partners?

Emotional responses?

What this is not about: personal critique



The background of the slide features a warm, golden sunset sky. In the foreground, a line of stylized human figures, rendered in a dark brown color, are holding hands. Their shadows are cast onto the ground below them, creating a sense of depth and unity. The figures are simple in design, with rounded heads and rectangular bodies.

What this is about: us

Willam Catton: “While vilification often brings emotional gratification, it brings no solution to our **common** plight. Indeed it aggravates life’s difficulties. Our common plight is not really due to villains.”



Go Cougs!

Alaska Horizon

WSU

N430GX

My Carbon Footprint Options:

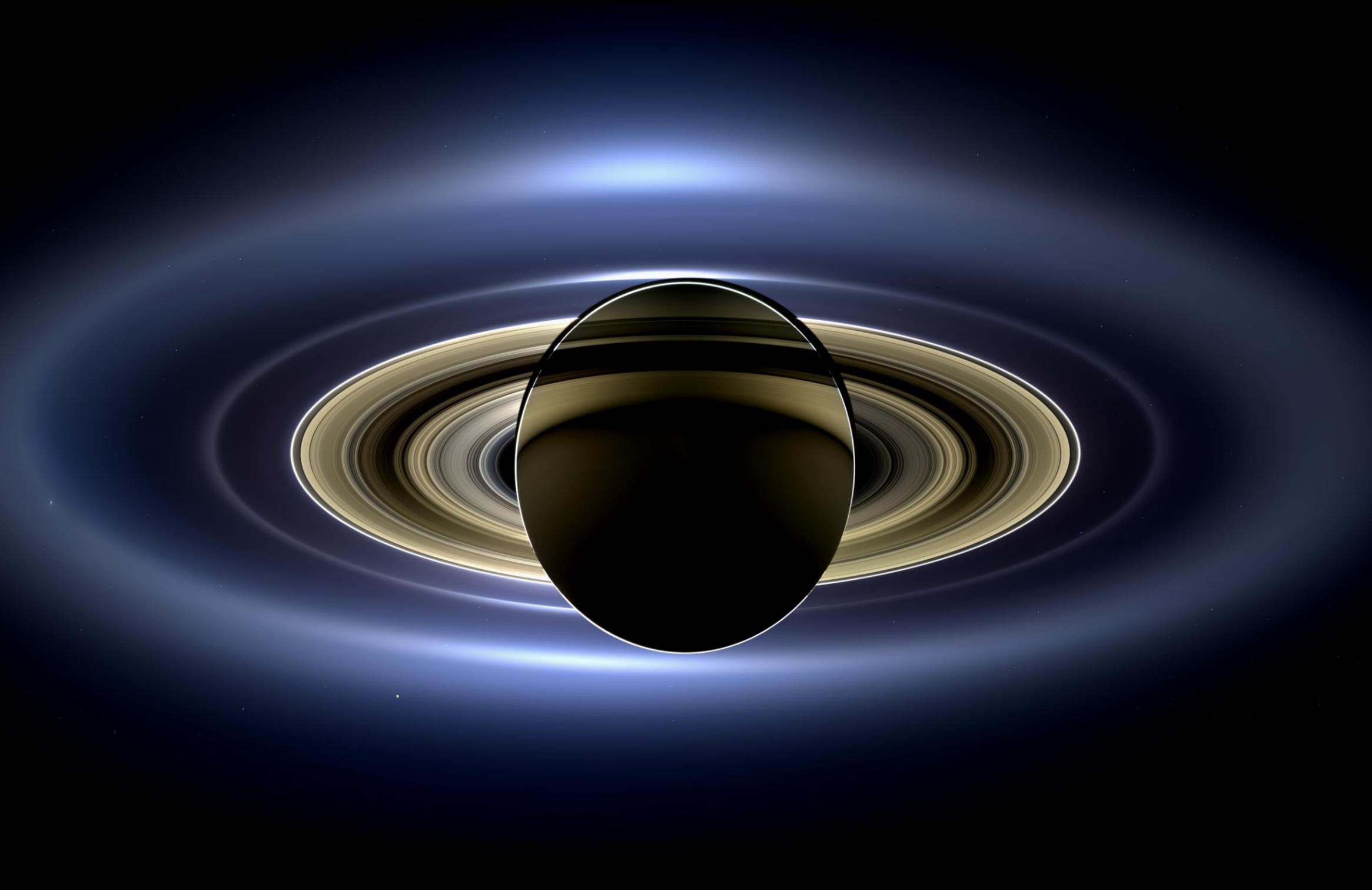
- Flying + bus = 285lbs CO₂
- Personal car = 768lbs CO₂
- Train = 112lbs CO₂ (+ 192lbs CO₂ driving to station)

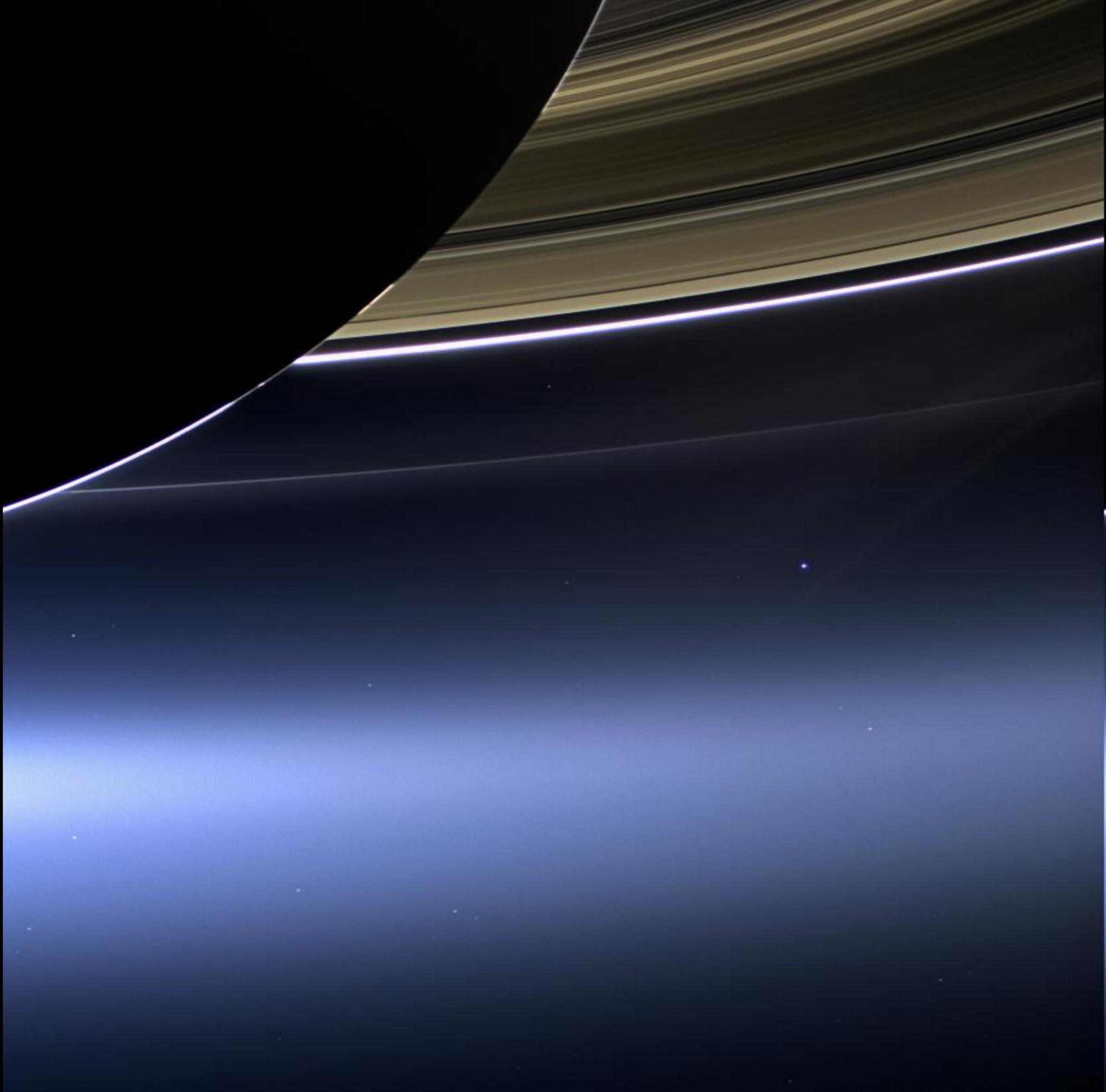
1% of annual US per capita emissions
16% of Sub-saharan avg

2.6% of annual US per capita emissions
43% of Sub-saharan avg



only supports community-scale projects bringing multiple benefits – improving biodiversity by planting indigenous trees, enhancing livelihoods as people are paid to plant and maintain their trees





Climate Crisis



Greta Thunberg

“Our house is on fire. I am here to say, our house is on fire.”

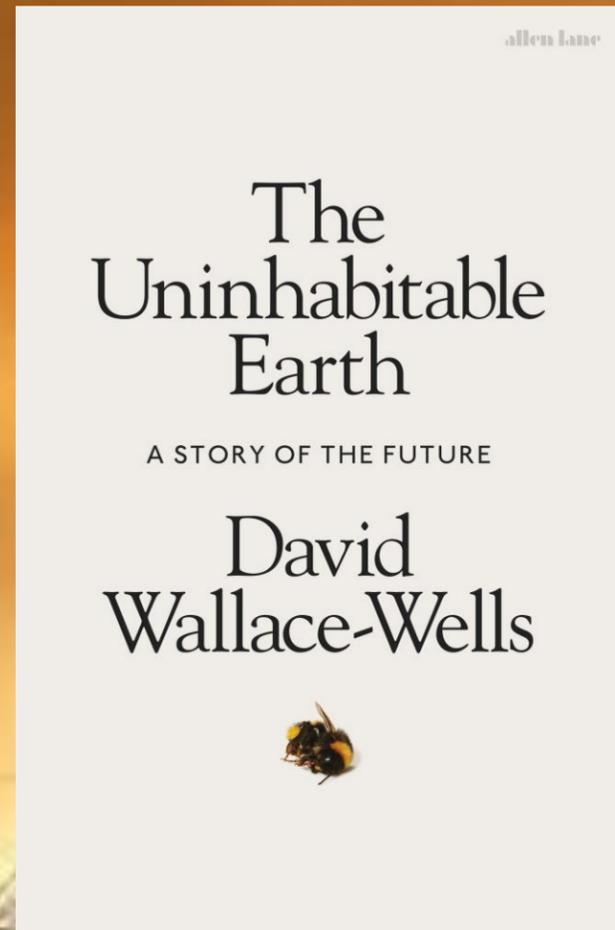
Solving the climate crisis is the greatest and most complex challenge that Homo sapiens have ever faced.

The main solution, however, is so simple that even a small child can understand it. We have to stop our emissions of greenhouse gases.

Either we do that or we don't”

SKOLSTREJK
FÖR
KLIMATET

“It is worse, much worse,
than you think.” David Wallace Wells



2019

Assessing the U.S. Climate in February 2019

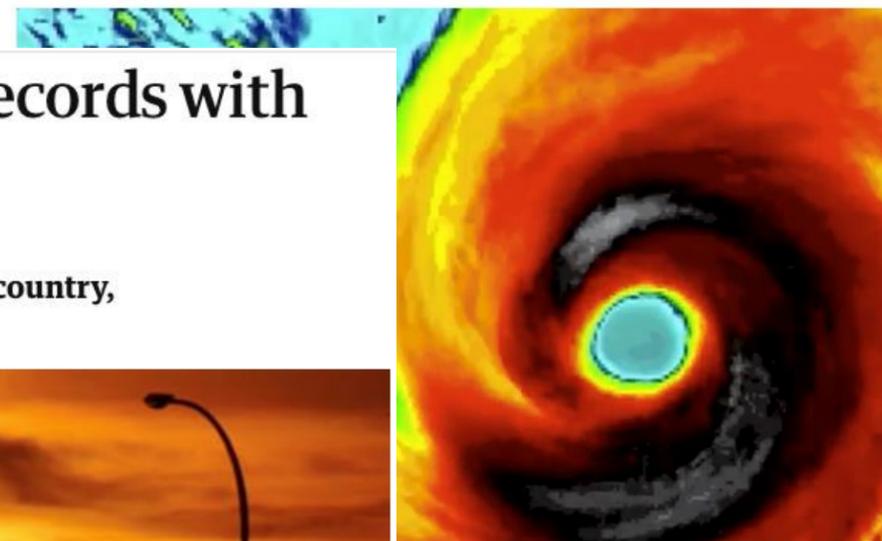
Wettest winter on record for the contiguous United States



The Northern Hemisphere Just Experienced Its First-Ever Category 5 Cyclone in February.



