



Leaving a Living Legacy

Stewardship in a Warming World



A world map is shown in the background, with a dark blue semi-transparent overlay covering most of it. A thin vertical line runs through the center of the map, passing through the Atlantic Ocean. The text "How likely is it to happen?" is centered over the map in white.

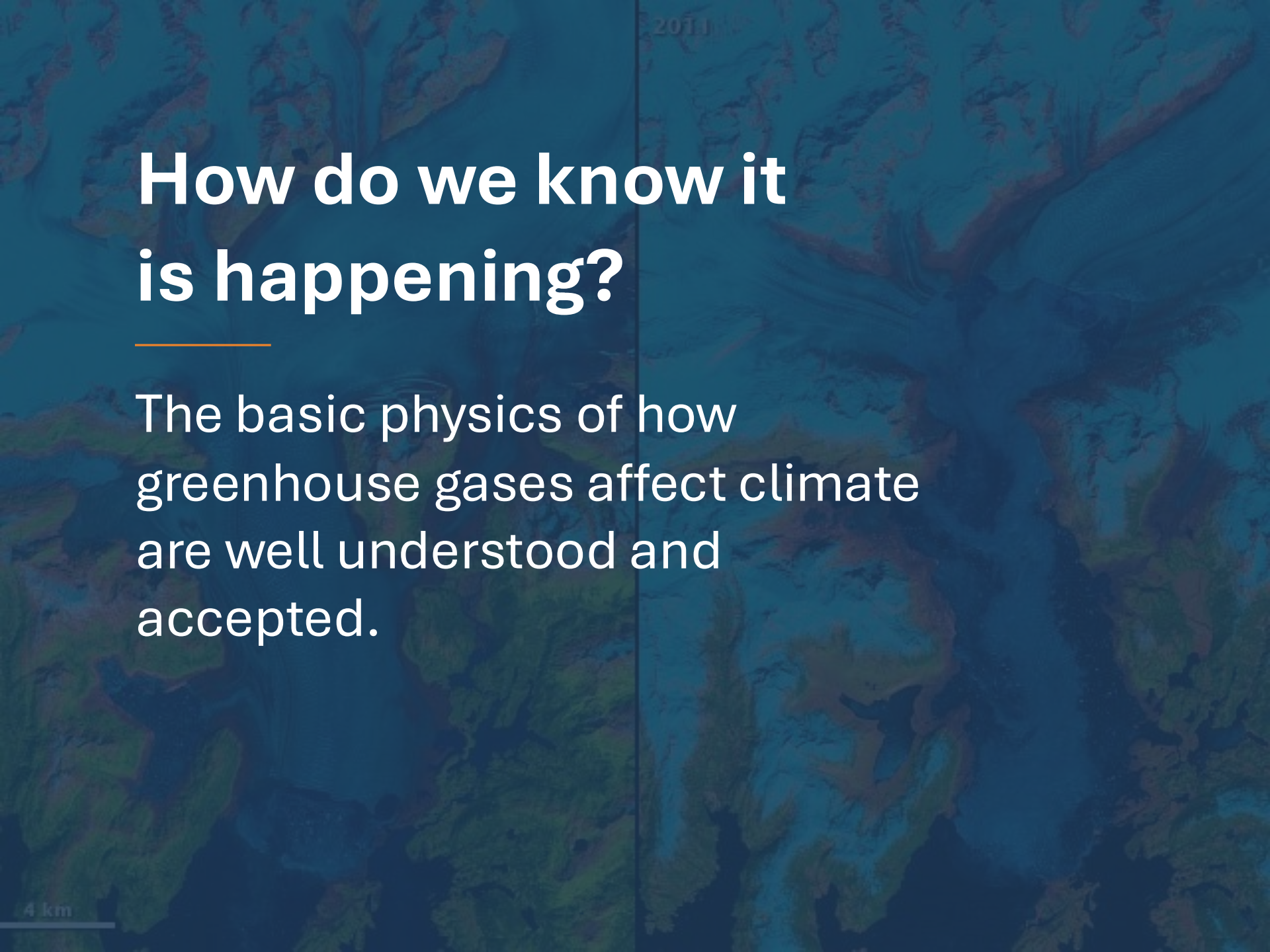
**How likely is it to
happen?**

A helicopter is shown in flight, dropping a bucket of fire retardant onto a forest fire. The fire is large and intense, with thick black smoke rising from the trees. The helicopter is positioned above the fire, and the bucket is seen falling towards the flames. The background is a hazy, smoke-filled sky. The text "How dangerous are the potential consequences?" is overlaid on the image in white, bold, sans-serif font.

**How dangerous are the
potential
consequences?**

A person wearing a backpack and a hat stands on a dark, rocky beach, looking out at a body of water filled with icebergs. The sky is overcast and grey. The text "How difficult or expensive to avoid the risk?" is overlaid in white.

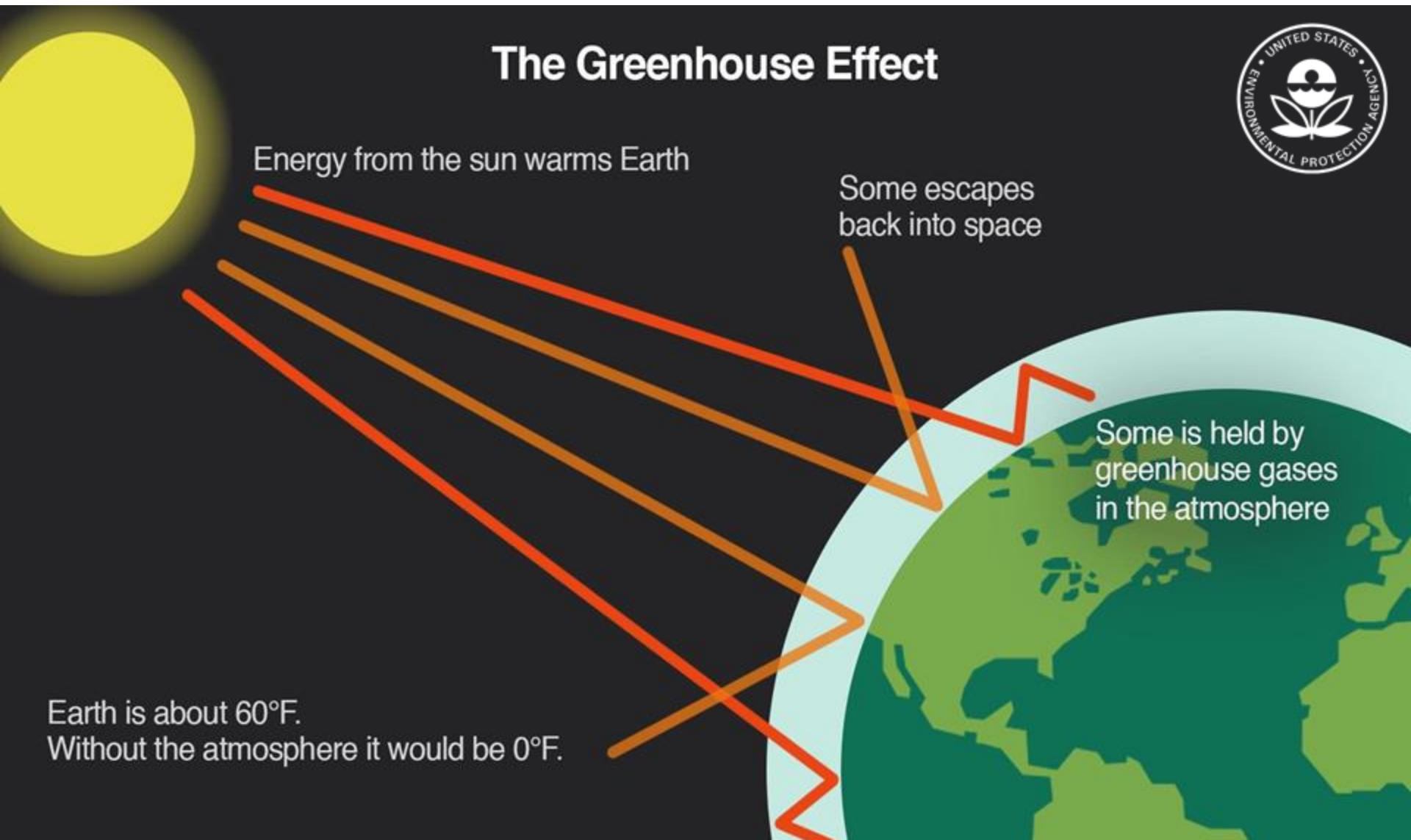
**How difficult or
expensive to avoid the
risk?**

The background is a world map with a blue overlay. A vertical line runs down the center of the map. The text is white and bold.

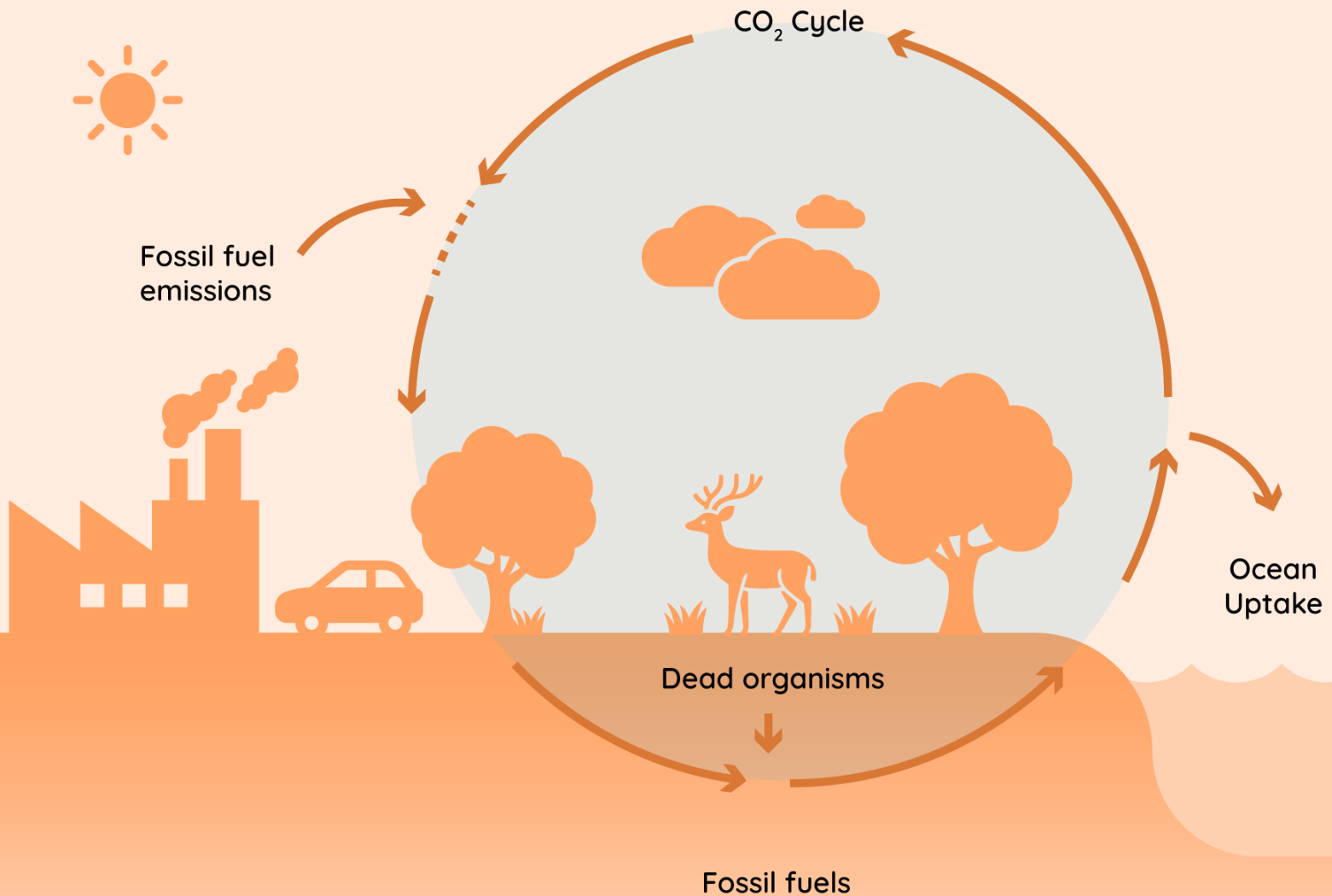
How do we know it is happening?

The basic physics of how greenhouse gases affect climate are well understood and accepted.

How do we know it is happening?