Brian Kahn
Tuesday 4:10pm • Filed to: TYPHOON WUTIP



Australia breaks weather records with hottest ever summer

2018-19 season tops temperature highs across the country, exceeding previous record set six years ago



UK experiences hottest winter day ever as 21.2C is recorded in London

Parts of Britain exceed temperatures in Malibu, Athens and Crete



278.8K 63 3



Eric Holthaus
@EricHolthaus

In January, there were 651 record daily highs across the U.S., compared to 321 record daily lows — a roughly 2-to-1 ratio.

Globally, the ratio of record highs to lows was about 20-to-1, with new all-time records in Namibia, Chile, and Reunion Island. grist.org/article/despit...

5:55 PM - Jan 31, 2019



Despite the U.S. cold snap, January was hot hot hot

steveaustin.org

There have been 651 record daily highs across the U.S., compared to 321 record daily lows.

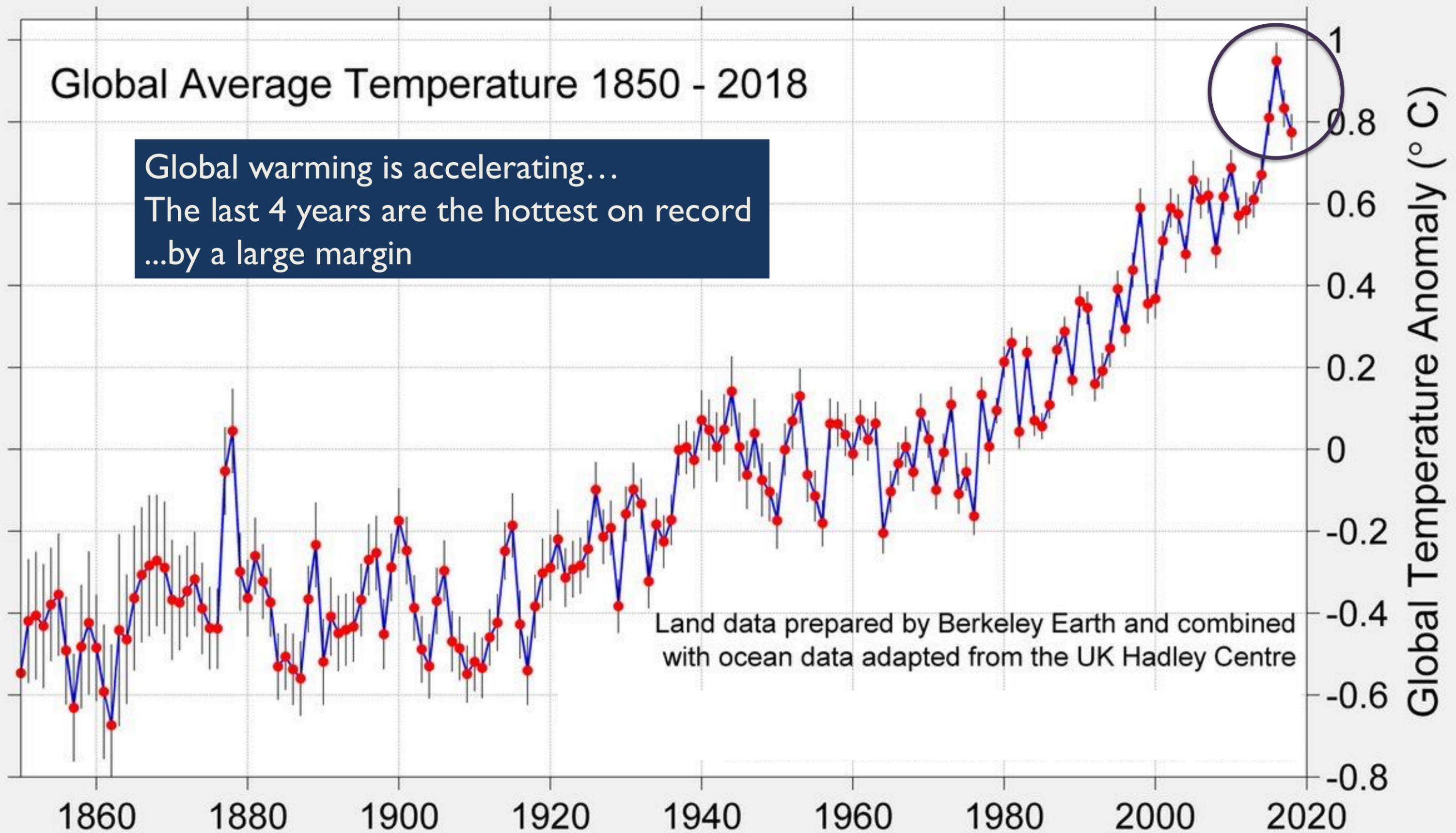
Atmospheric Carbon Dioxide



“We have no historical or even evolutionary experience of the climate that we are creating.” Bob Ward

Global Average Temperature 1850 - 2018

Global warming is accelerating...
The last 4 years are the hottest on record
...by a large margin



We know what's causing it



CO₂: Fossil Fuels



CO2: Industrial Agriculture

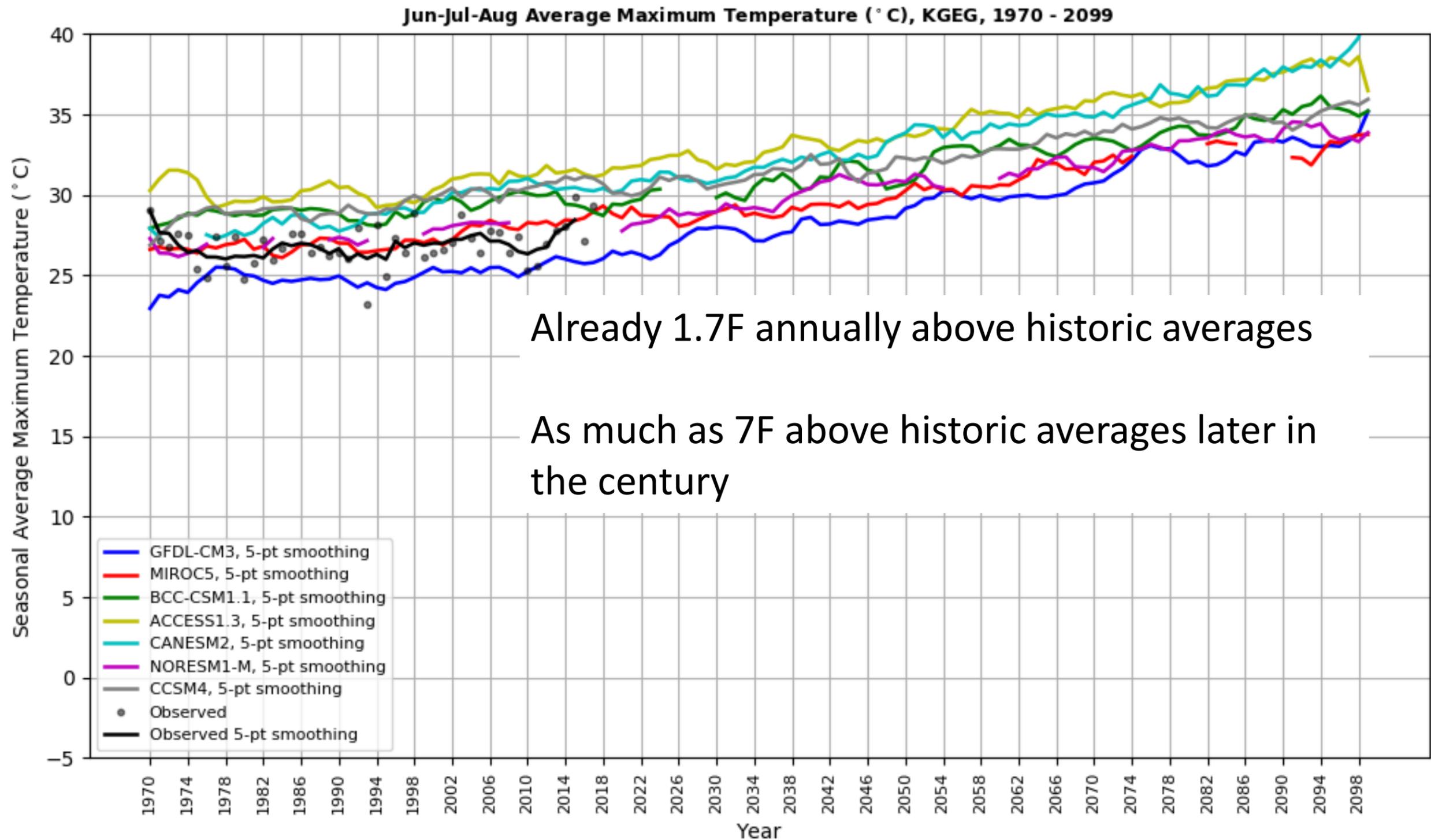


CO2: Land Use Change



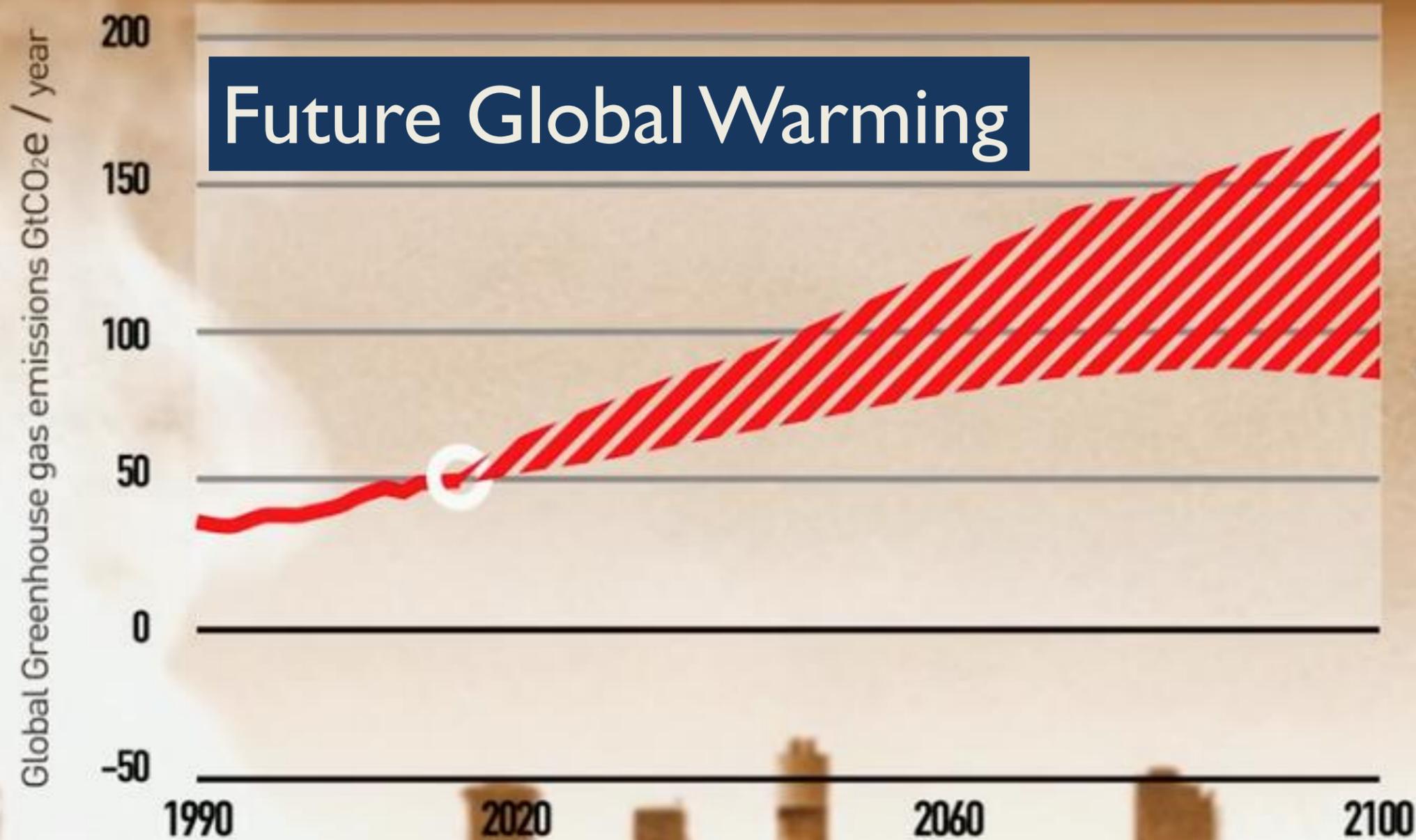
The future

Washington State Warming



<https://cliffmass.blogspot.com/2018/09/is-global-warming-significant.html>

Source: Climate Action Tracker



Future Global Warming

Warming projected
by 2100

Baseline
4.1 - 4.8°C

7°F (4°C) of warming “would constitute the end of civilization as we know it.” Michael Mann