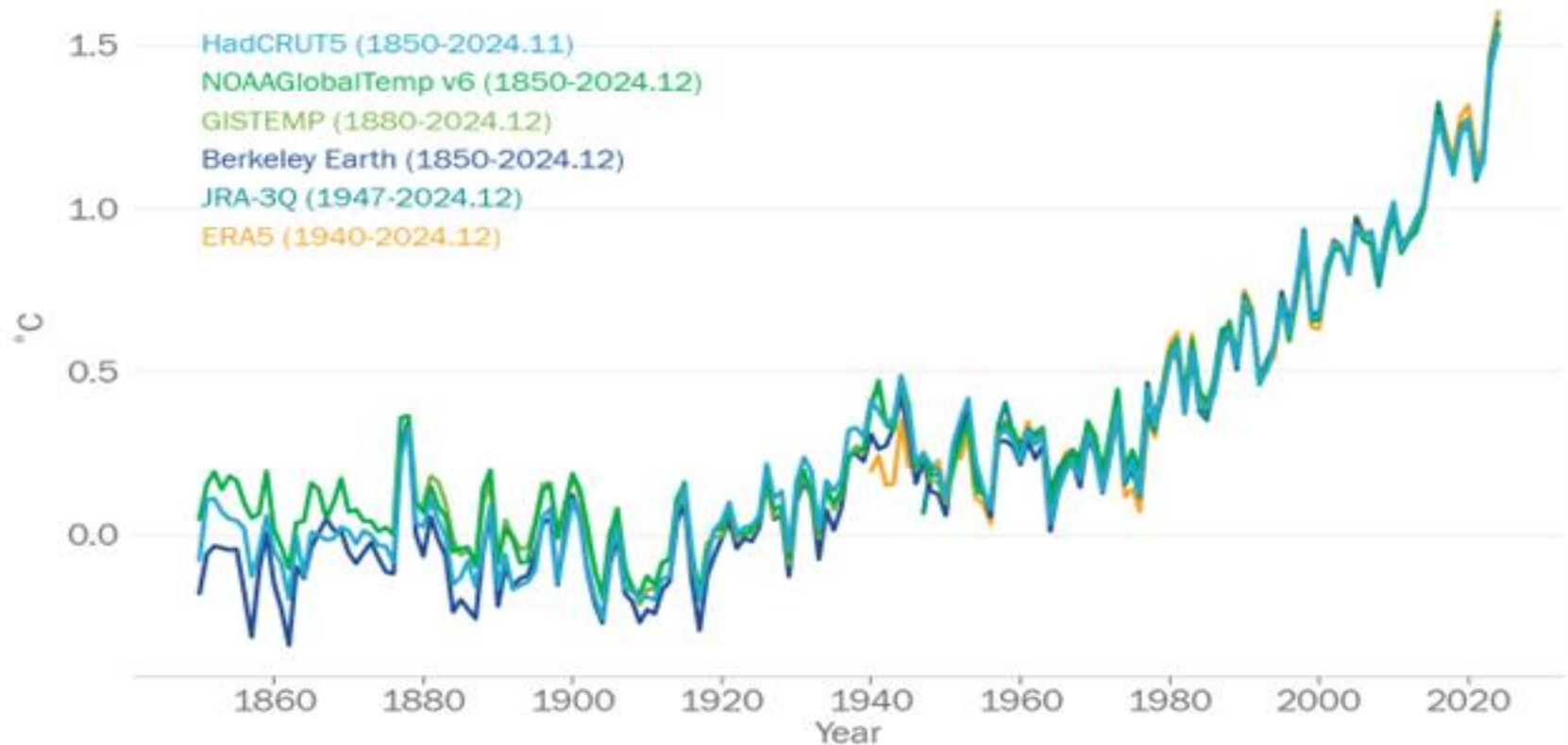


The carbon cycle

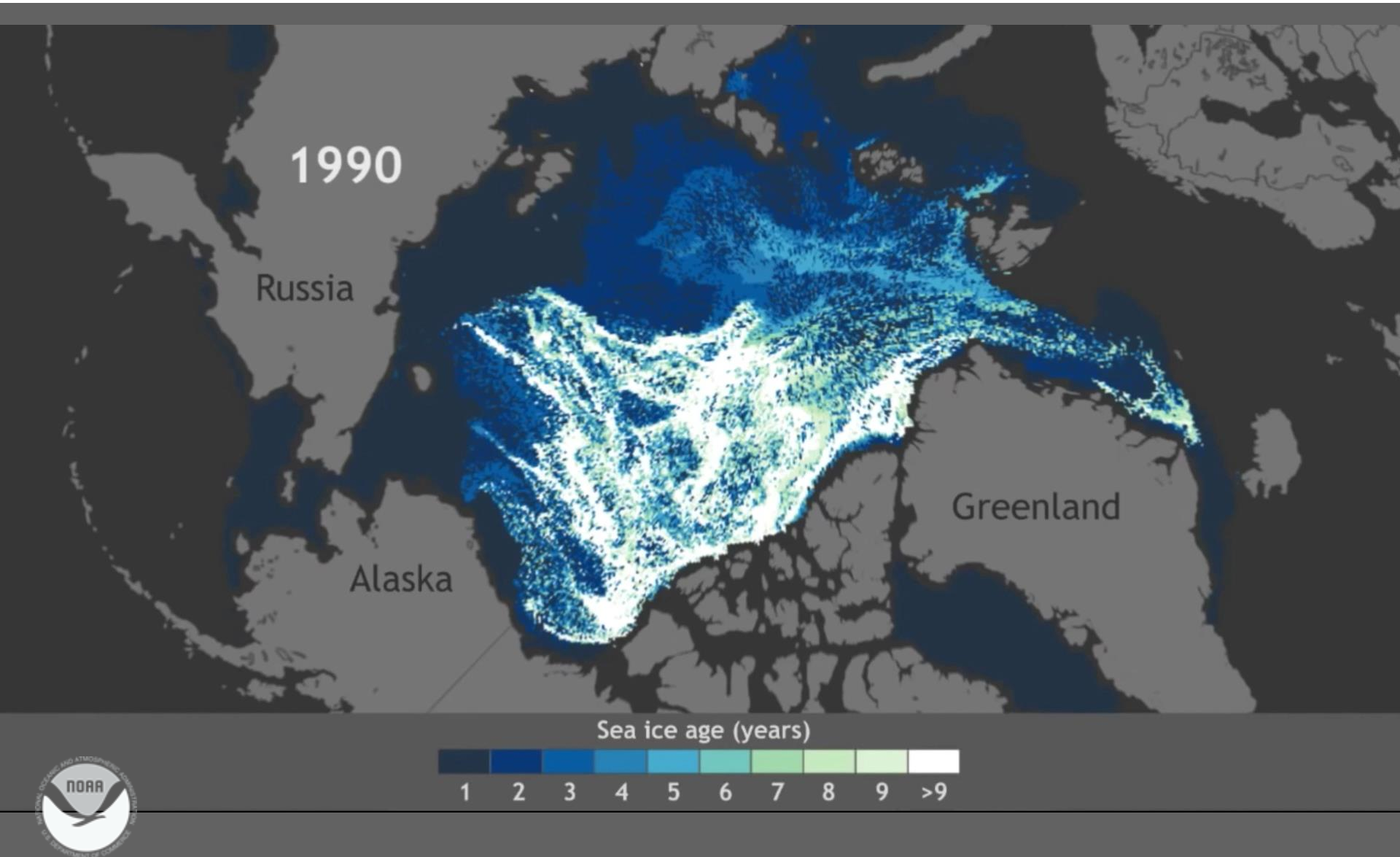


Observing consistent results around the globe: 1.5°C or 2.7°F

Global mean temperature 1850-2024
Difference from 1850-1900 average



Critical Arctic ice melting



We know humans are responsible

How We Know It's Us

Fossil fuels have a unique chemical
CO₂ fingerprint



Today's carbon levels are very different from the past



CO2 levels are now in uncharted territory

Daily Update

PPM

400

350

300

250

200

800,000

600,000

400,000

200,000

NOW

YEARS BEFORE NOW

TODAY:

4/2025

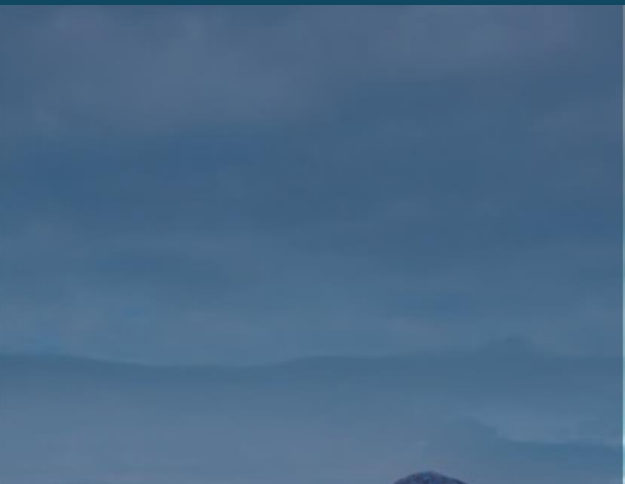
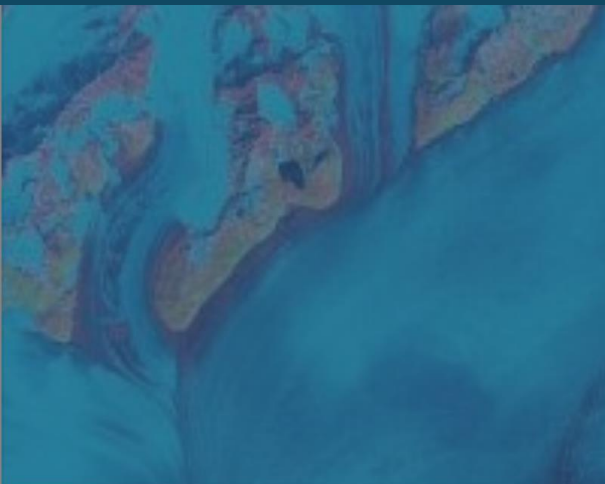
427.9 PPM

1910

300 PPM

Source: Luthi et al (2008) (cdiac.ornl.gov) & NOAA ESRL (esrl.noaa.gov)

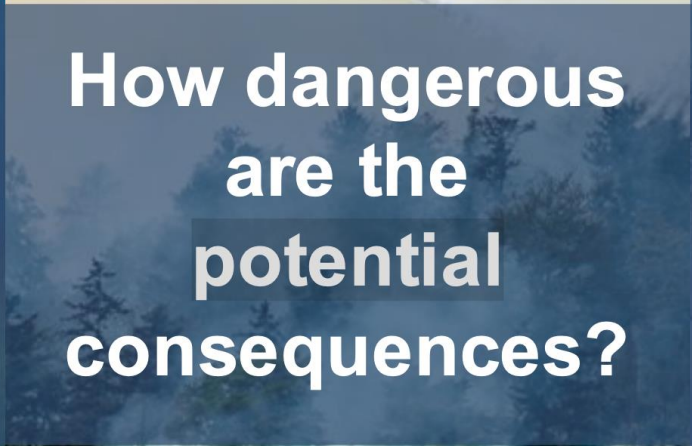
CLIMATE  CENTRAL



How likely
is it to
happen?

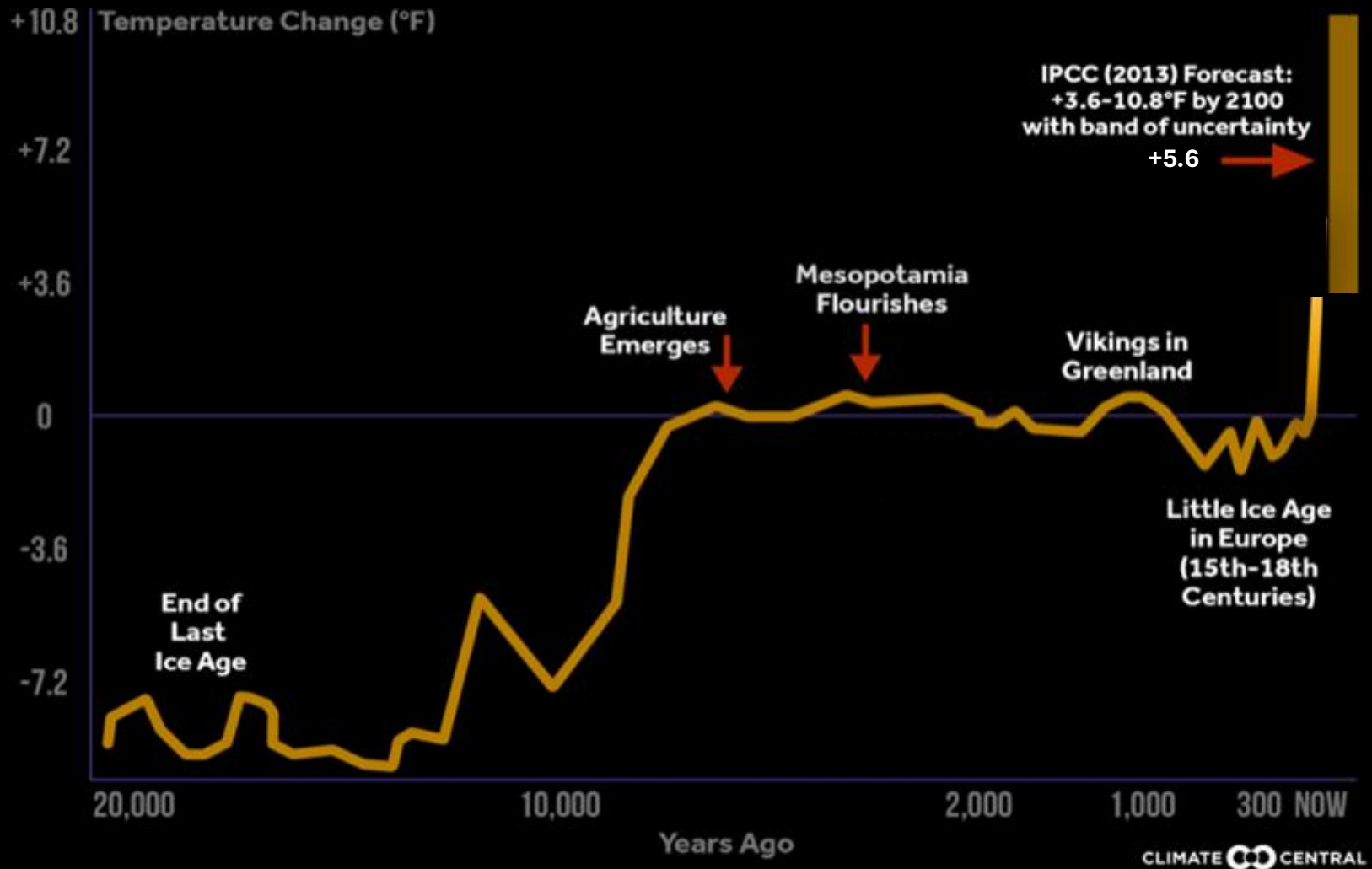


How dangerous
are the
potential
consequences?



How difficult or
expensive to
avoid the risk?

Global temperatures since the Ice Age



Some ways climate change affects us

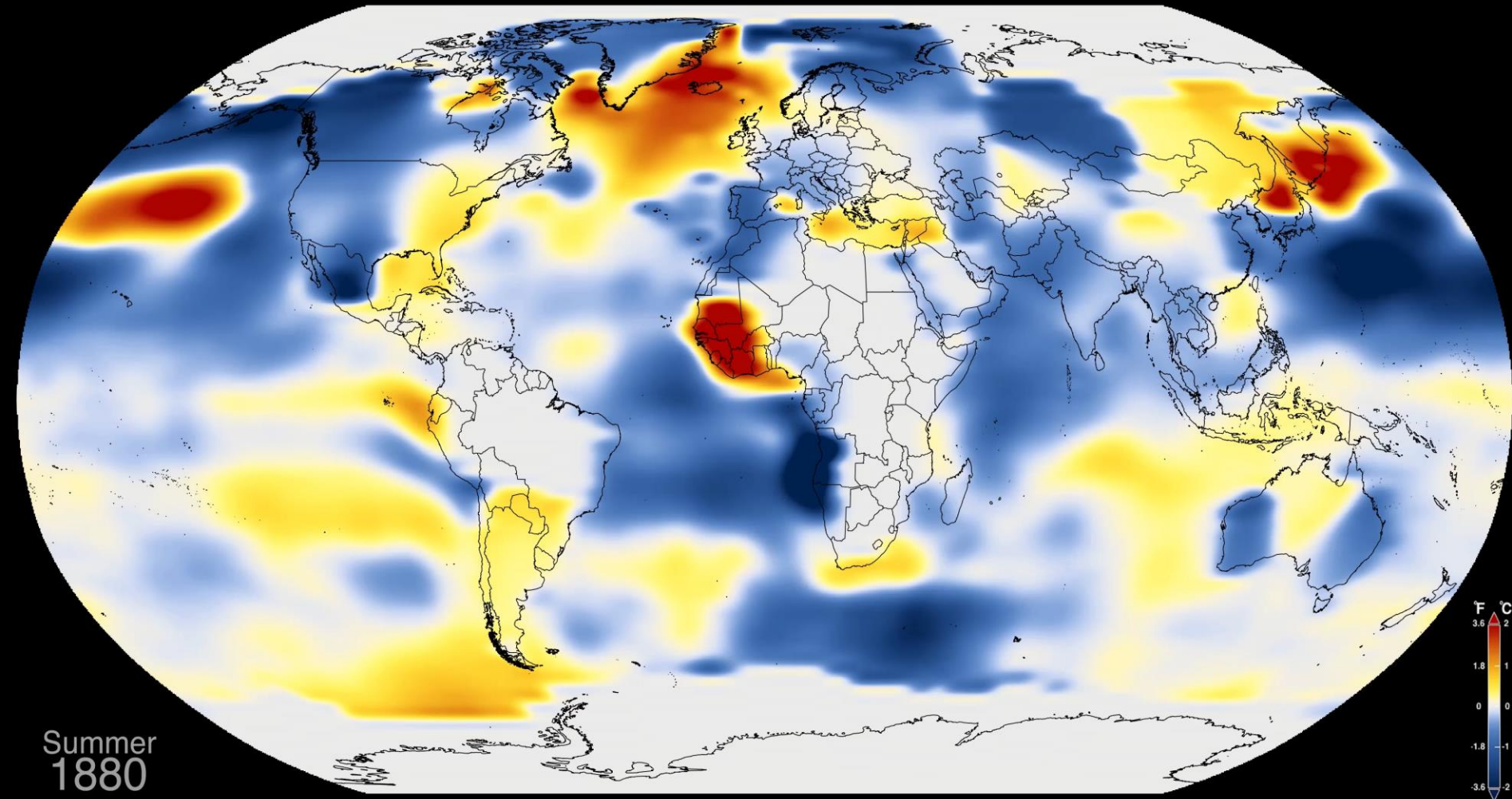
Jobs and the economy

Health and personal security

Geopolitical stability

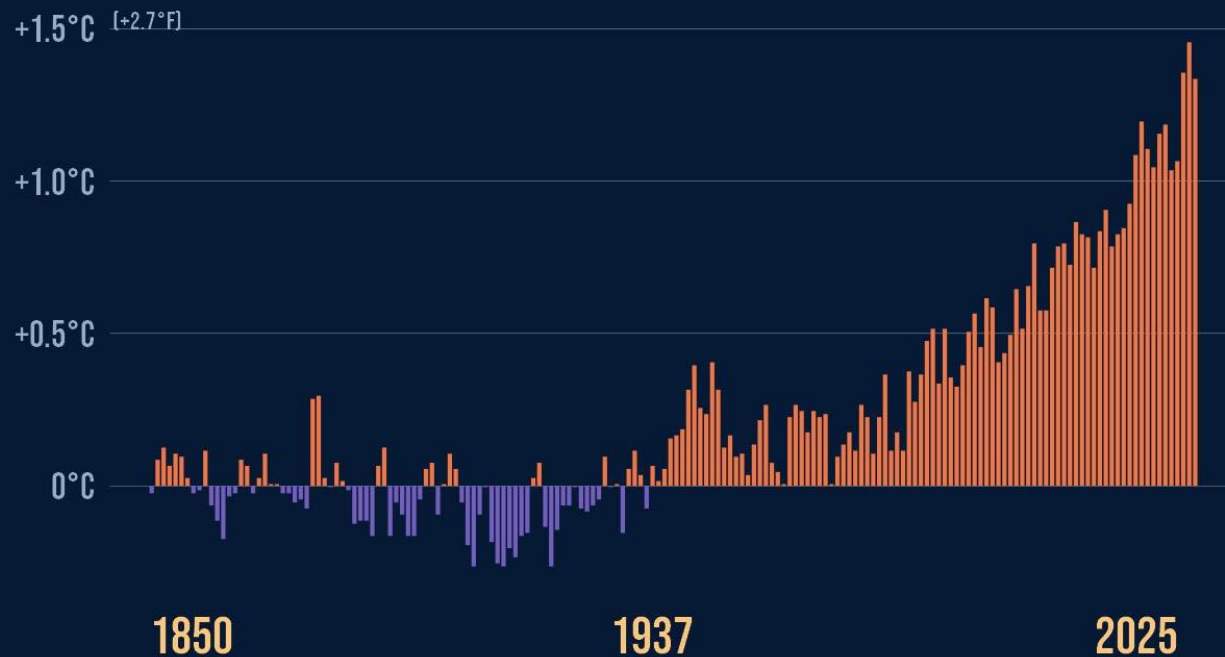
- civil conflict, refugee crisis, and terrorism