Tipping Points: risk that self-reinforcing feedbacks could push the earth system toward “runaway climate change”
Steffen, et al



FEATURED QUARTZ EMAILS EDITIONS

NO SILVER LINING

We're on track for a cloud-cover tipping point that could add 8°C of warming within a century

By Zoë Schlanger • February 26, 2019

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A Pulitzer Prize-winning, non-profit, non-partisan news organization dedicated to covering climate change, energy and the environment. f t in @

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HOT TOPICS: Arctic Agriculture Military Clean Energy Climate Science Extreme Weather Exxon Investigation

HOME

Permafrost Is Warming Around the Globe, Study Shows. That's a Problem for Climate Change.

Rapid changes in the long-frozen soil are raising concerns about a surge of planet-warming greenhouse gases as the permafrost thaws.

BY BOB BERWYN, INSIDECLIMATE NEWS
JAN 16, 2019

A banquet of consequences



 **USA TODAY**

Antarctic ice melting 6 times faster than it did in '80s

Doyle Rice, USA TODAY Published 6:24 p.m. ET Jan. 14, 2019 | Updated 3:53 p.m. ET Jan. 15, 2019





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☰ PRESS RELEASES

Half of plant and animal species at risk from climate change in world's most important natural places

The Amazon, Miombo Woodlands in Southern Africa, and southwest Australia will be among the most affected places in the world, according to comprehensive new paper and report commissioned by WWF

Heatwaves sweeping oceans 'like wildfires', scientists reveal

Mon 4 Mar 2019 16.00 GMT

Extreme temperatures destroy kelp, seagrass and corals - with alarming impacts for humanity



▲ Ocean heatwaves destroy kelp forests, which provide food and shelter for many other species. Photograph: Thomas Schmitt/Getty Images

Climate refugees

Temperature spikes are going to drive corals to extinction in the next couple of decades



More than 500 million people depend on coral reefs for food or fishing income

Climate refugees

The New York Times

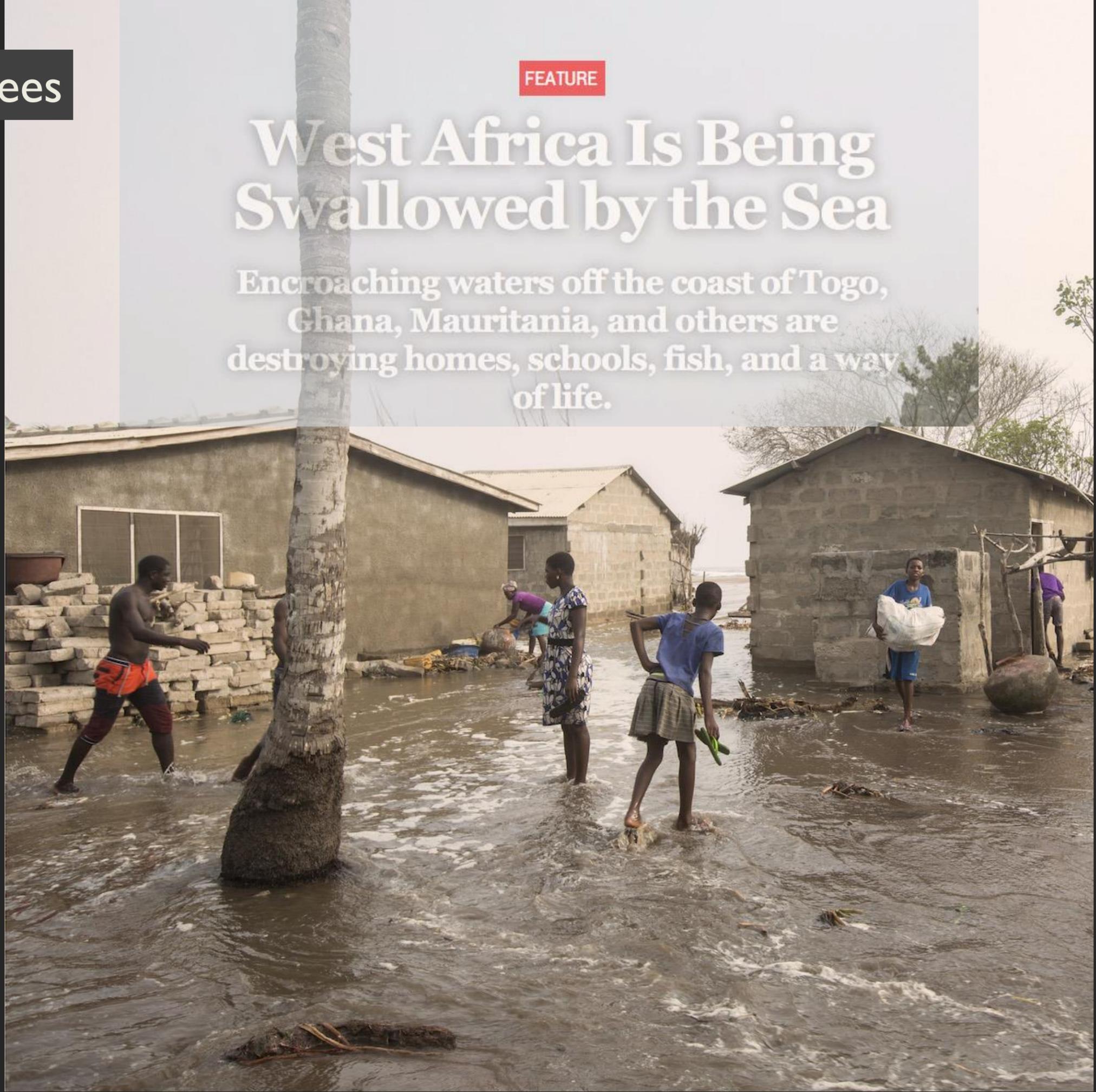
*More Floods and More Droughts:
Climate Change Delivers Both*



FEATURE

West Africa Is Being Swallowed by the Sea

Encroaching waters off the coast of Togo, Ghana, Mauritania, and others are destroying homes, schools, fish, and a way of life.



Climate refugees



 **ARTICLE**

The many ways climate change worsens California wildfires

Years of record-setting California wildfires are consistent with mounting evidence of climate change as a principal factor.



1 billion environmental migrants by 2050

U.K.-based Christian Aid

"Displacement of populations and destruction of cultural language and tradition is equivalent in our minds to genocide." Tony de Brum, Marshall Islands Foreign Minister





Bloomberg

Climate Changed

Pentagon Fears Confirmed: Climate Change Leads to More Wars and Refugees

By [Jonathan Tirone](#)

January 23, 2019 at 3:28:09 AM PST

- ▶ Study confirms links between drought, war and migration
- ▶ Pentagon and World Economic Forum have expressed concerns

Its not just climate crisis

Anthropocene

- Resource depletion – energy, materials, soil, water
- Pollution – plastic, water, air
- Biodiversity loss through mass extinction

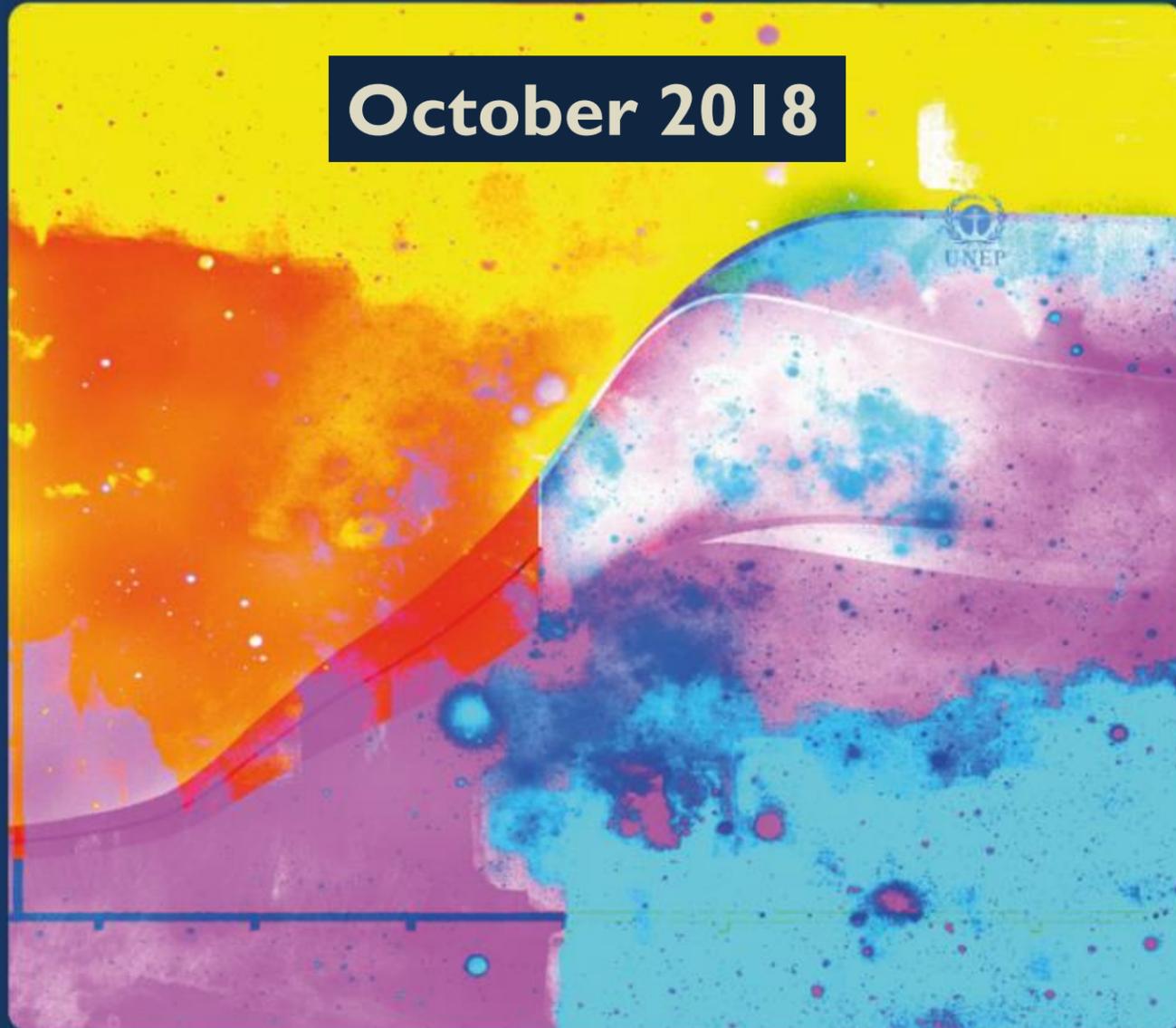


The Response

Global Warming of 1.5°C

An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.

October 2018



Staying at or below 1.5°C requires slashing global greenhouse gas emissions 45 percent by 2030 and reaching net zero by 2050.

“This report shows that we only have the slimmest of opportunities remaining to avoid unthinkable damage to the climate system that supports life as we know it.”

Amjad Abdulla, IPCC board member

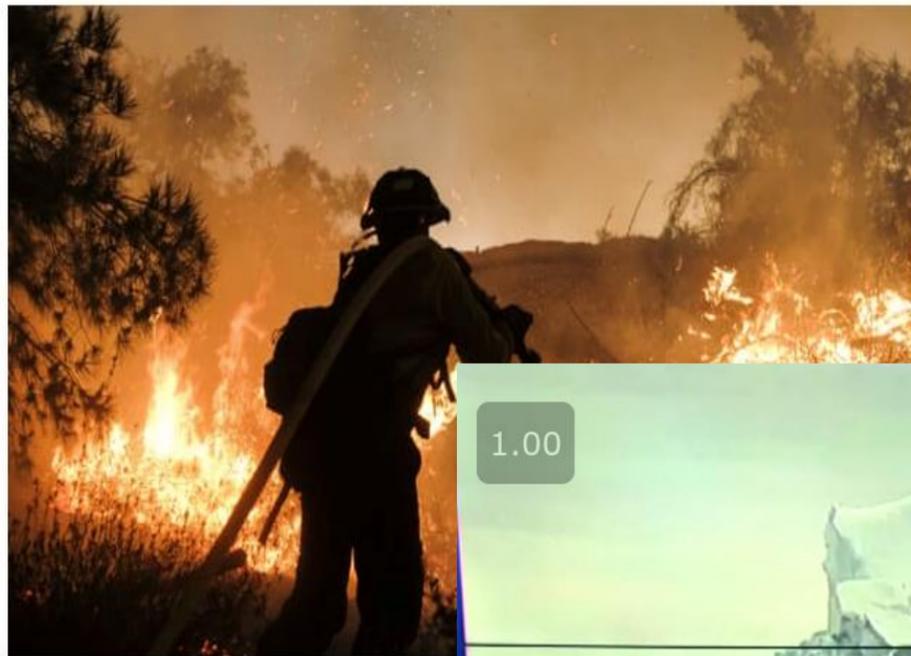
“The next few years are probably the most important in our history.”

Debra Roberts, IPCC co-chair

We have 12 years to limit climate change catastrophe, warns UN

Urgent changes needed to cut risk of extreme heat, drought, floods and poverty, says IPCC

Overwhelmed by climate change? Here's what you can do



60p



MONDAY 8 OCTOBER 2018 Number 2156

News.co.uk

Why we need mental health first aiders at work

QUALITY

MAN CITY

W

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Government to zero by

Alexandria Ocasio-Cortez calls climate change 'our World War II,' warns world will end in 12 years



New York Democratic congressional candidate Alexandria Ocasio-Cortez speaks at a rally calling on Sen. Jeff Sessions to step down from the Supreme Court on October 1, 2018. (Photo credit: [unreadable])



1.00

"CLIMATE CATASTROPHE" WARNING

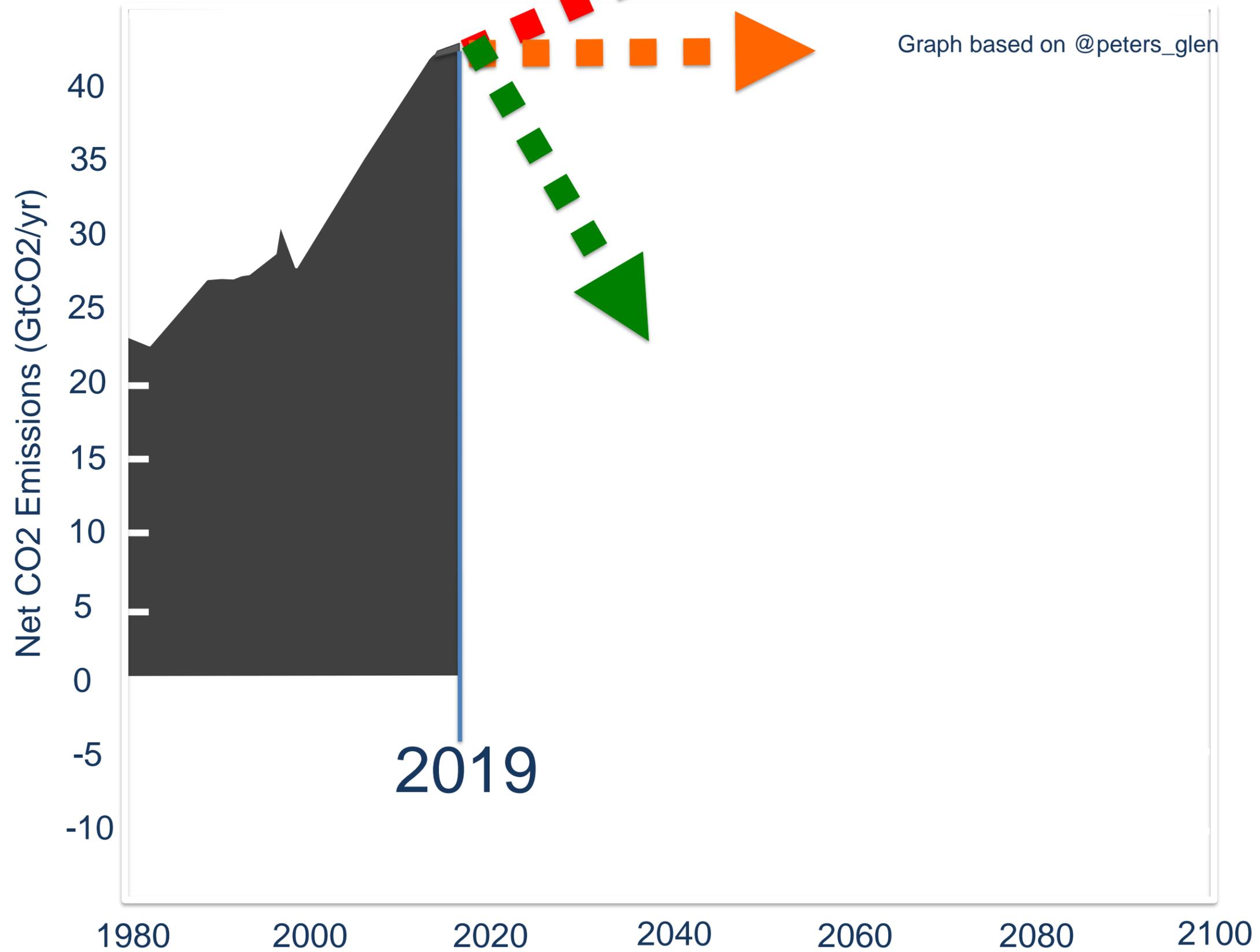
U.N. REPORT: EARTH HAS 12 YEARS TO STEM CLIMATE CHANGE