Average global temperature trend



Hottest ten years on record: The last ten

GLOBAL TEMPERATURE



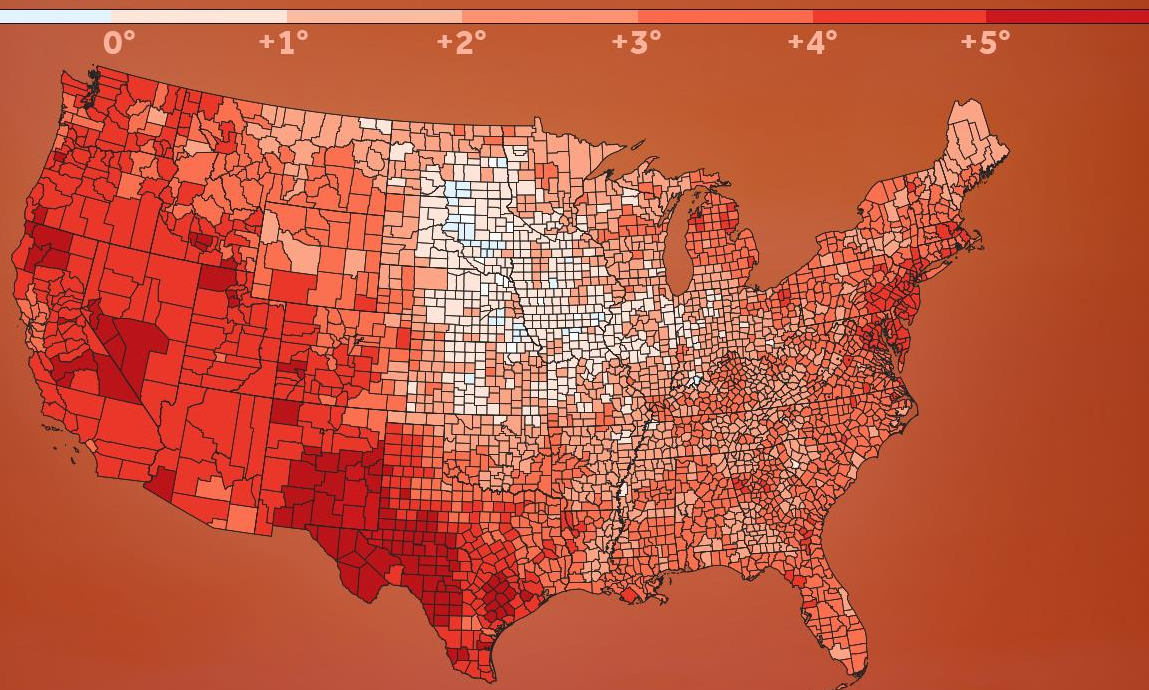
Global land and ocean temperature departures (°C)
from the pre-industrial (1850-1900) average.
Source: NOAA (NCEI). Data as of 01/14/2026.

CLIMATE  CENTRAL

Hot days increasing

SUMMER WARMING

SINCE 1970 (°F)

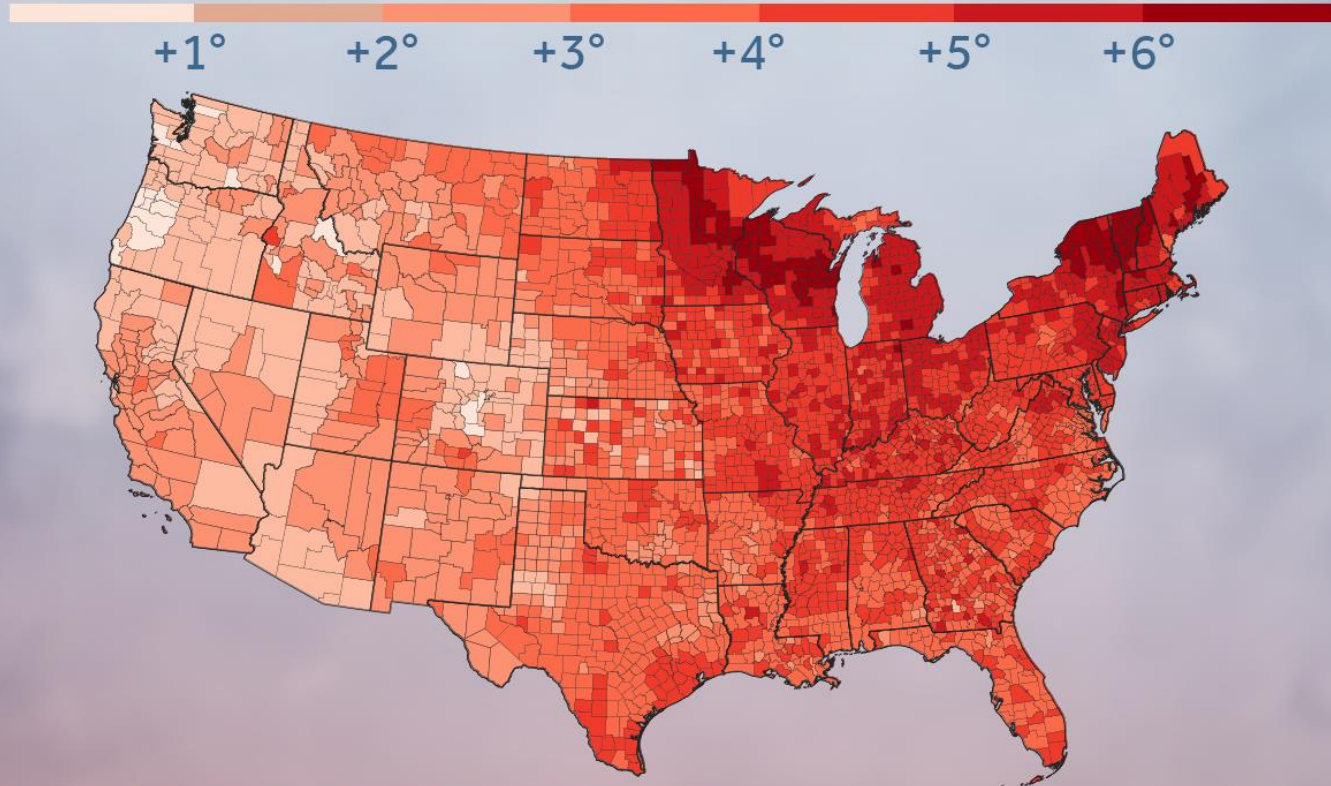


Change in summer (June, July, August) average temperature, 1970–2024
Source: NOAA Climate at a Glance

CLIMATE  CENTRAL

It's not just summer

WINTER WARMING SINCE 1970 (°F)



Change in winter (December, January, February) average temperature, 1970-2025.
Source: NOAA/NCEI Climate at a Glance

CLIMATE  CENTRAL

WHERE YOUR SUMMER IS HEADED

Average
Summer High

+8.1°F
BY 2100

2020

Hagerstown

2060

Fayetteville

2100

Longview

Current temperatures: ERA5, European Centre for Medium-Range Weather Forecasts, accessed 6/15/2022
CMIP6 multi-model ensemble dataset based on current emissions trends (SSP3)

CLIMATE  CENTRAL

More days with heat index above 105°F

CITY	MIDCENTURY (2036-2065)	LATE CENTURY (2070-2099)	CITY	MIDCENTURY (2036-2065)	LATE CENTURY (2070-2099)
Brownsville, TX	97	139	Shreveport, LA	65	103
El Centro, CA	91	112	Orlando, FL	61	112
Naples, FL	86	133	Miami, FL	59	119
Tampa, FL	80	127	Austin, TX	59	101
Houston, TX	74	118	New Orleans, LA	58	104
Phoenix, AZ	71	97			

What do higher temperatures mean for jobs?



What do higher temperatures mean for health?

Heat stress, heat stroke

Cardiovascular failure

Premature births

Aggression, murder, suicide

More vector-borne diseases

Kidney disease

Severe burns



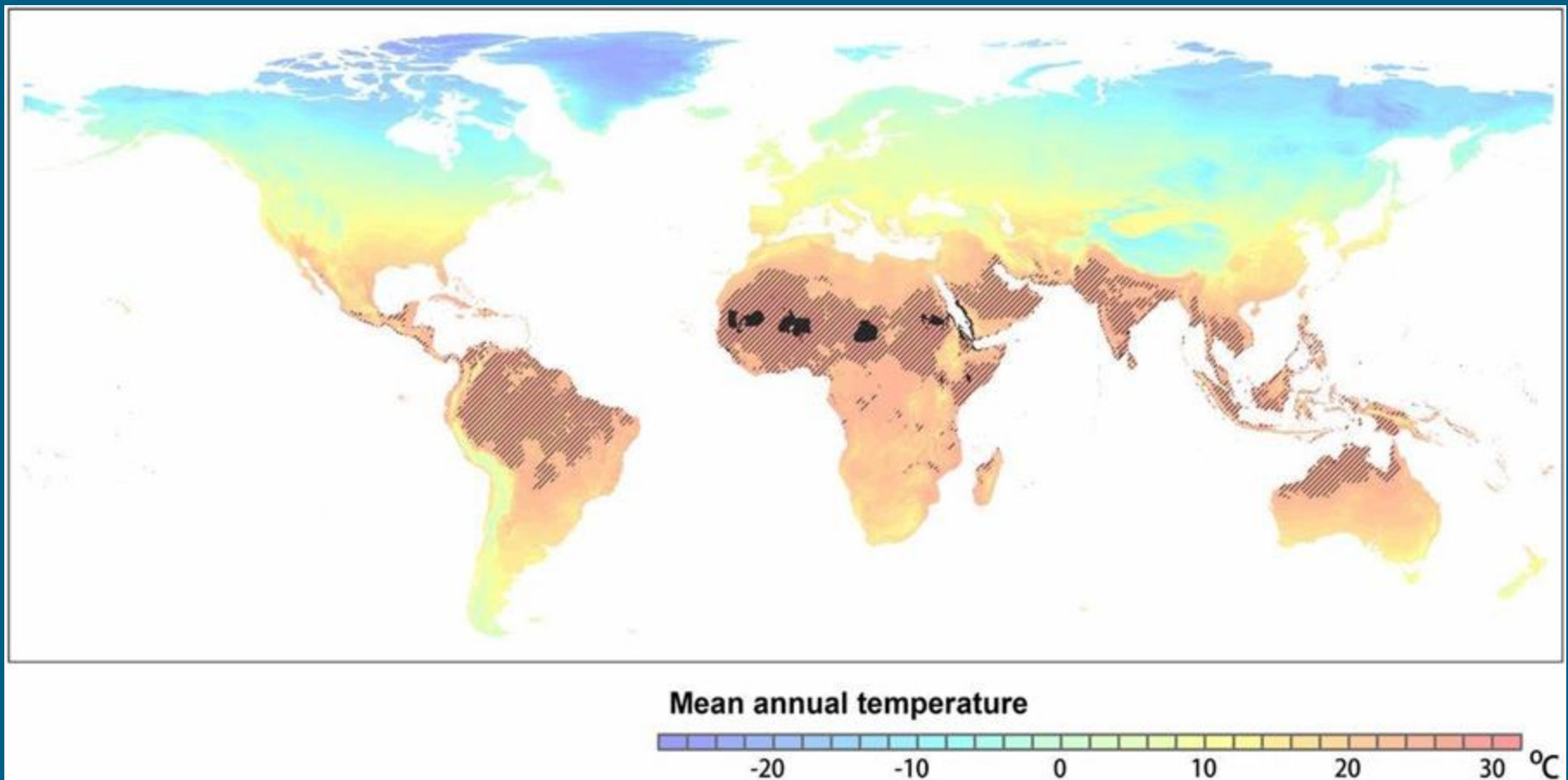
Migration pressures will increase



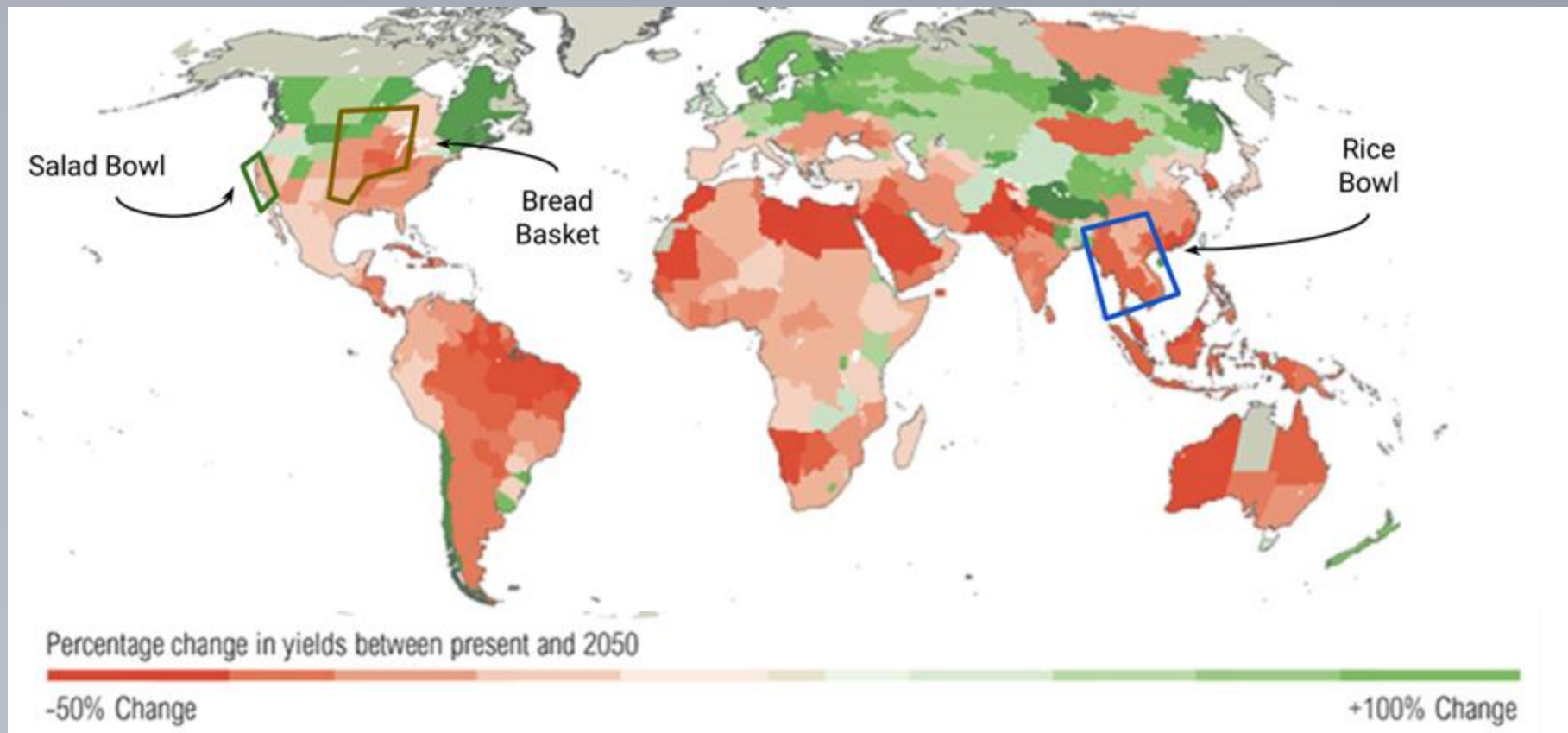
Mass population
movement

Southerners
moving north

By 2070, 1/3 of the world's population could experience Sahara-like temperatures



Crop yield projection with 3°C or 5.4°F increase

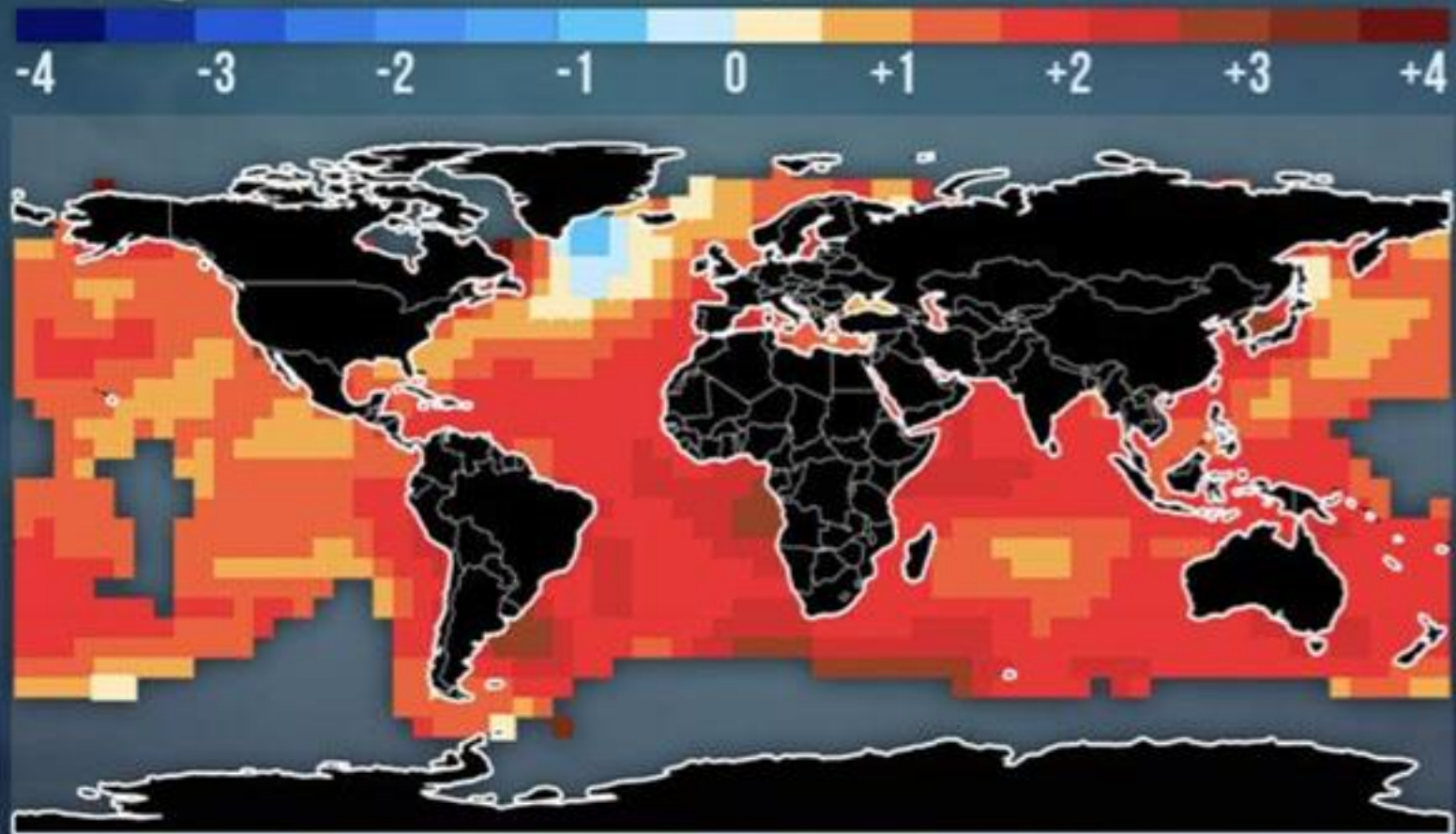


Affecting the things we love



Oceans heating up

Change in sea surface temperature (°F) since 1901:



Data through 2015. Gray indicates insufficient data.
Source: IPCC, NOAA; Merged Land-Ocean Surface Temp Analysis

CLIMATE  CENTRAL

Coral reefs at risk



More powerful hurricanes



More extreme storms cause flooding



More extreme storms cause flooding



Extreme precipitation increasing

HIGHER RAINFALL INTENSITY

Average rainfall intensity (hundredths of inches per hour)

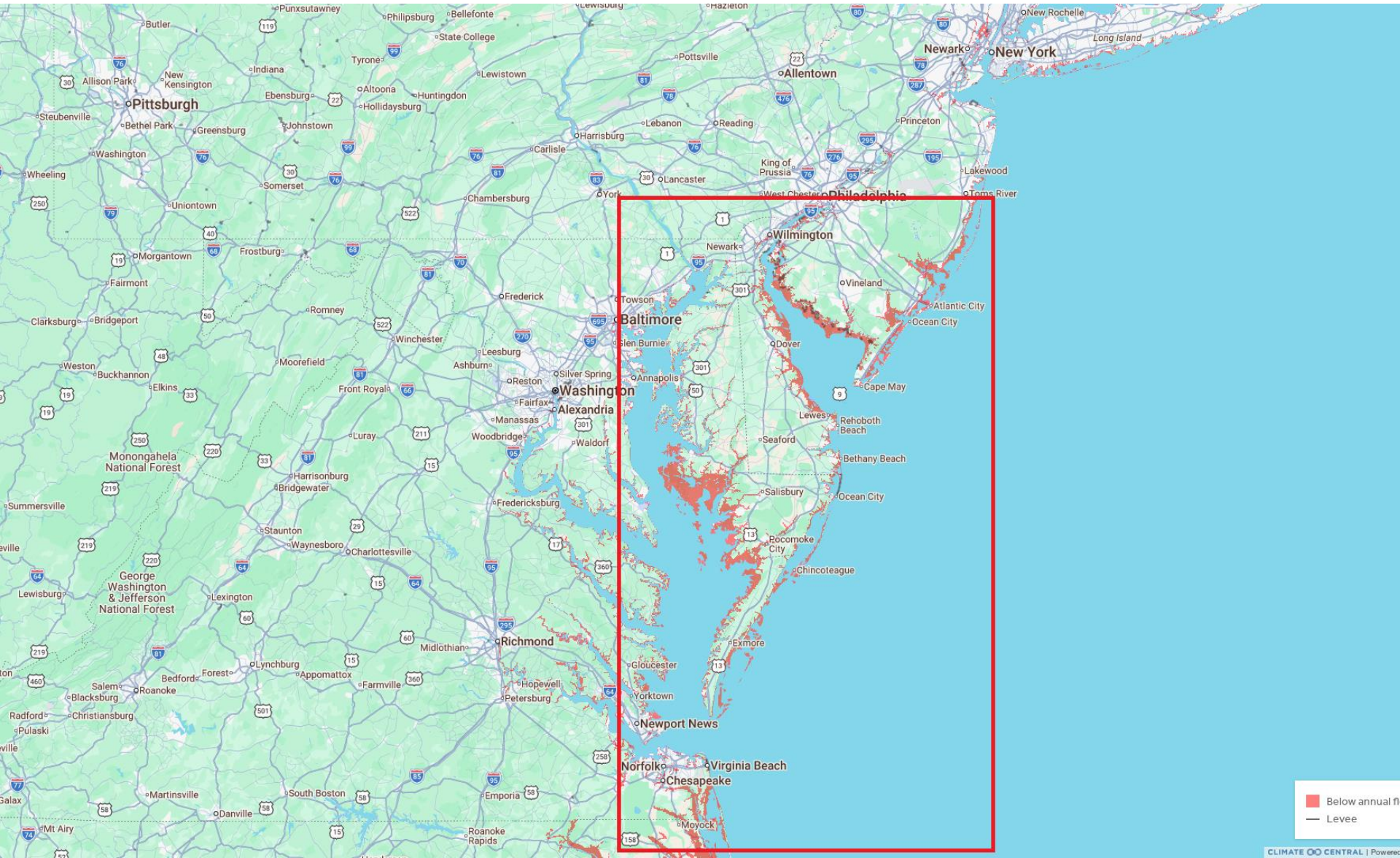


Simple hourly rainfall intensity index = total annual rainfall divided by the total annual hours with rainfall.
Source: NOAA (NCEI, ACIS). Accessed: 02/01/2026.

Sea level rise endangers coastal communities



Climate Central – 2050 Coastal Flood Risk



Climate change effects on health



Insect-borne illnesses on the rise

- Mosquitoes spreading dengue, Zika, West Nile, chikungunya, malaria
- Southeast has greatest risk



Climate change increases
pollen, allergies, and asthma



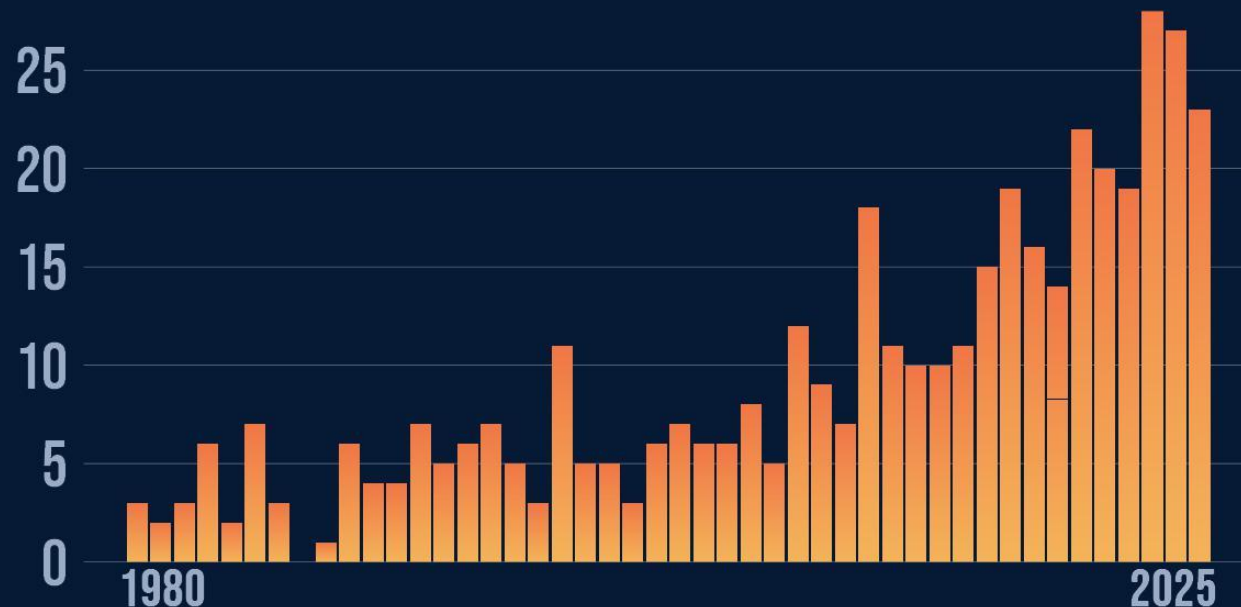
Wildfire seasons changing



Severe disasters increasing

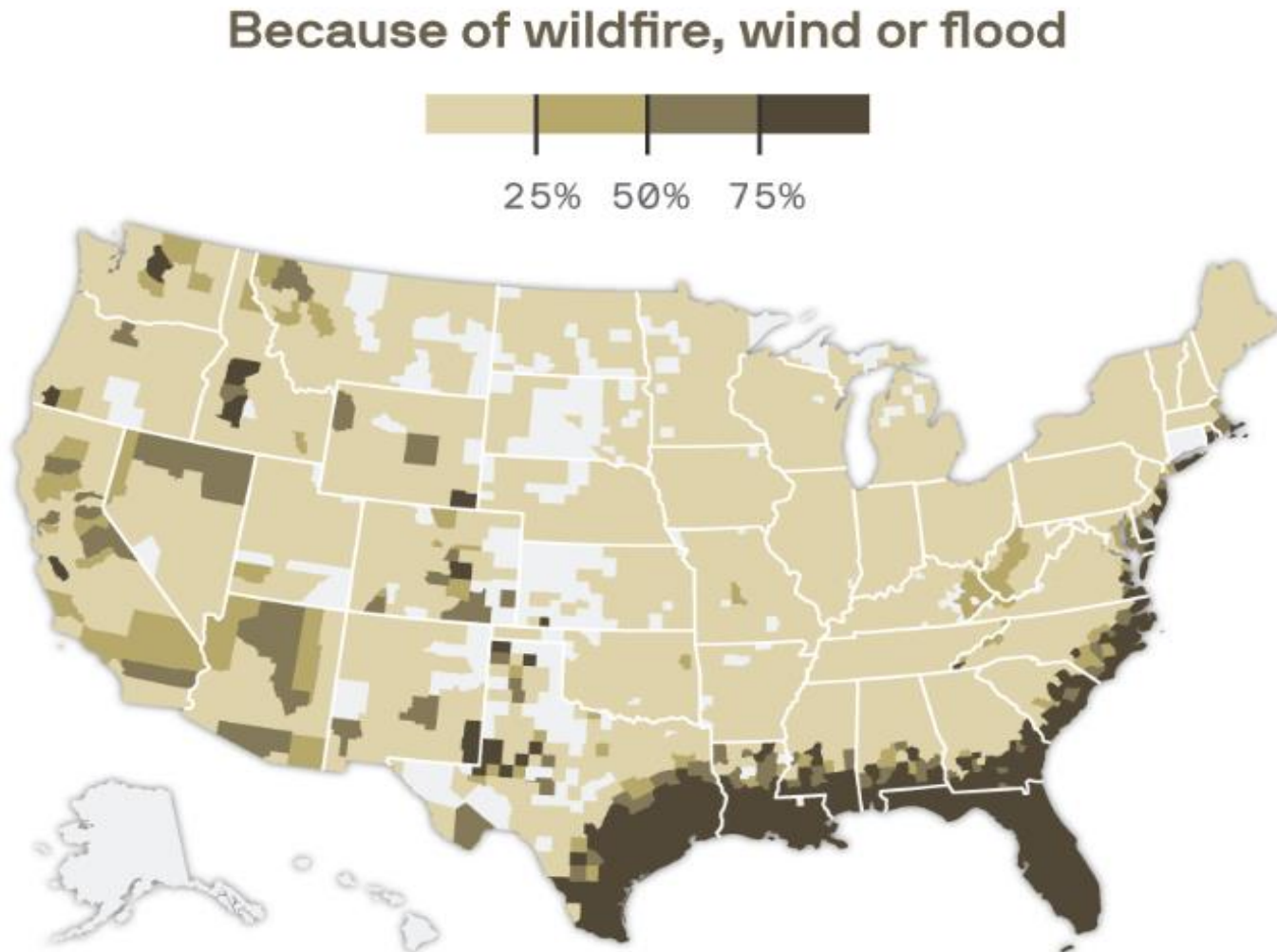
U.S. BILLION-DOLLAR DISASTERS

Annual number of events



Annual number of billion-dollar weather and climate disasters (CPI-adjusted) that impacted the U.S. No disasters in 1987.
Source: Climate Central. Data as of December 31, 2025.

Share of properties at risk of insurance rate increase or non-renewal, 2023



Climate change hits holistically

"The economic value of entire regions—coastal, arid, wildfire-prone—will begin to vanish from financial ledgers. Markets will reprice, rapidly and brutally. This is what a climate-driven market failure looks like."

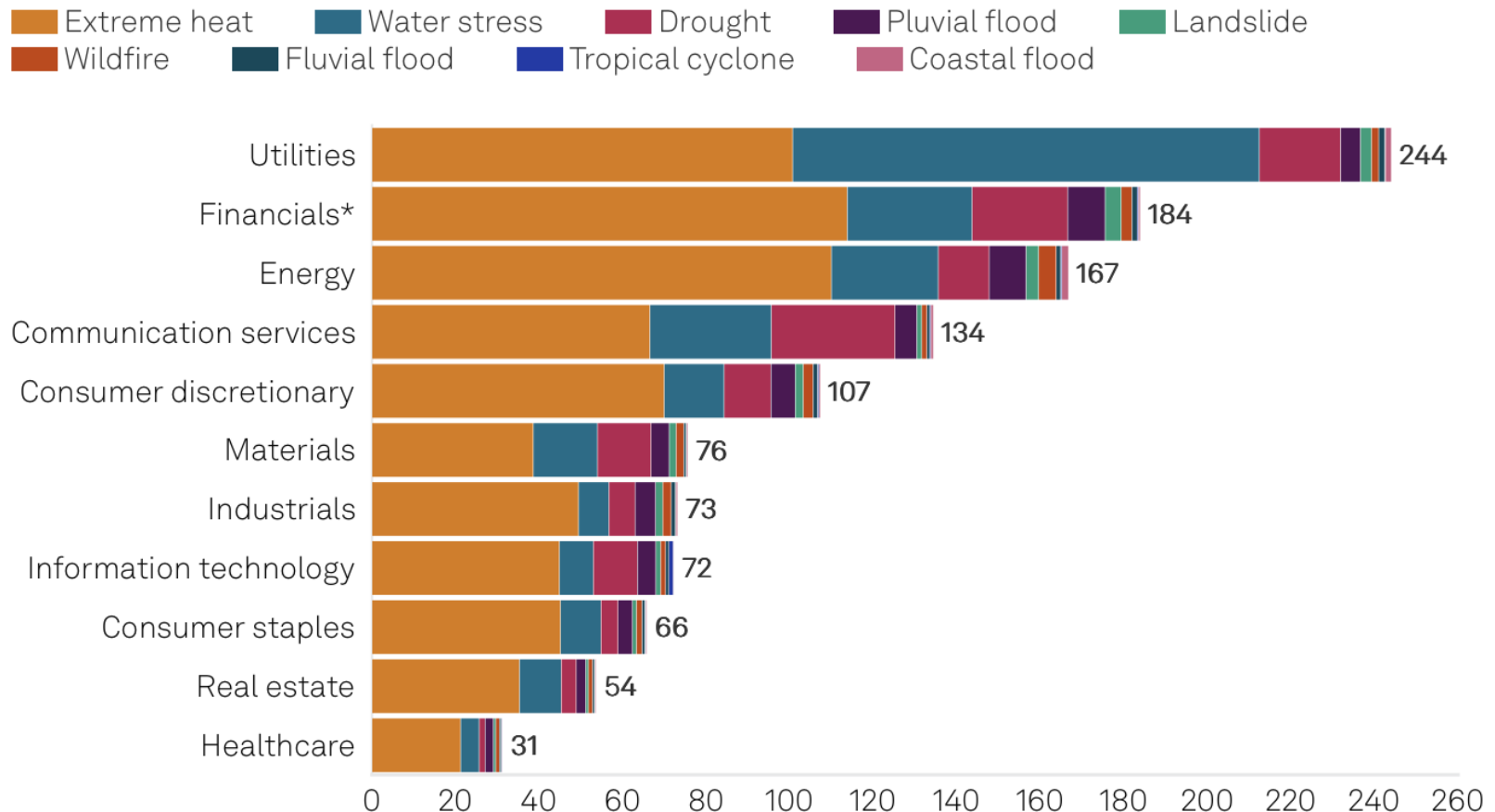
Günther Thallinger
Former Chief Executive
Officer investment
management