LIVE

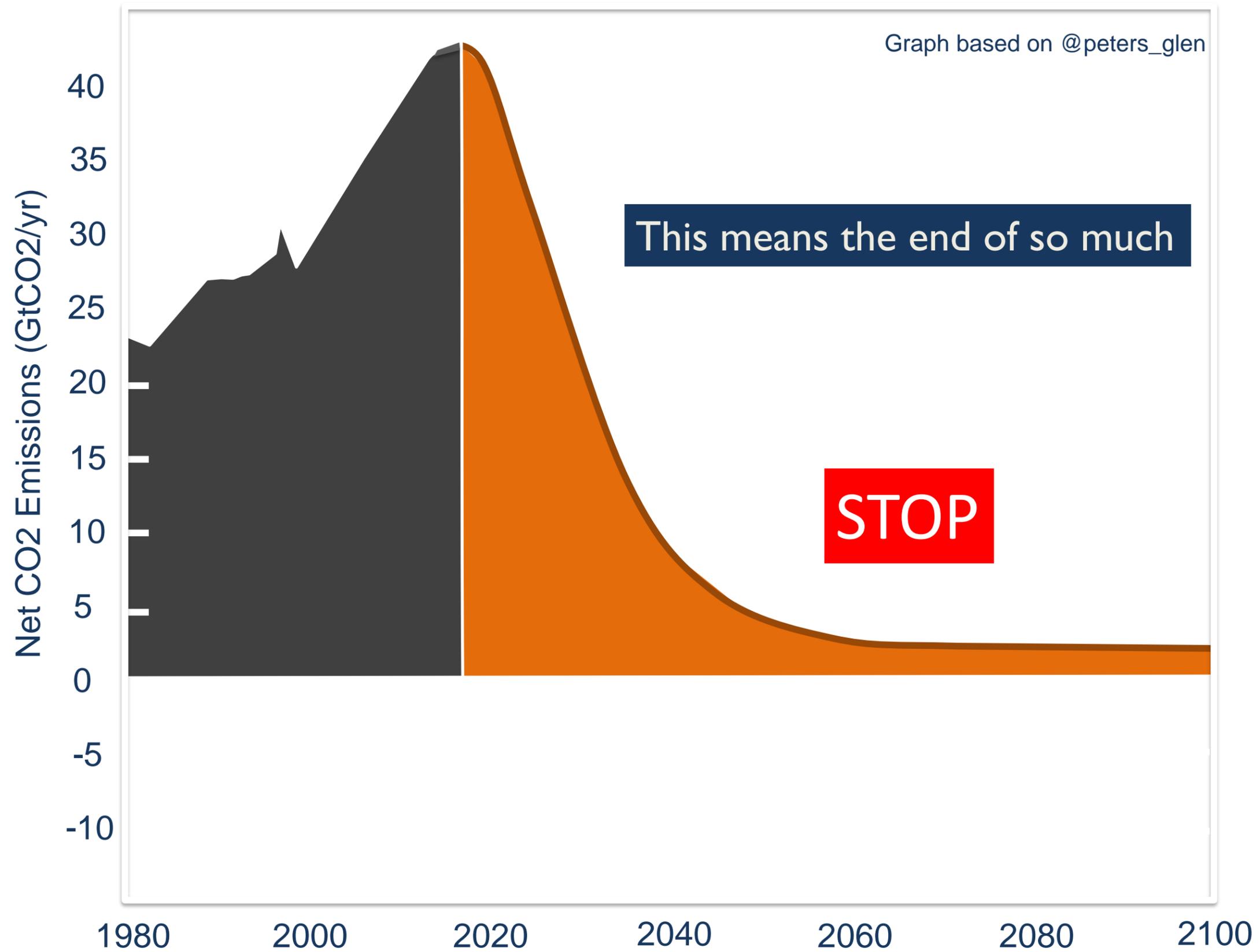
CNN

DAX -92.40

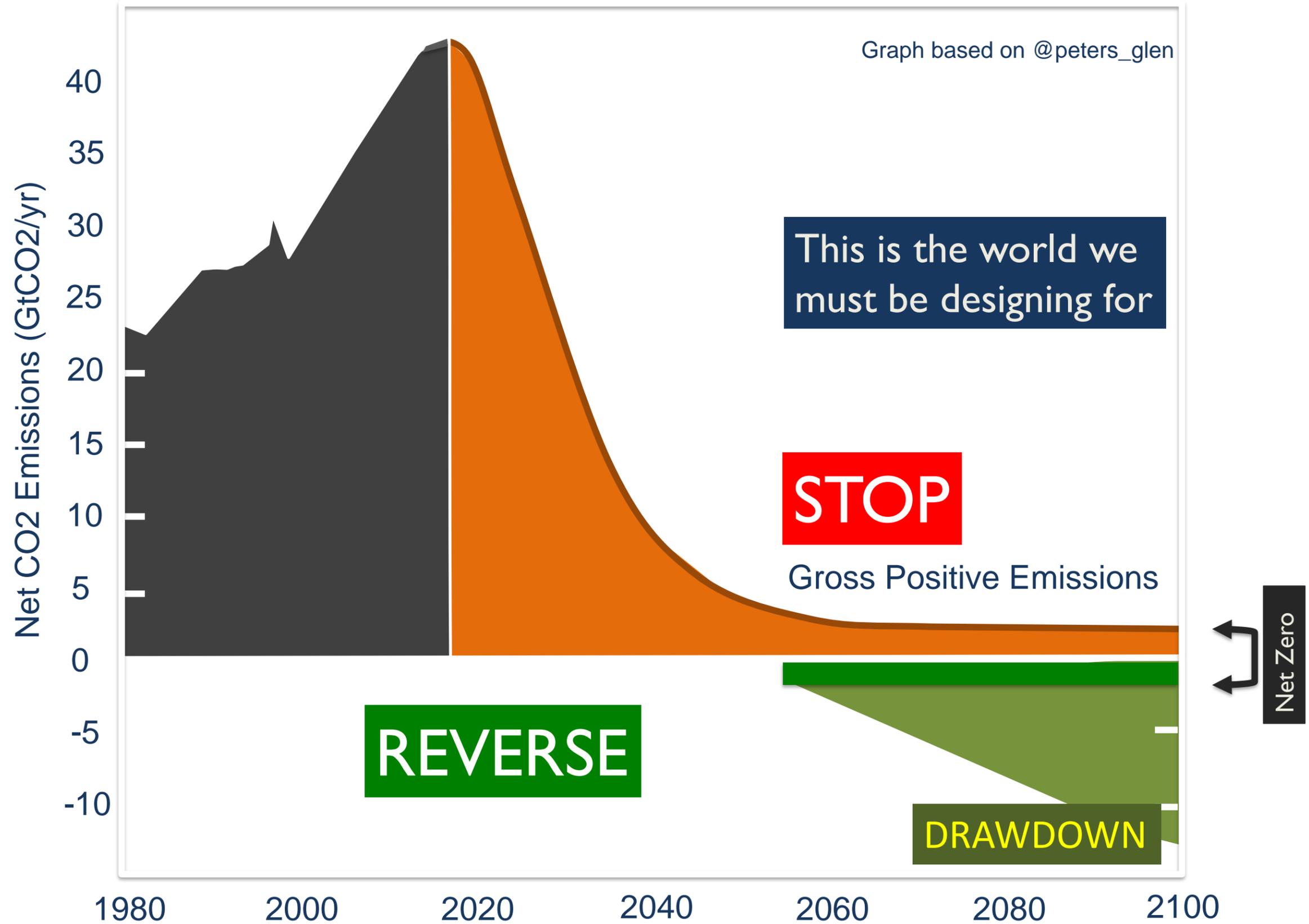
Annual Carbon Emissions



Annual Carbon Emissions



Annual Carbon Emissions



POST CARBON ERA

We must cease emitting CO₂ into the atmosphere,
especially through burning fossil fuels.

We must draw down excess CO₂ to restore a
livable climate.



Post Carbon

Landscape Architecture

Little to no use of fossil fuels for
construction

transportation

creation of many common materials



Post Carbon

Landscape Architecture

This will challenge landscape architects to reimagine
how we do what we do



Reaffirming What We Do

We are needed to design and build beautiful places that will nurture the healing and growth of authentic human communities and individual spirits.

We are needed to protect and restore systems that will help life to recover and flourish.

We are needed to share our understanding of the earth's cycles, processes and bioregions to sustainably meet our elemental needs.

We are needed to help creatively adapt to the challenges of the Anthropocene, such as rising sea levels, fires, droughts, human migration, habitat loss, pollution, (and unfortunately), etc, etc, etc.

None of these activities intrinsically require fossil fuels.

An Example

Central Park



Olmsted's vision of "democracy-made-visible"

Central Park



No fossil fuels

Central Park

Seneca Village



SQUATTER SETTLEMENT, 1855.—NOW CENTRAL PARK.

#20,670 C187-2

Reframing How We Work

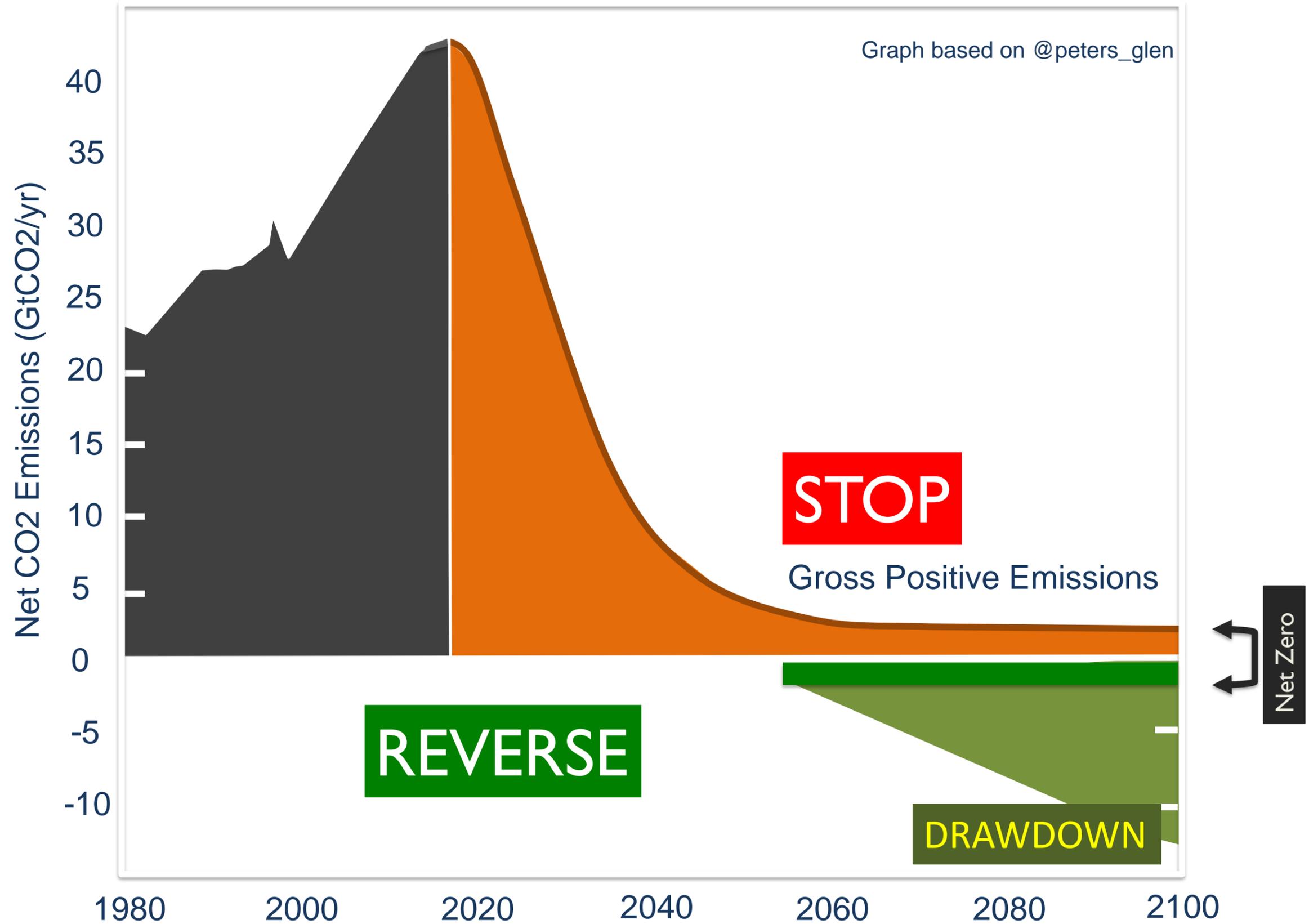
Fossil fuels have only been fully embedded in the work of landscape architecture for 100 years or so, and then only as a means to our desired ends.

Ending their use will demand that we reframe how we work:

- Energy Limits
- Construction methods and materials
- Design goals – no emissions and drawdown
- Education
- Practice
- Ethics

Energy Limits

Annual Carbon Emissions



A Breakup Story





Ah....here is the answer!

well not so much....



“The world will need to make do with far lower levels of energy than we use today.” Patrick Moriarty, Damon Honnery



Energy literacy: this isnt fuel – it is technology used to produce *electricity*

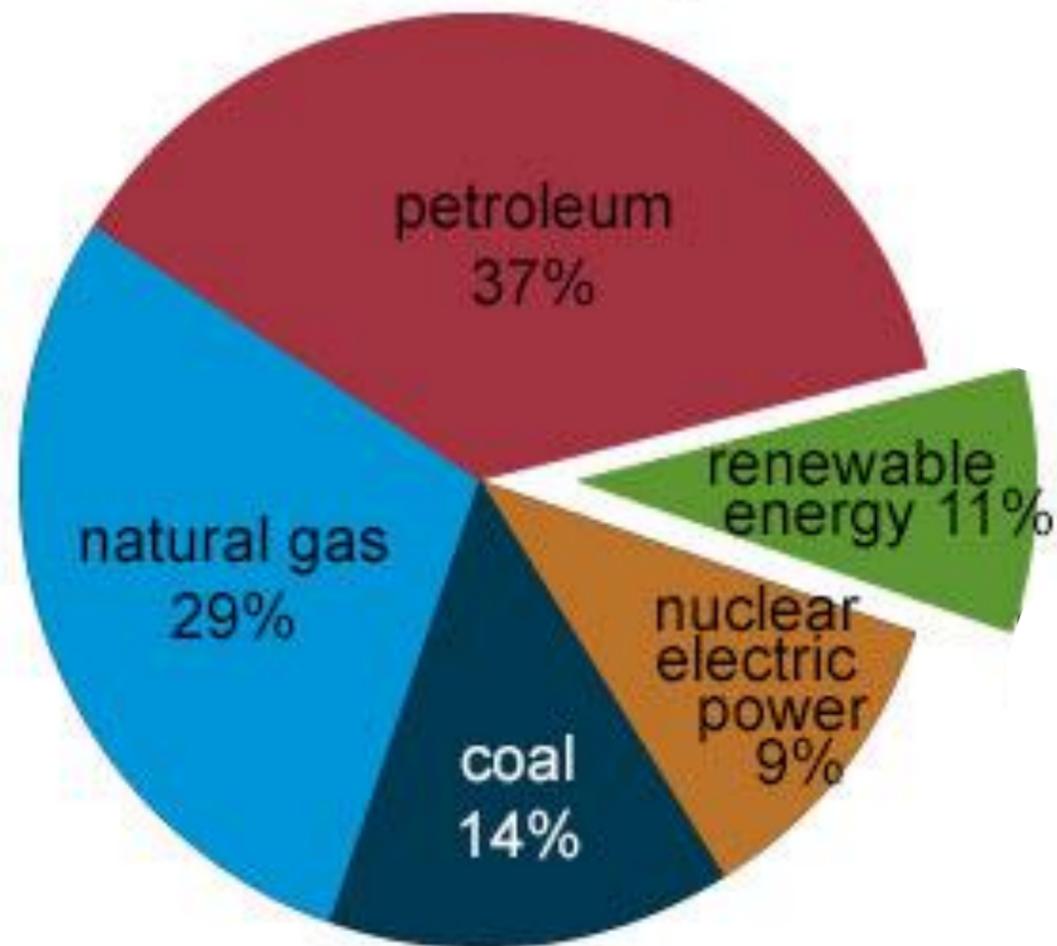
DOES NOT produce burnable fuels (gasoline, natural gas) – nearly 100% of our energy use for transportation and commodity production

Energy Limits

U.S. energy consumption by energy source, 2017

Total = 97.7 quadrillion
British thermal units (Btu)

Total = 11.0 quadrillion Btu



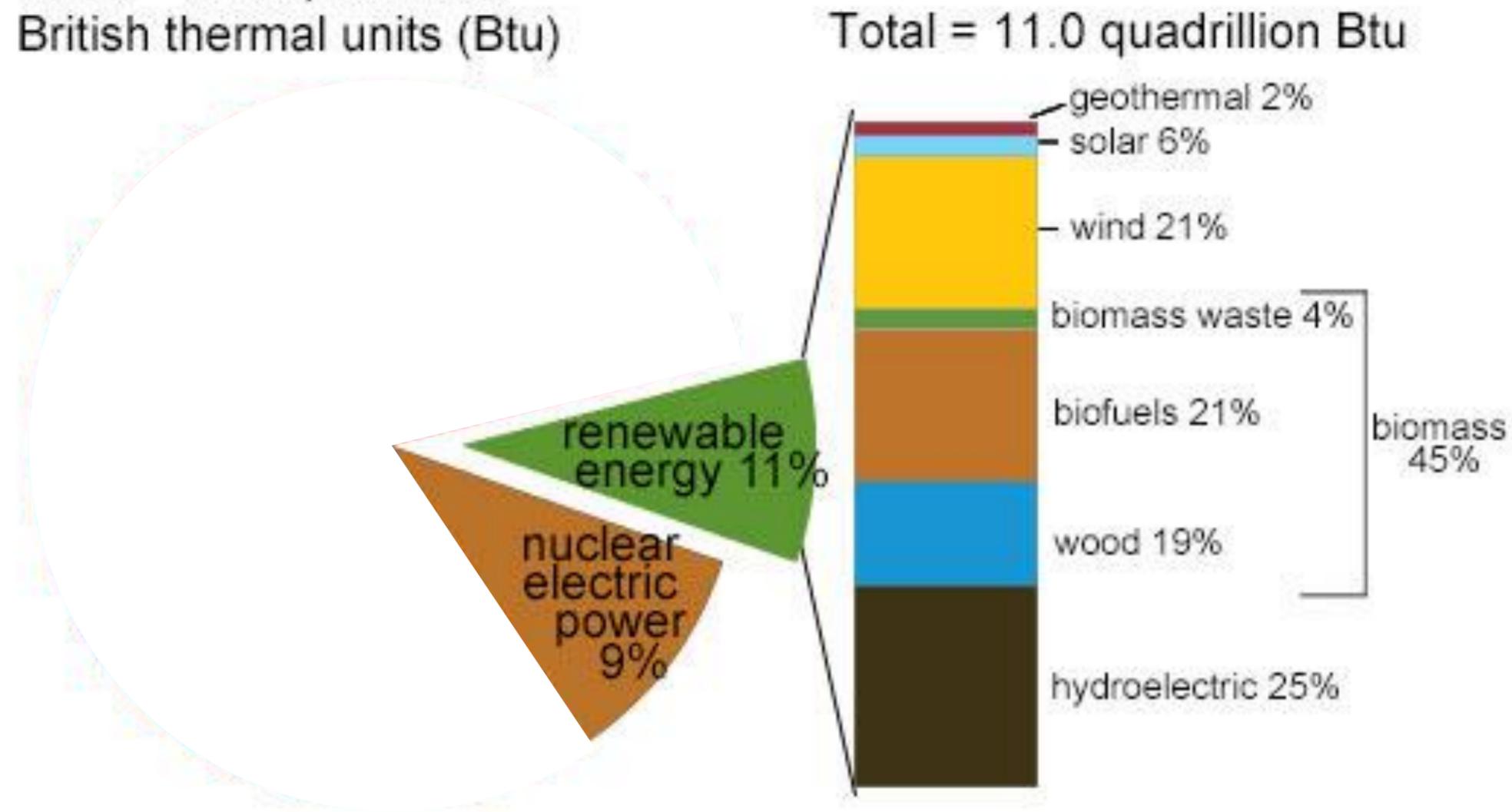
Note: Sum of components may not equal 100% because of independent rounding.
Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 1.3 and 10.1, April 2018, preliminary data



Energy Limits: NO FOSSIL FUELS

U.S. energy consumption by energy source, 2017

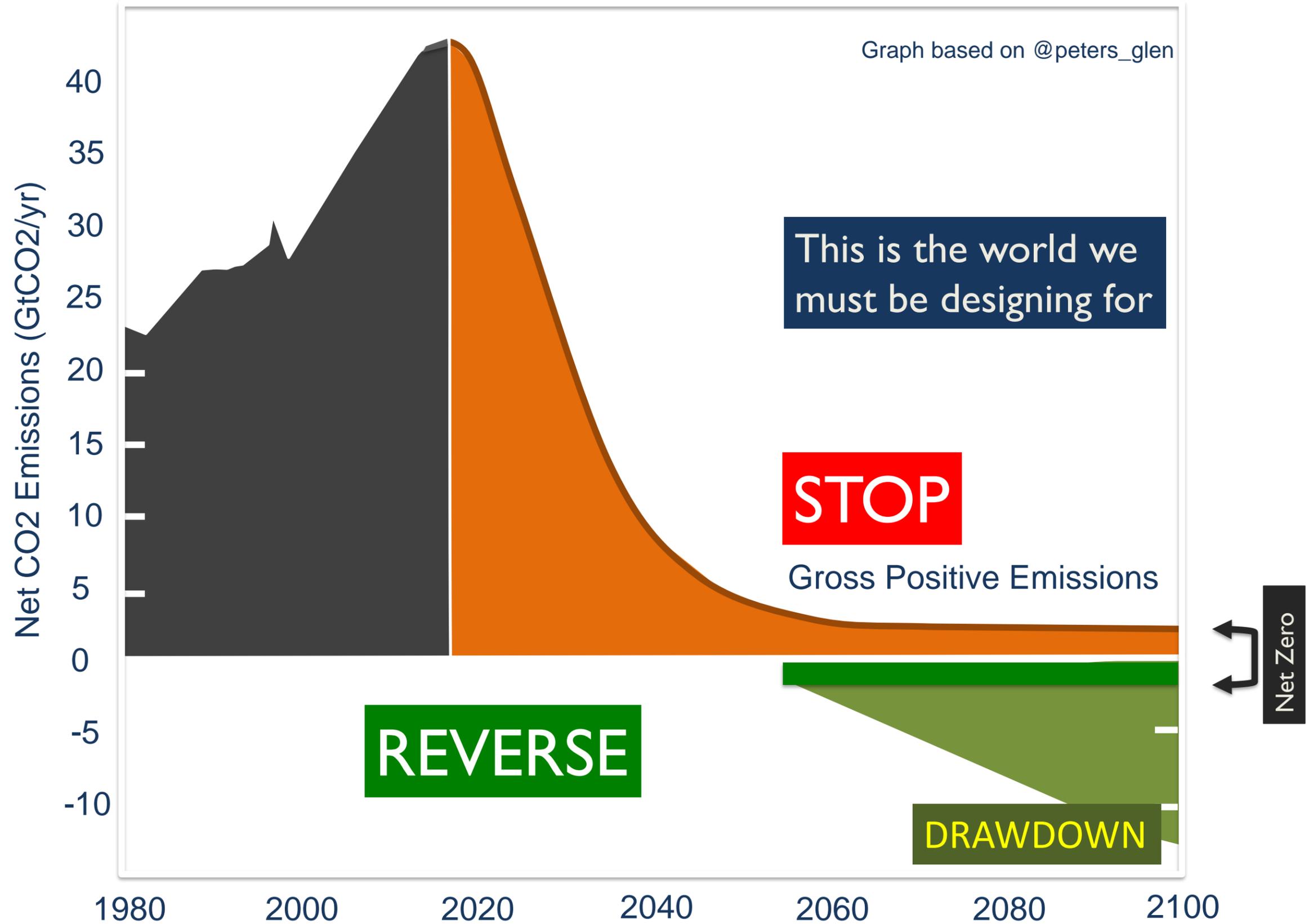
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Annual Carbon Emissions

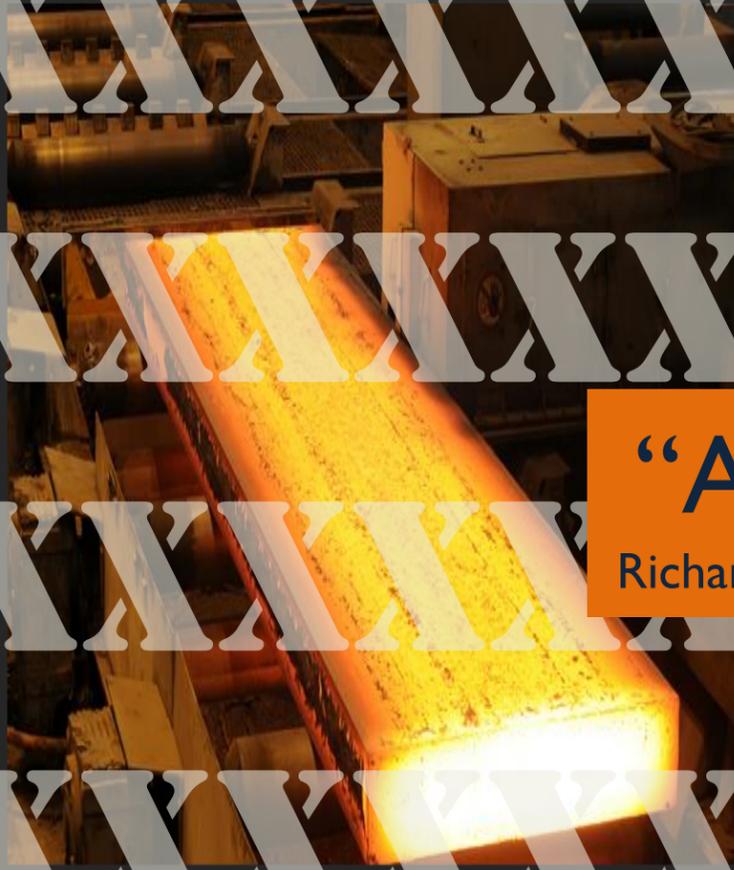


**What it means:
2 things**

Materials and Construction Methods

“A low tech, high labor economy...”