Allianz 



Investments at risk: extreme weather projected to have escalating financial impact

Total annual financial impact on S&P Global 1200 companies in the 2050s under the SSP2-4.5 scenario (\$B)

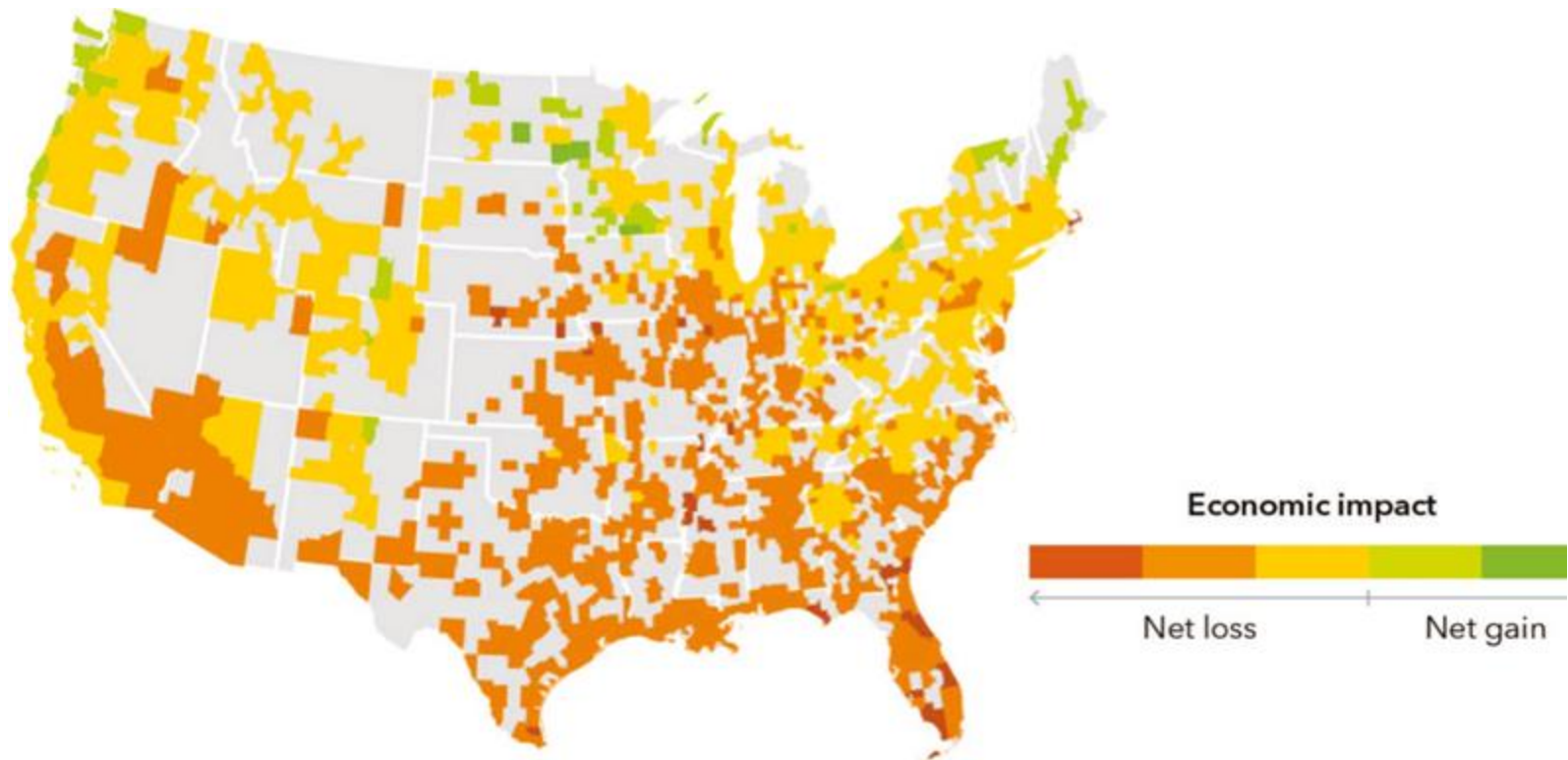


As of Feb. 24, 2025.

SSP = Shared Socioeconomic Pathway.

BlackRock projects significant GDP loss

Estimated climate-related impact 2060-2080

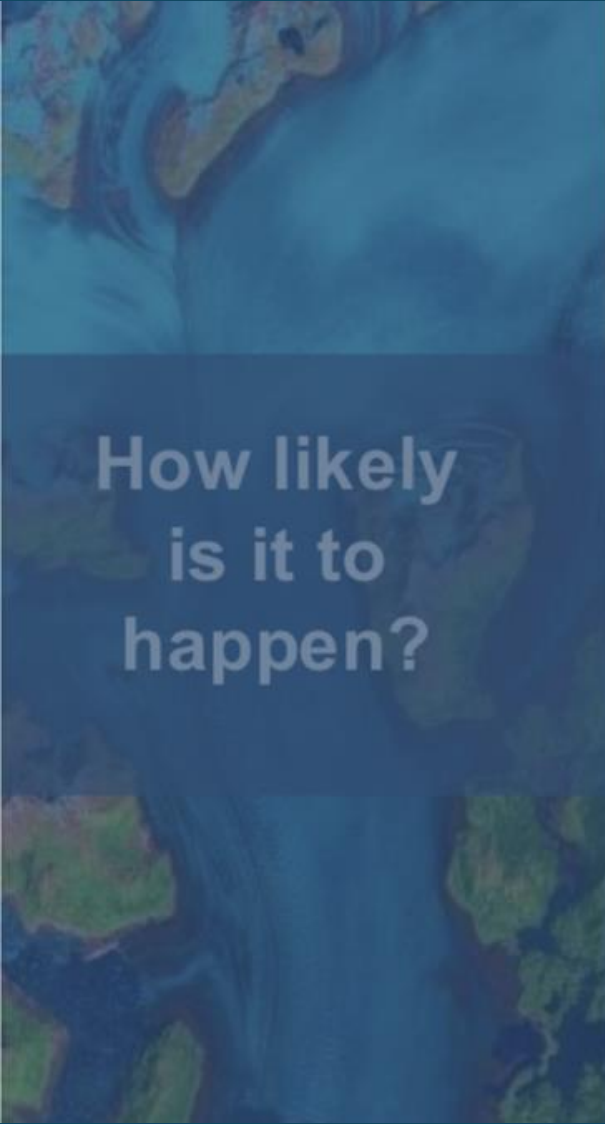


Economic loss ahead

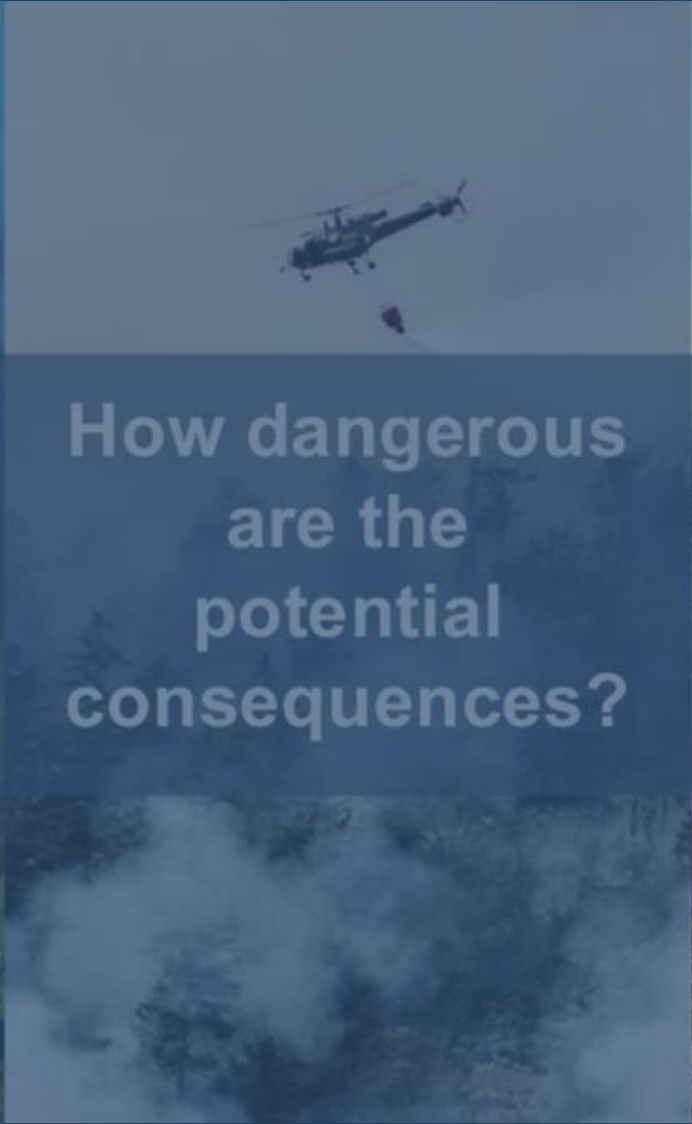
Deloitte.

“In a climate-damaged world of 2070, the US would lose nearly 4% of GDP—or \$1.5 trillion—in that year alone.”

- Reduced labor productivity
- Reduced agricultural productivity
- Infrastructure damage
- Health impairment



How likely
is it to
happen?



How dangerous
are the
potential
consequences?



How difficult or
expensive to
avoid the risk?

It is getting easier and less expensive to act:

The economic equation has changed

Cost of inaction > Cost of action



The world is creating a more affordable, reliable, and safe energy system



- Create ways to make fossil fuels safer
- Innovate - new systems and products
- Build modern grids (more efficient, less dependent on imports, secure)
- Electrify everything we can
- Secure and recycle metals/minerals

Make fossil fuels safer: capture methane



Make fossil fuels safer: capture emissions

First zero-emissions demonstration plant



Make fossil fuel's safer: Direct air capture



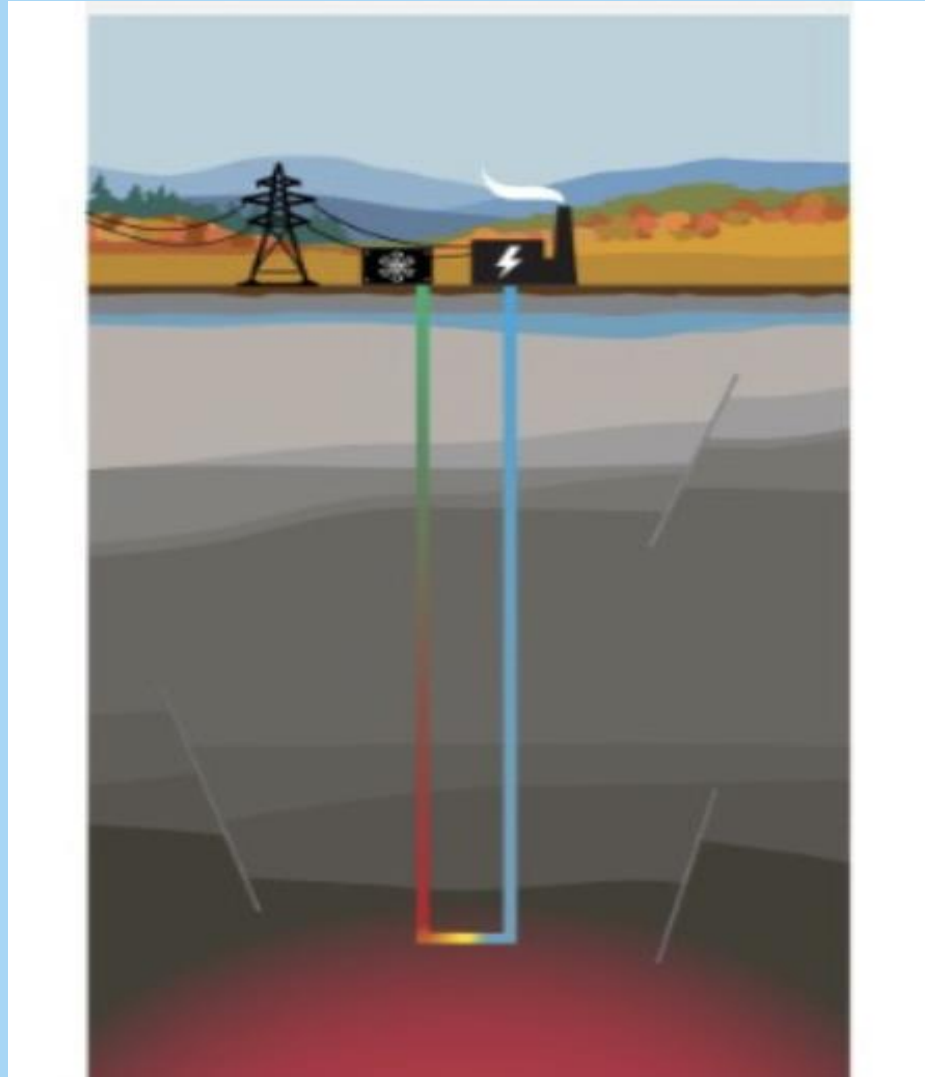
Cleaning up fossil fuels expensive: New products hold promise



New products on the horizon:
safer nuclear – small and big!



New products on the horizon: advanced geothermal



New products on the horizon:

Fusion energy finally in reach

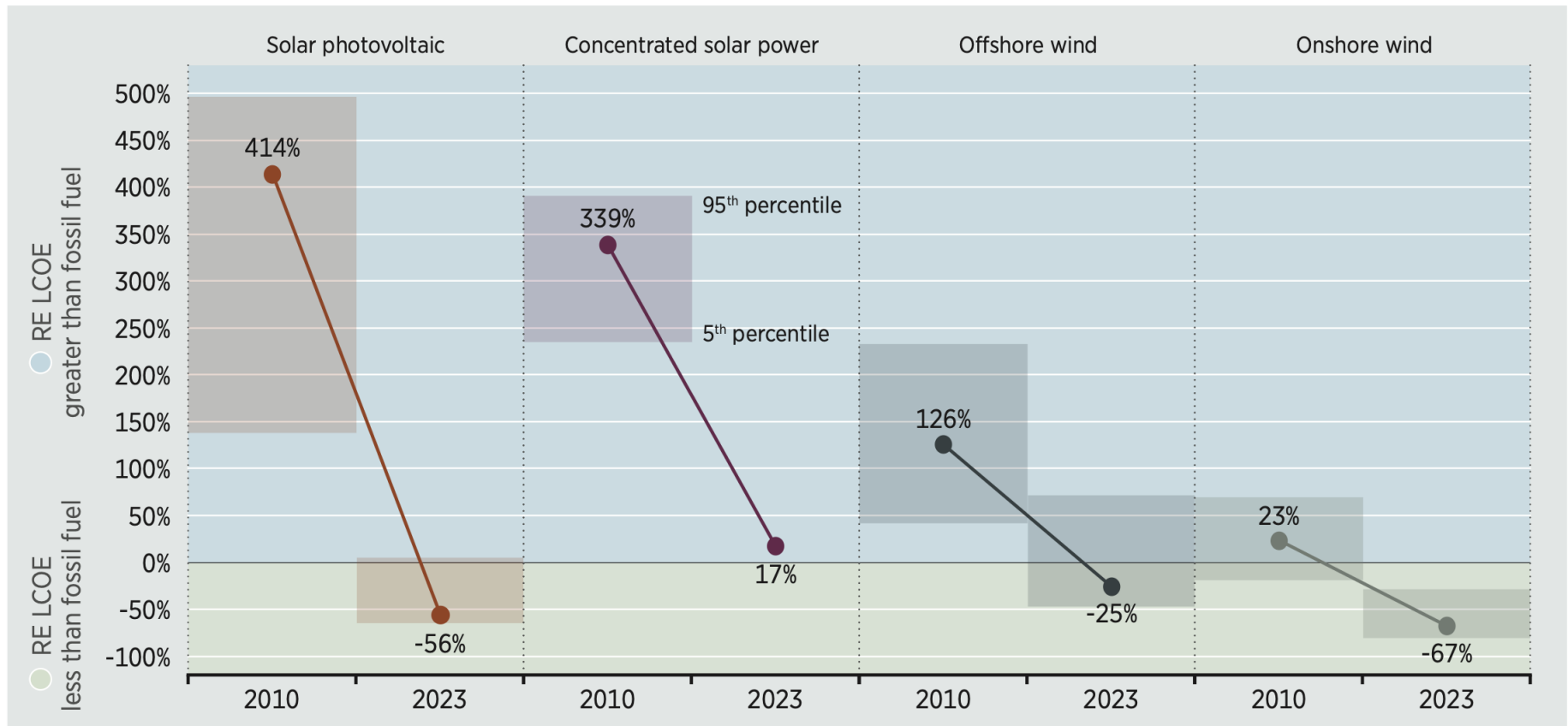


Renewables will continue to grow exponentially



Globally solar and wind cheapest utility energy ever

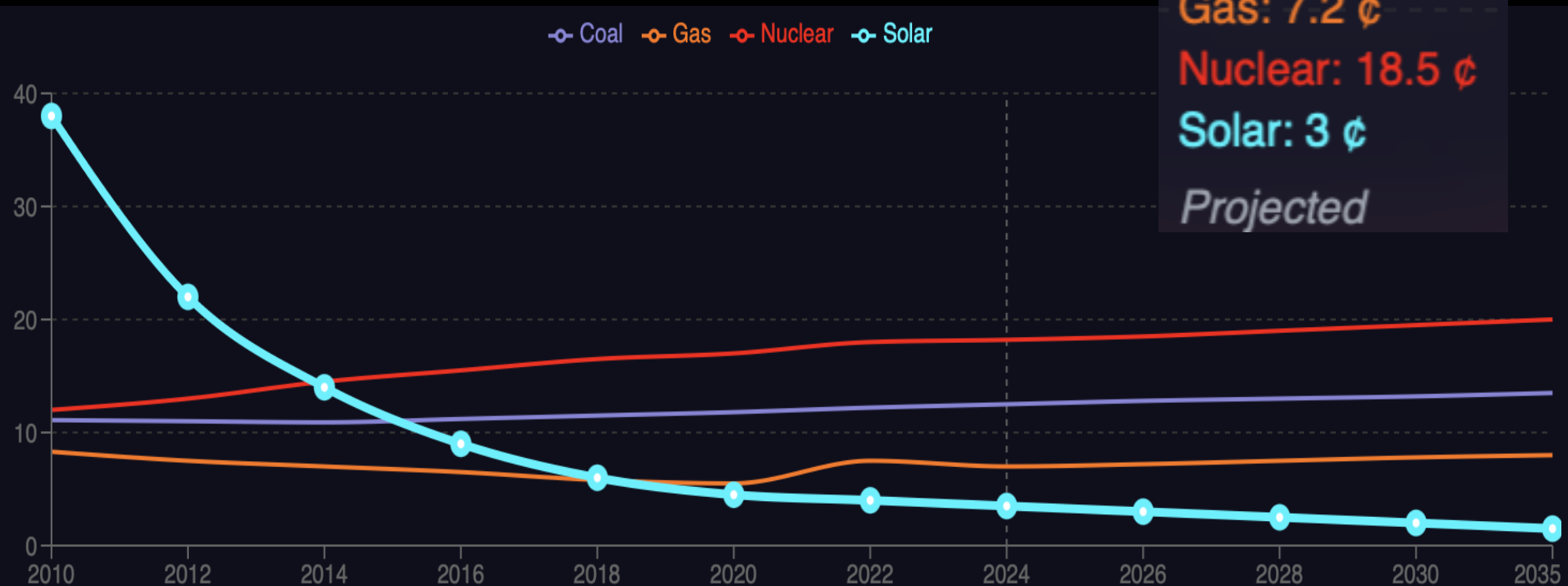
Figure S1 Change in global weighted average LCOE for solar and wind compared to fossil fuels, 2010-2023



Note: RE = renewable energy.

Solar is becoming the cheapest energy in history

The Energy Landscape (Cost per kWh)



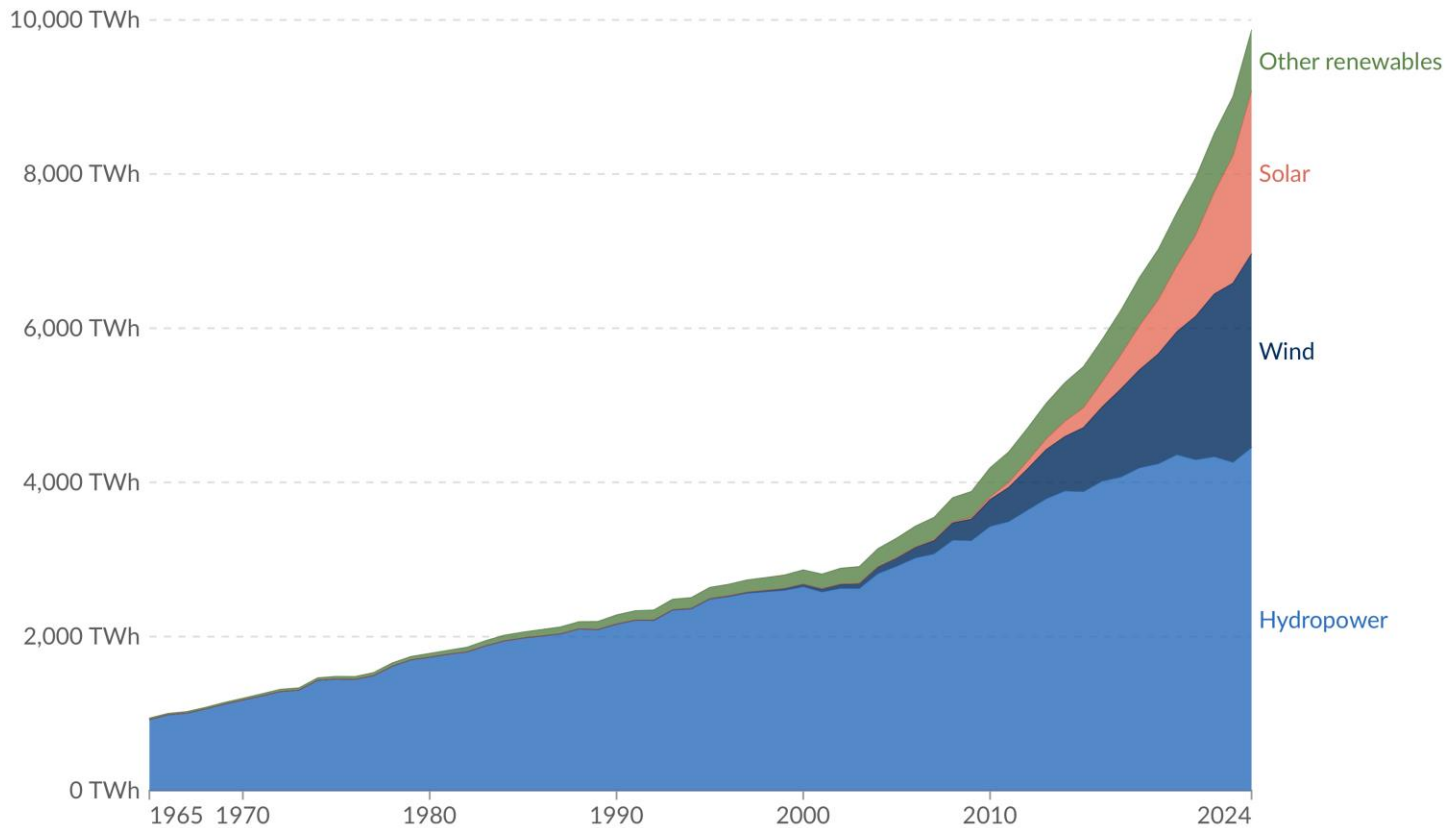
Saudi Arabia on track for 50% power from renewables by 2030



World surpasses 40% clean power as renewables see record rise

Renewable electricity generation, World

Our World
in Data

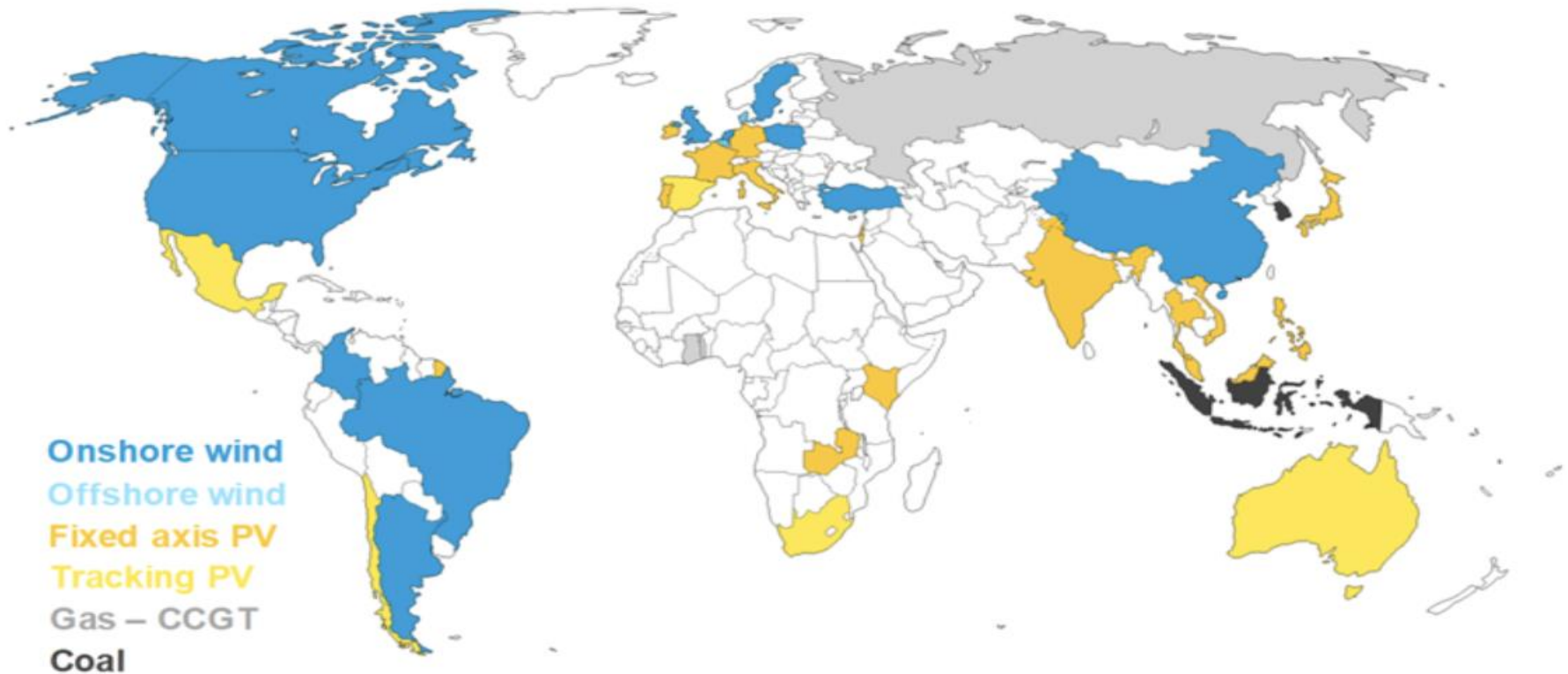


Data source: Energy Institute - Statistical Review of World Energy (2025)

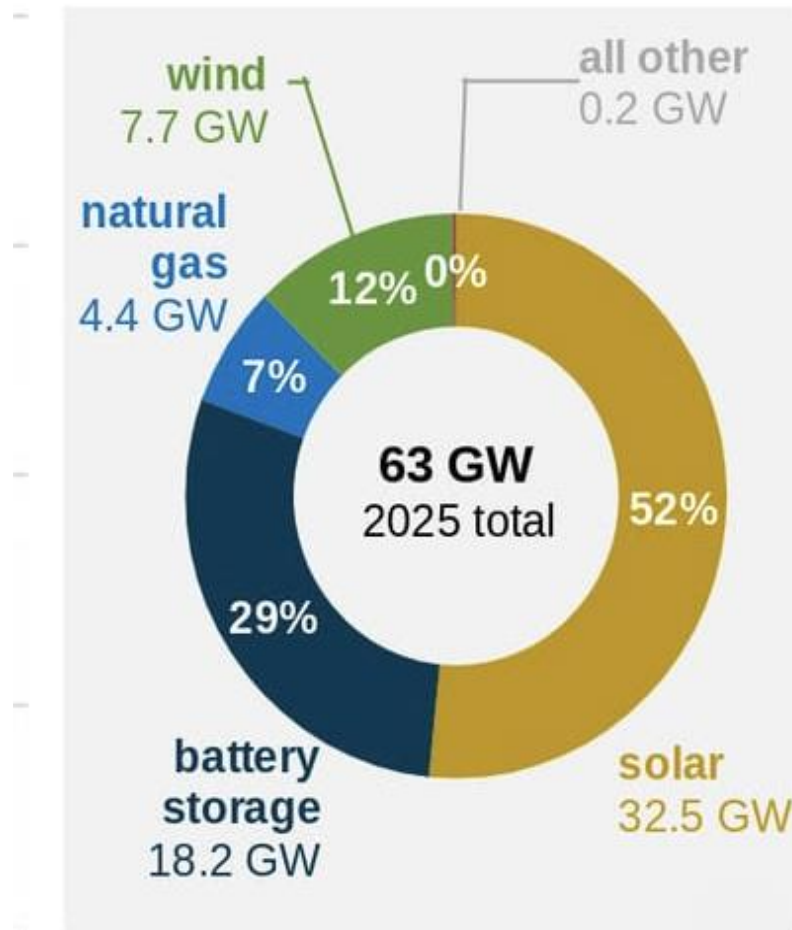
OurWorldinData.org/renewable-energy | CC BY

Note: 'Other renewables' refers to renewable sources including geothermal, biomass, waste, wave and tidal. Traditional biomass is not included.

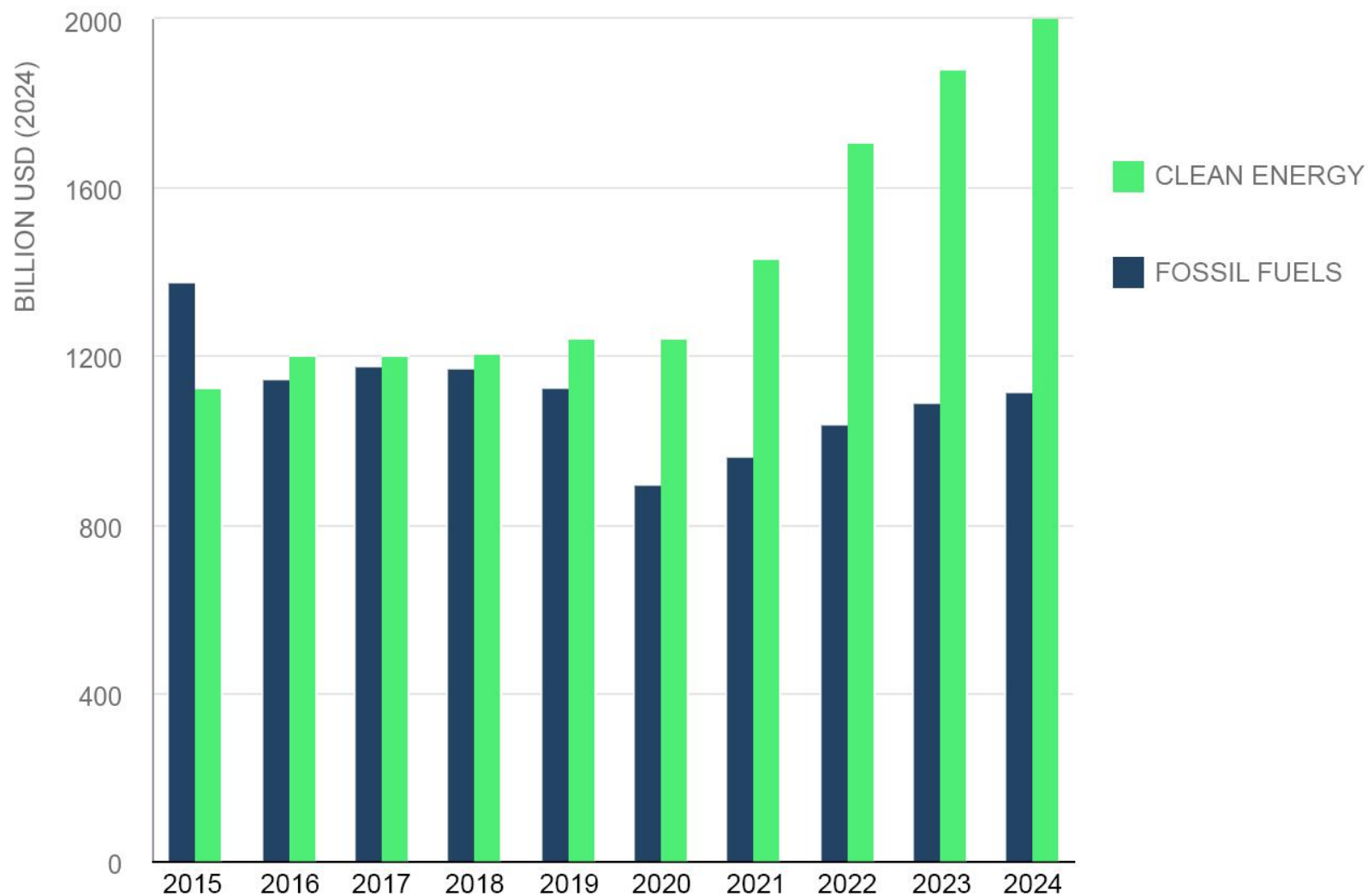
Renewables cheapest new energy in China, the U.S., and India