Richard Heinberg

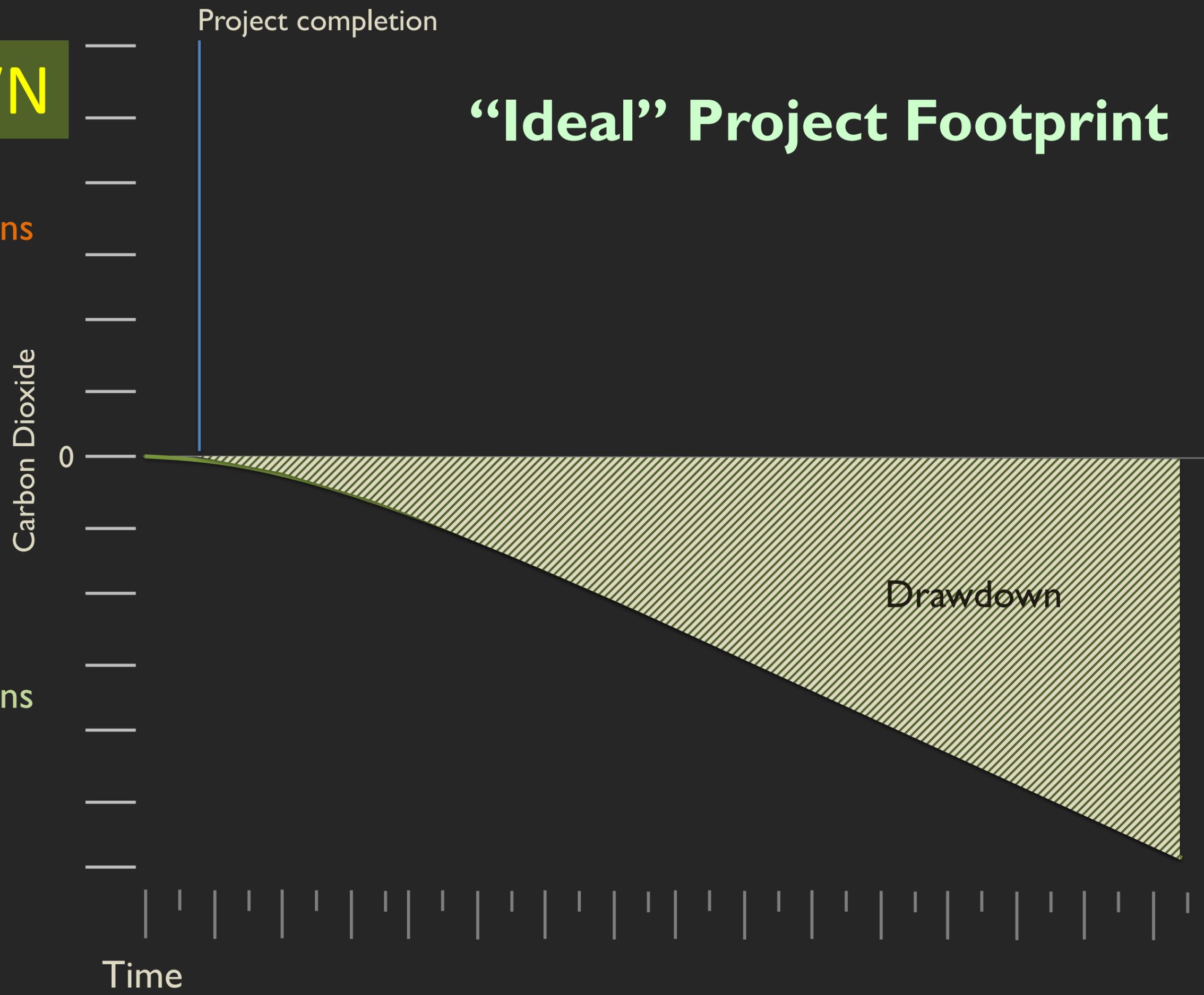


DRAWDOWN

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Positive CO2 Emissions

Negative CO2 Emissions



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Positive CO2 Emissions

Negative CO2 Emissions

Project completion

“Typical” Project Footprint

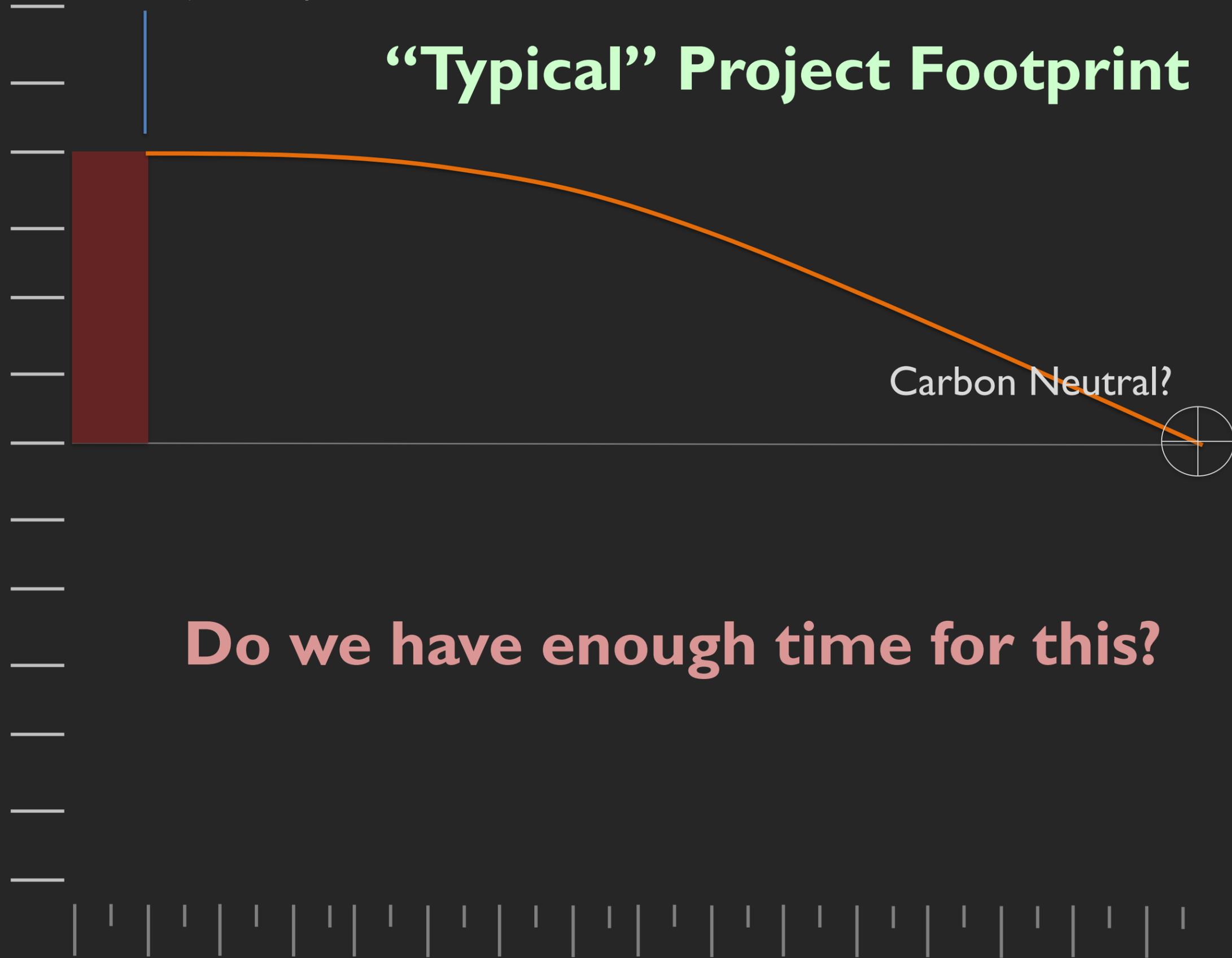
Carbon Dioxide

0

Carbon Neutral?

Do we have enough time for this?

Time



DRAWDOWN

“Realistic” Project Footprint?

Positive CO2 Emissions

Negative CO2 Emissions

Carbon Dioxide

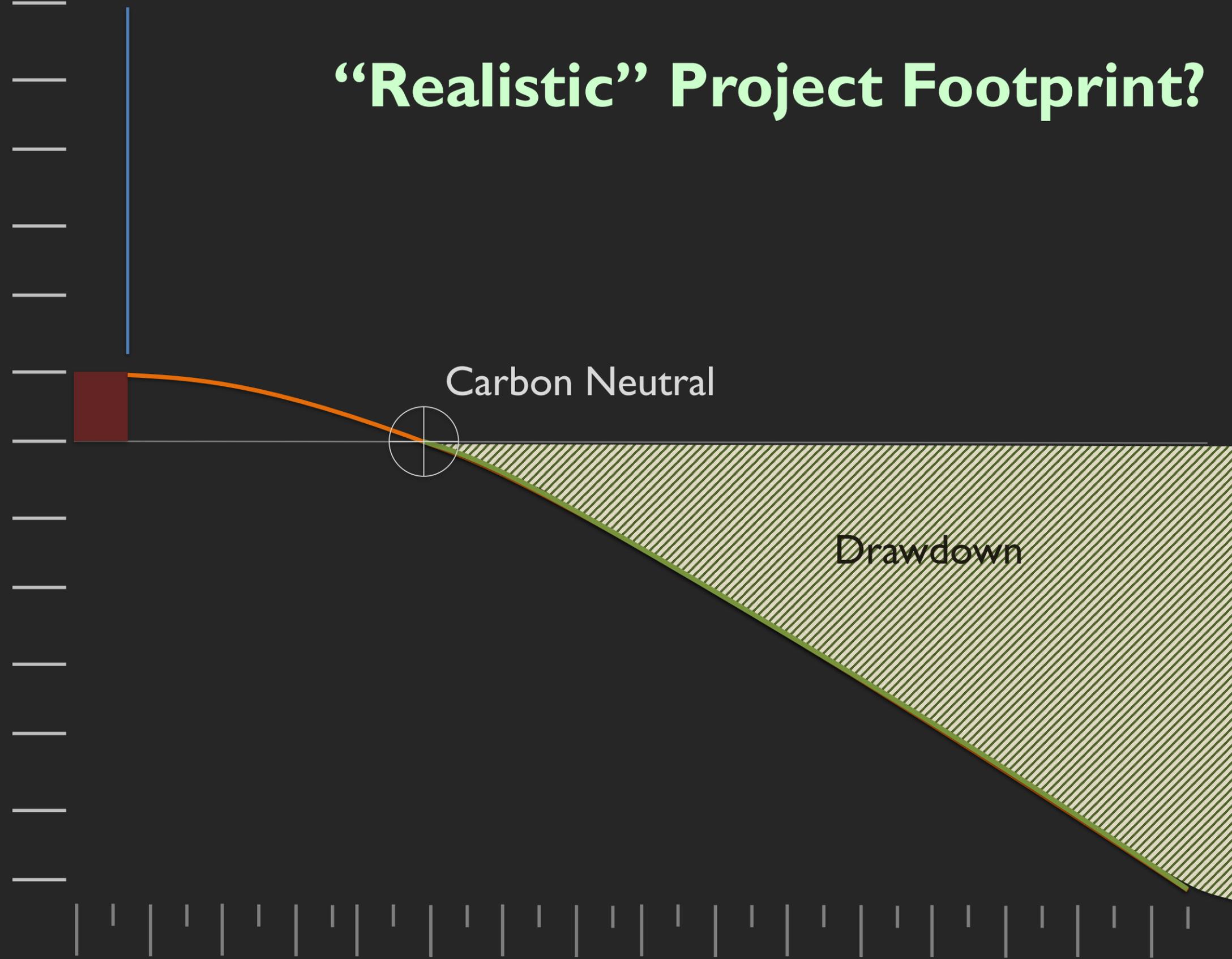
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Time

Project completion

Carbon Neutral

Drawdown



Reframing How We Work

- RESEARCH IS VITAL
- Design
- Education
- Practice
- Ethics

What Won't Work

Technology

Geo-engineering

Current path

Doing nothing



Current Administration's Department of Justice:

“there is no right to a climate system capable of sustaining human life....because such a right is entirely without basis in this Nation's history or tradition.”

Offsetting Current Emissions



To offset current emissions we just need to plant trees on 494,210,763 acres PER YEAR (equivalent to four Spains)



Carbon Capture



ebar

Vox FUTURE PERFECT EXPLAINERS THE GOODS POLITICS & POLICY CULTURE MORE ▾

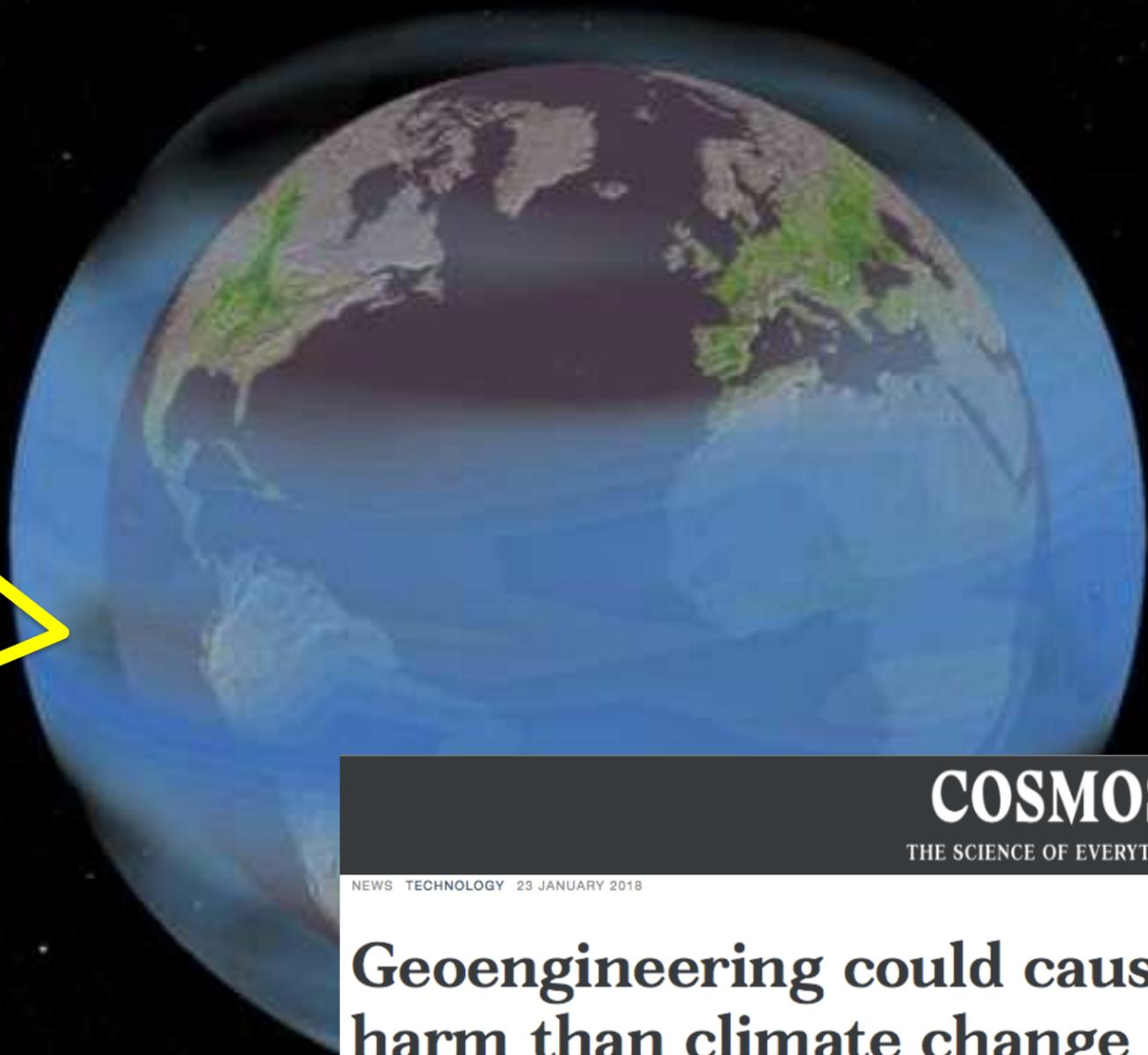
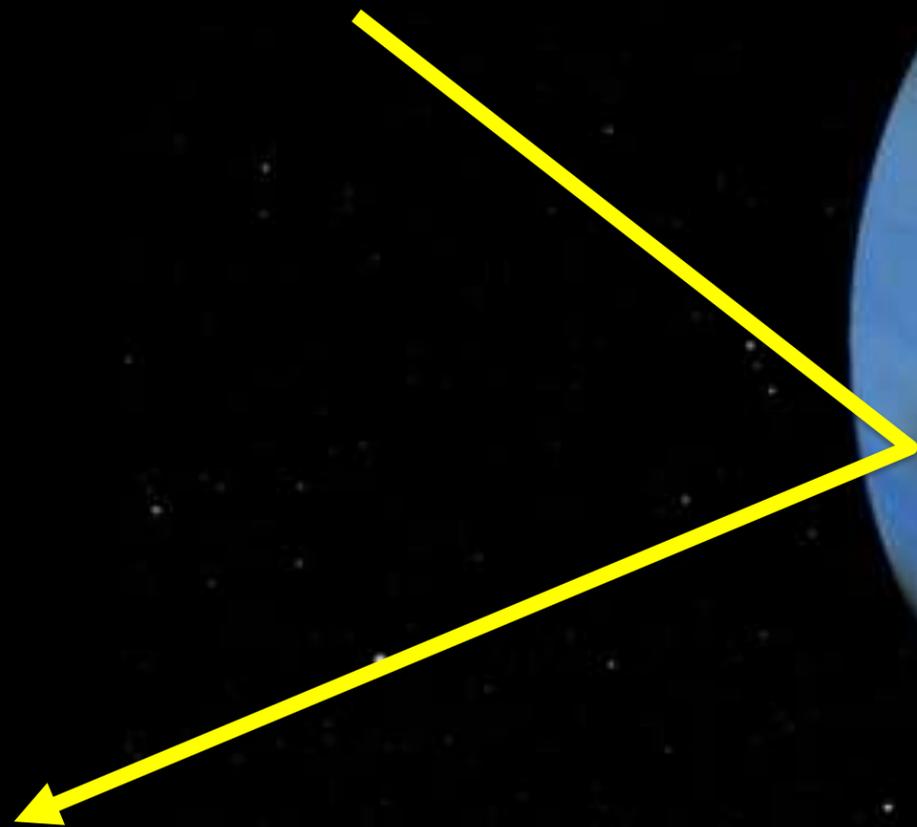
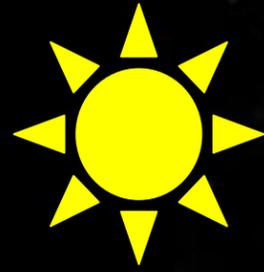
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Sucking carbon out of the air won't solve climate change

But it might fill in a few key pieces of the clean energy puzzle.

By David Roberts | @drvox | david@vox.com | Updated Jul 16, 2018, 2:14pm EDT

Solar Geo-Engineering

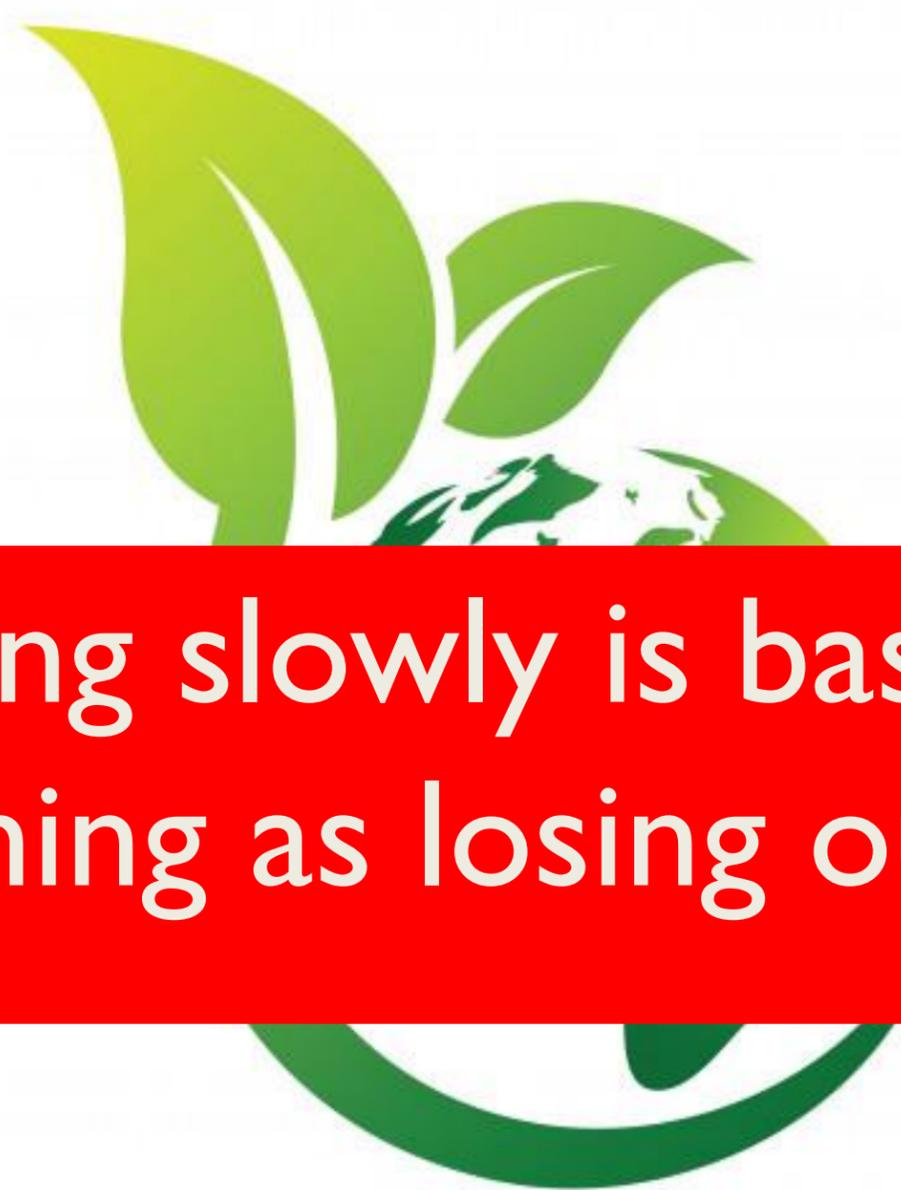


COSMOS
THE SCIENCE OF EVERYTHING

NEWS TECHNOLOGY 23 JANUARY 2018

Geoengineering could cause more harm than climate change

US research finds policy and politics could turn a technological fix into a climate disaster. Stephen Fleischfresser reports.



“Winning slowly is basically the same thing as losing outright.”

Alex Steffan

**Doing
Nothing**



**CLIMATE
EMERGENCY**

**“If we don’t respond to the emergency,
we become part of the storm itself.”**

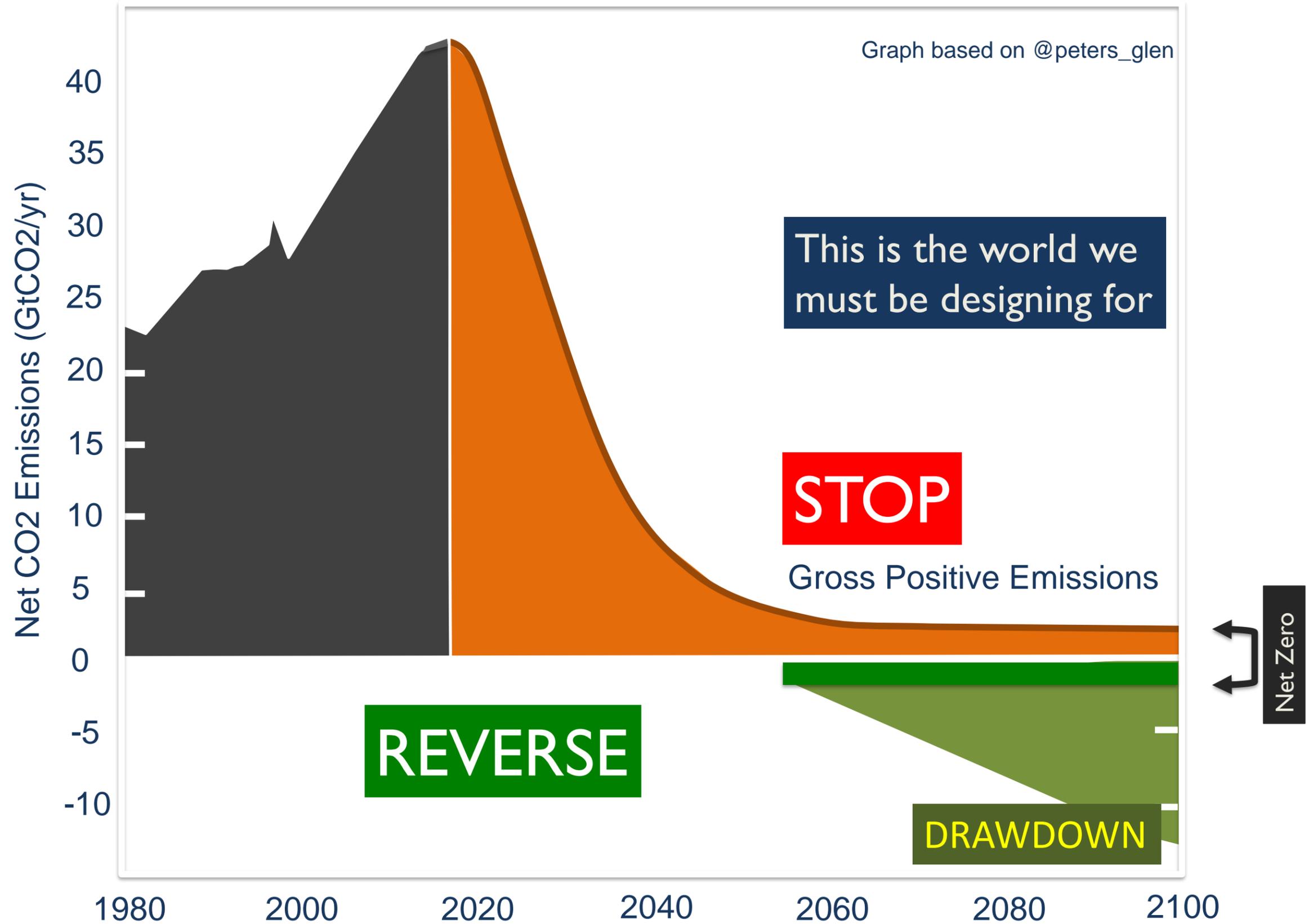
Kathleen Dean Moore

“The future hasn’t already been decided.”

Rebecca Solnit



Annual Carbon Emissions



“Adults keep saying: ‘We owe it to the young people to give them hope.’

But I don’t want your hope. I don’t want you to be hopeful. I want you to panic. I want you to feel the fear I feel every day. And then I want you to act.

I want you to act as you would in a crisis. I want you to act as if our house is on fire. Because it is.”

Greta Thunberg



SKOLSTREJK
FÖR
KLIMATET

What can we do?

Continue to educate ourselves

Discuss this

Analyze our professional carbon use – find immediate reductions



VANTAGE|POINT

WASLA CONFERENCE
TACOMA 2019

Possible Discussion Topics



How do we get started?
Opportunities? Obstacles? “Realities?”
Partners?
Emotional responses?