US: 93% of new utility power online in 2025 is non-fossil

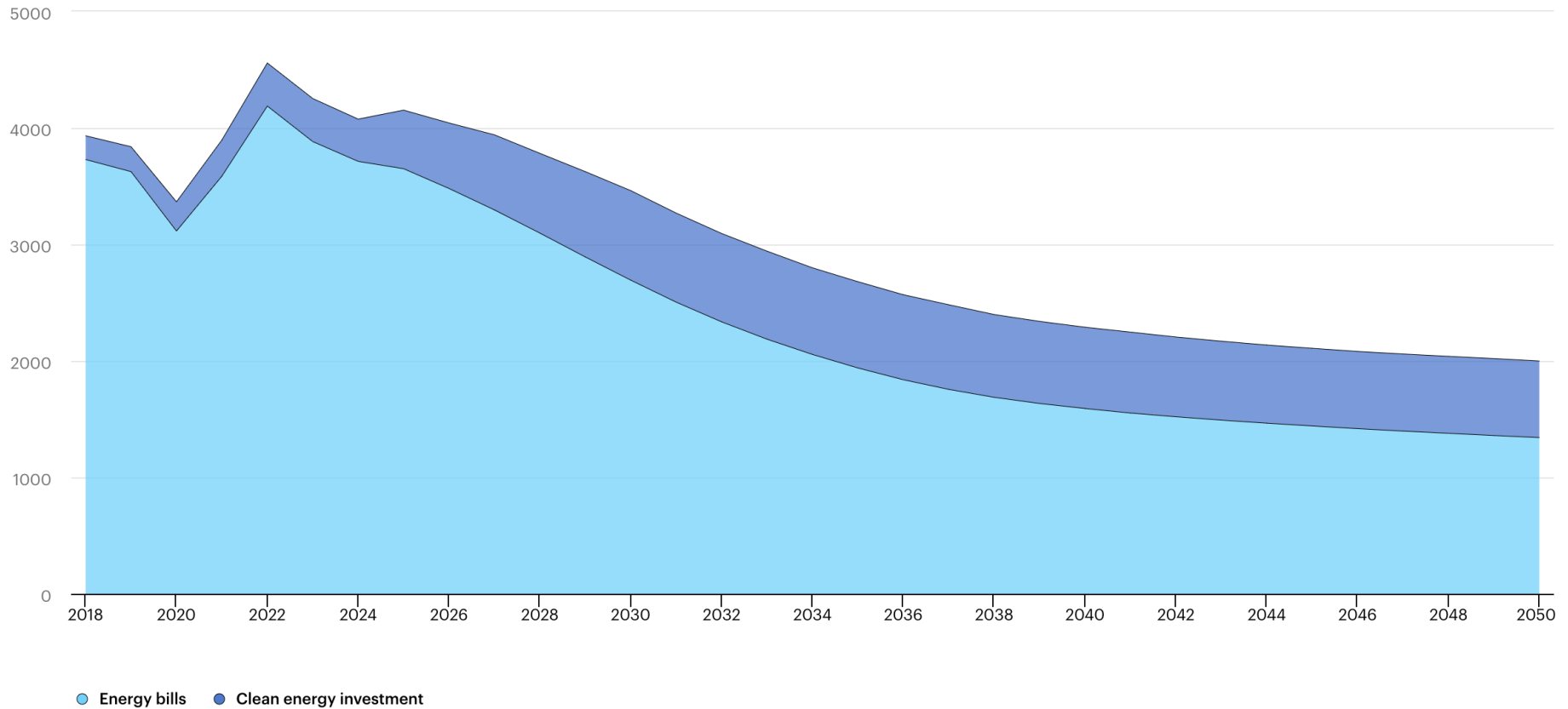


Global investment shifting

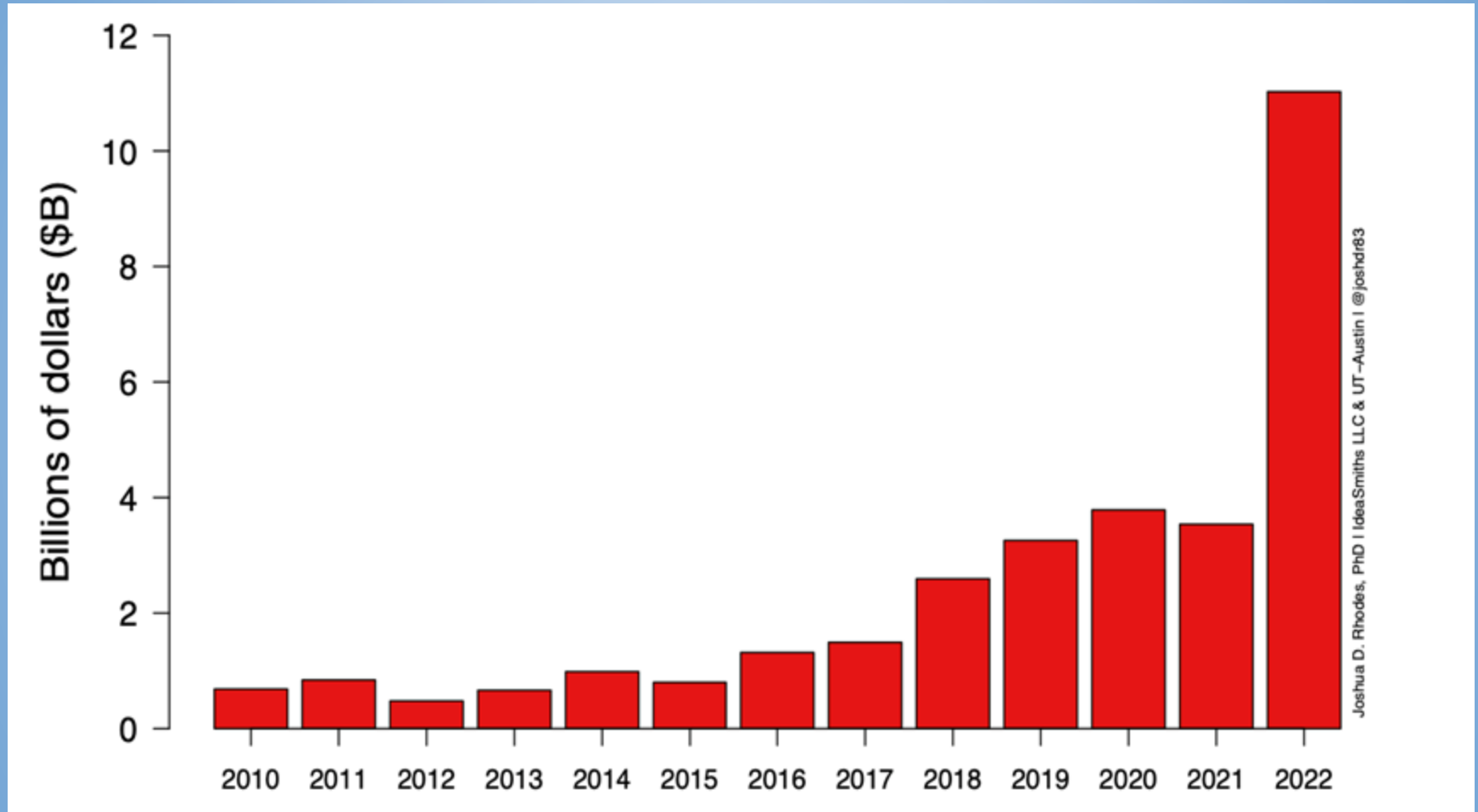


Households will save substantially with quicker transition

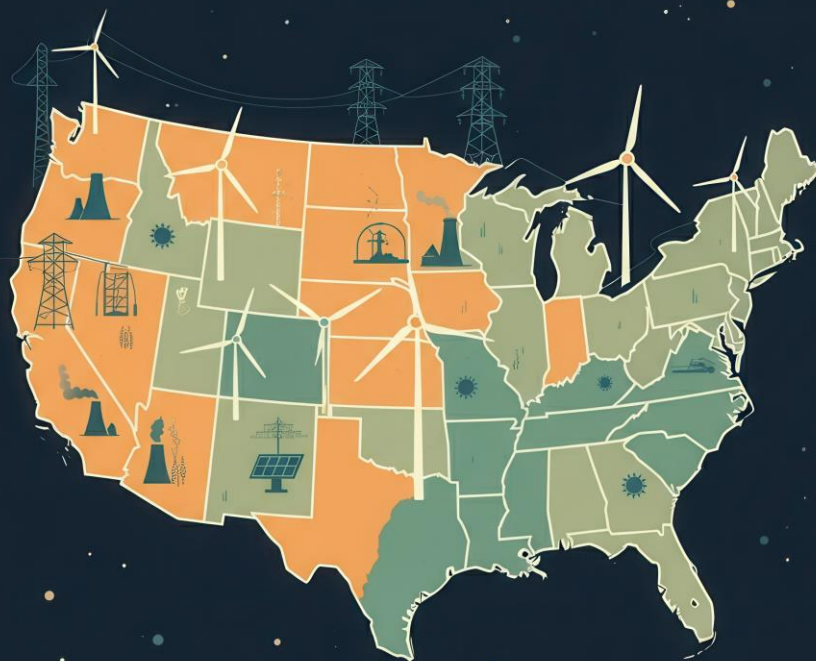
USD (2023, MER)



Texas saved \$11B due to renewables in 2022



Renewables safely powering U.S. state economies in 2024



- Iowa – 66%
- South Dakota – 59%
- Kansas – 52%
- Oklahoma – 41%

Texas: deregulated state is #1
producer of renewables

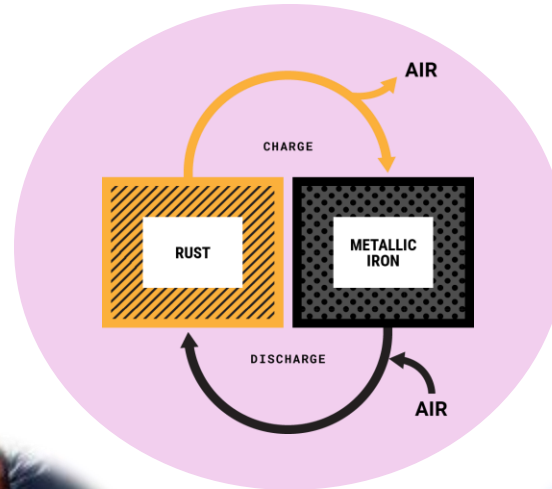


Novel wind and solar technologies

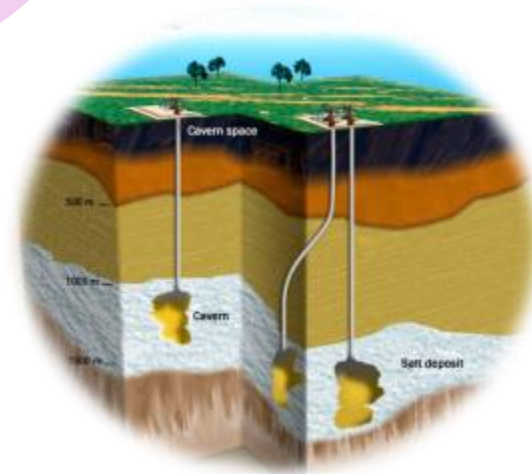


Innovations abound: new types of storage

Iron air
storage



Cavern
energy

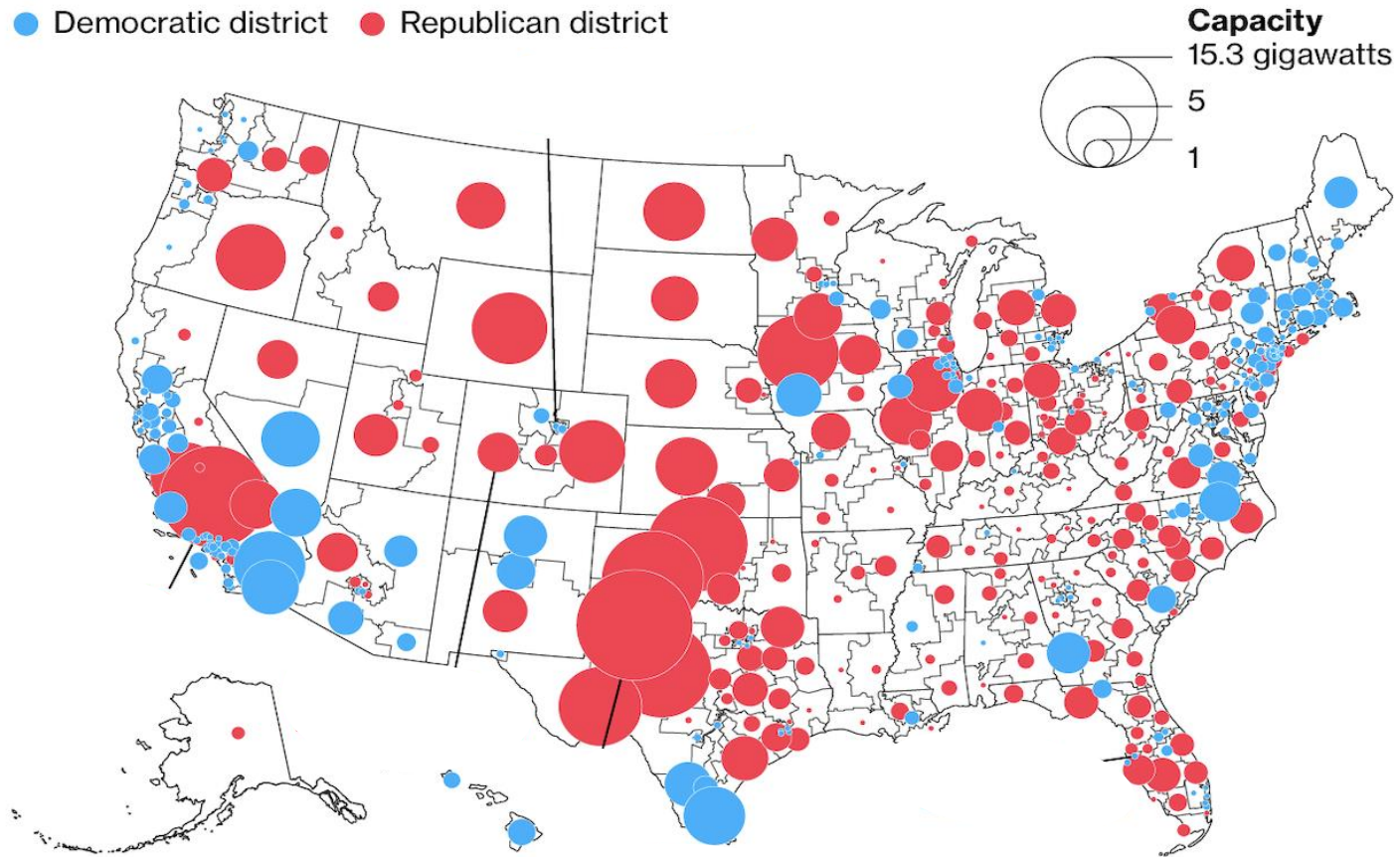


Gravity
energy

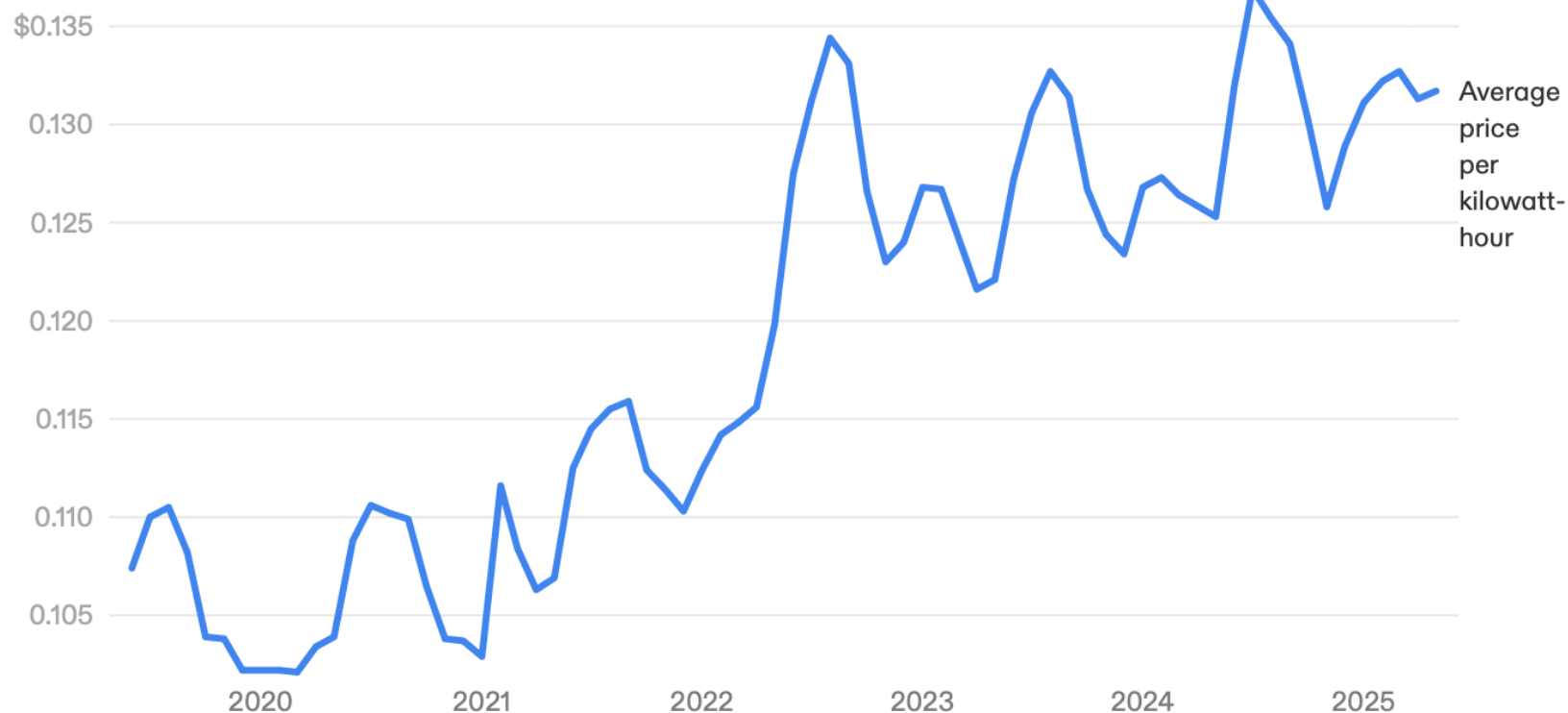


Hot rocks
thermal

A new energy system creating jobs and economic growth



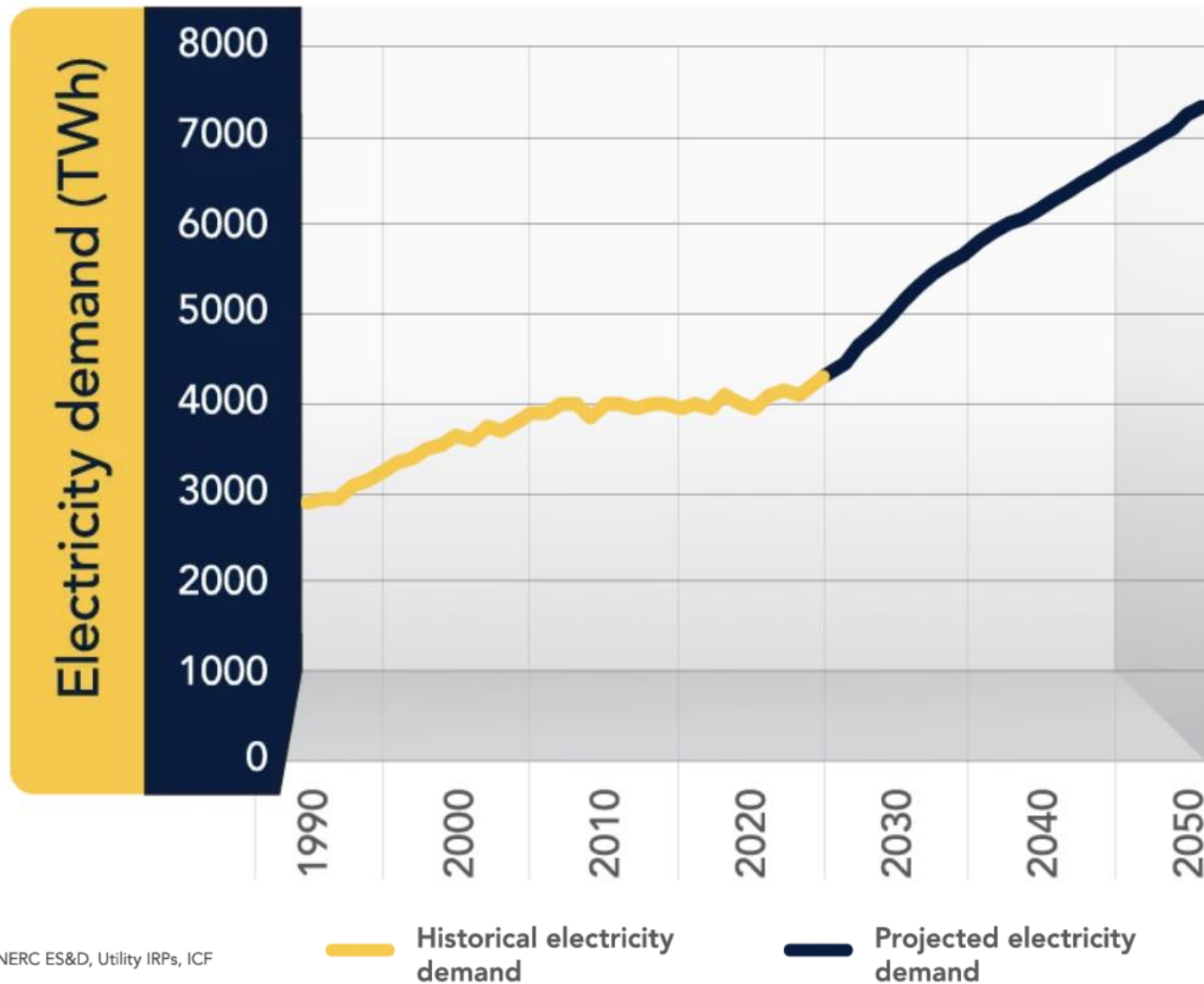
Electricity prices have gone way, way up



May 2019 to May 2025

Source: Energy Information Agency • [Embed](#) • [Download image](#)

Electricity demand increasing rapidly



Our challenge: speed to market and affordability

Rooftop/local microgrids less than 12 months

Wind and solar/batteries less than 12 months

Coal plants 4-6 years

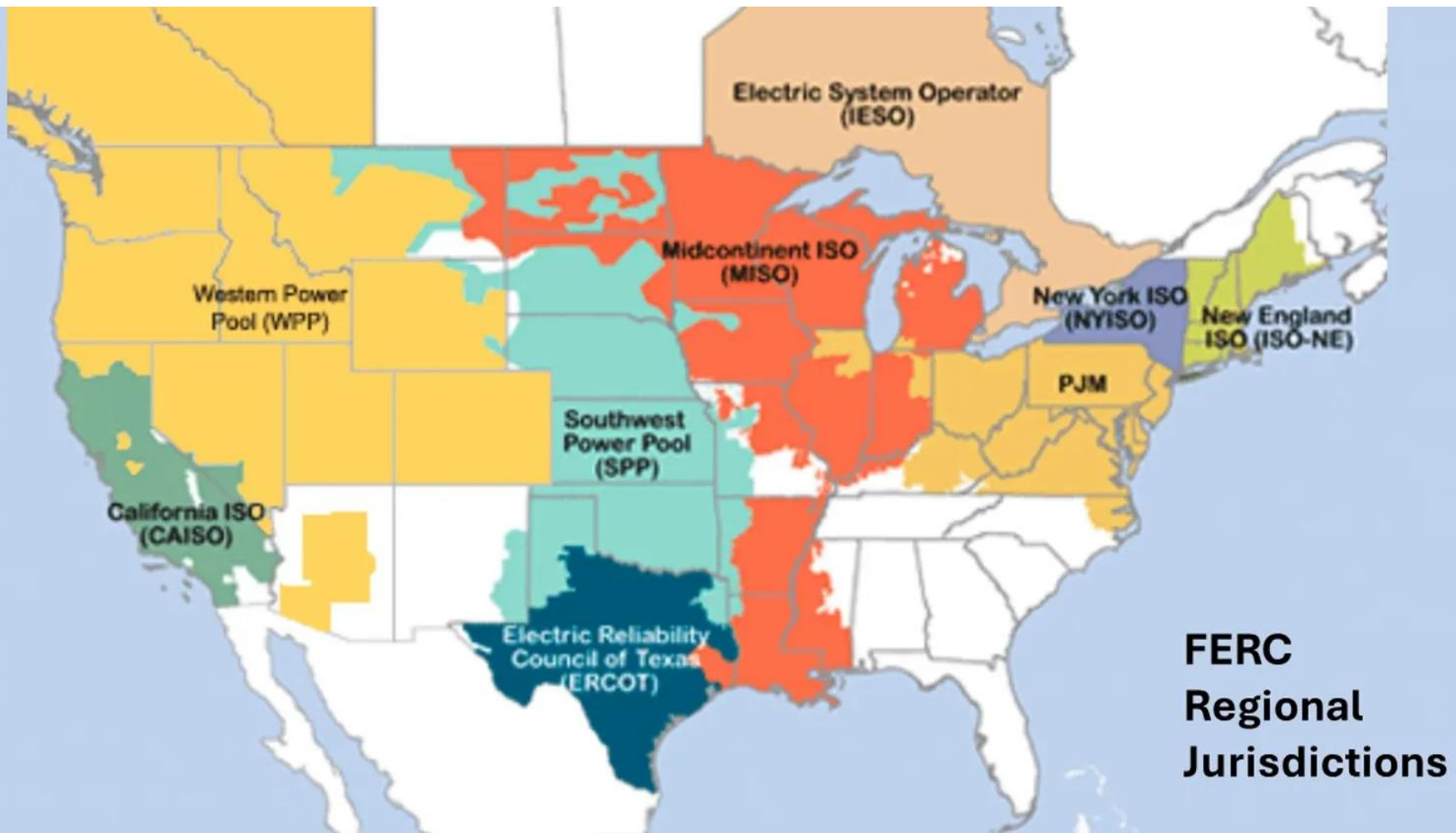
Natural gas 5-7 years

Nuclear 5-10 years

Geothermal 10 years

Fusion 20+years

Our challenge: our grid is antiquated and fragmented



Our challenge: China “dominating” and benefitting most from clean tech



Xi Jinping, President

The People's Republic of China

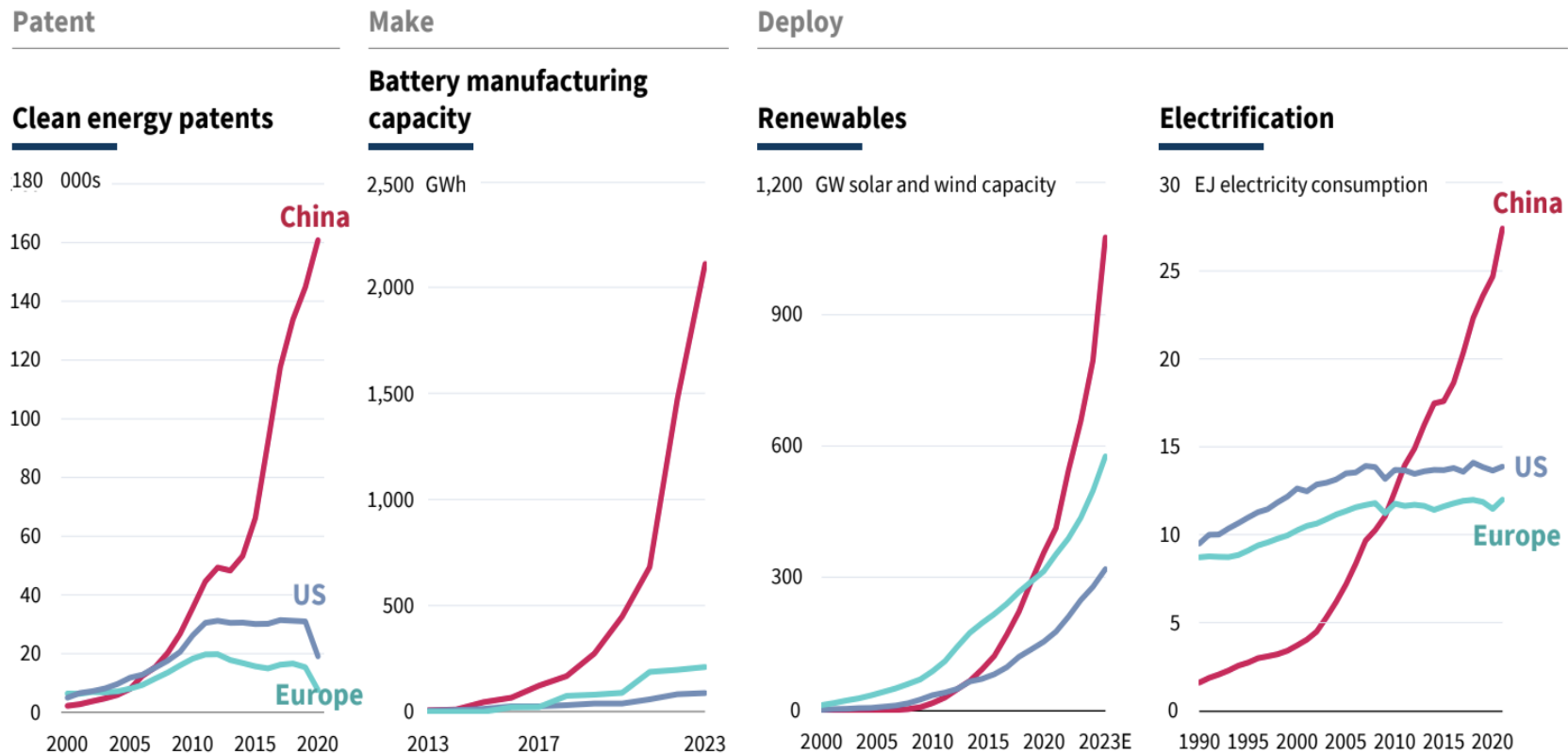
Bloomberg

- Spent more than US, EU, and UK combined in 2024
- Clean tech responsible for 26% of its GDP growth
- The world's first "electrostate" - gaining international power from electricity rather than from fossil fuels

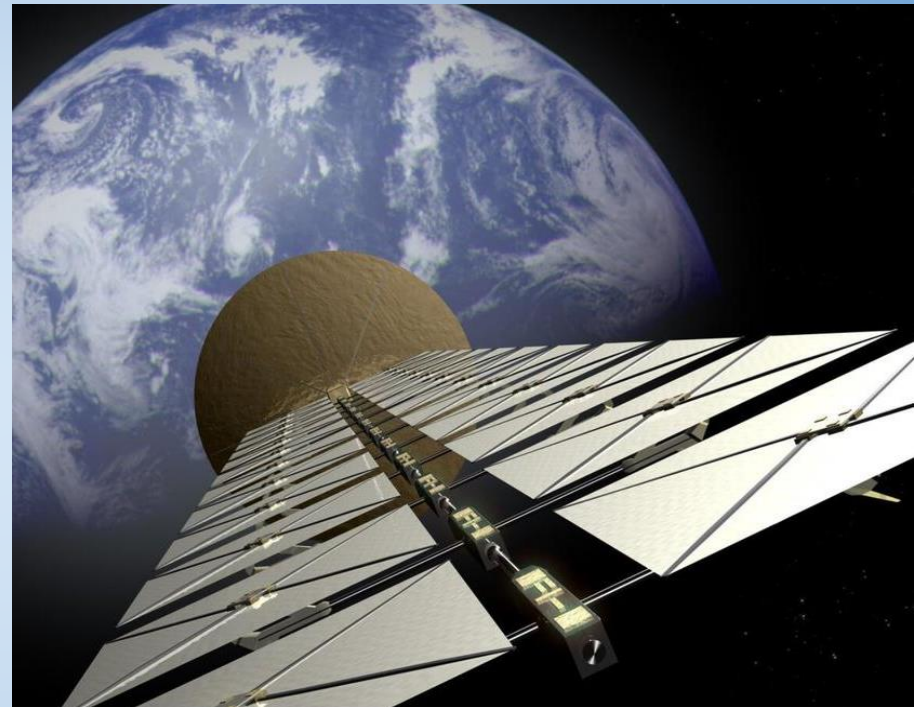
China poised to "own" technologies of the future

The world's largest energy consumer is moving fast

China is leading the way to patent, make, and deploy the energy technologies of the future



Challenging U.S. on innovation in new sectors



EVs soaring as China drives innovation: \$7,800 EV
(250 mile range)



Innovations abound across food, construction, manufacturing, and transportation



Innovation for natural solutions



Protect and increase carbon sinks



Reminder: We've met challenges before -
Montreal Agreement saved our generation

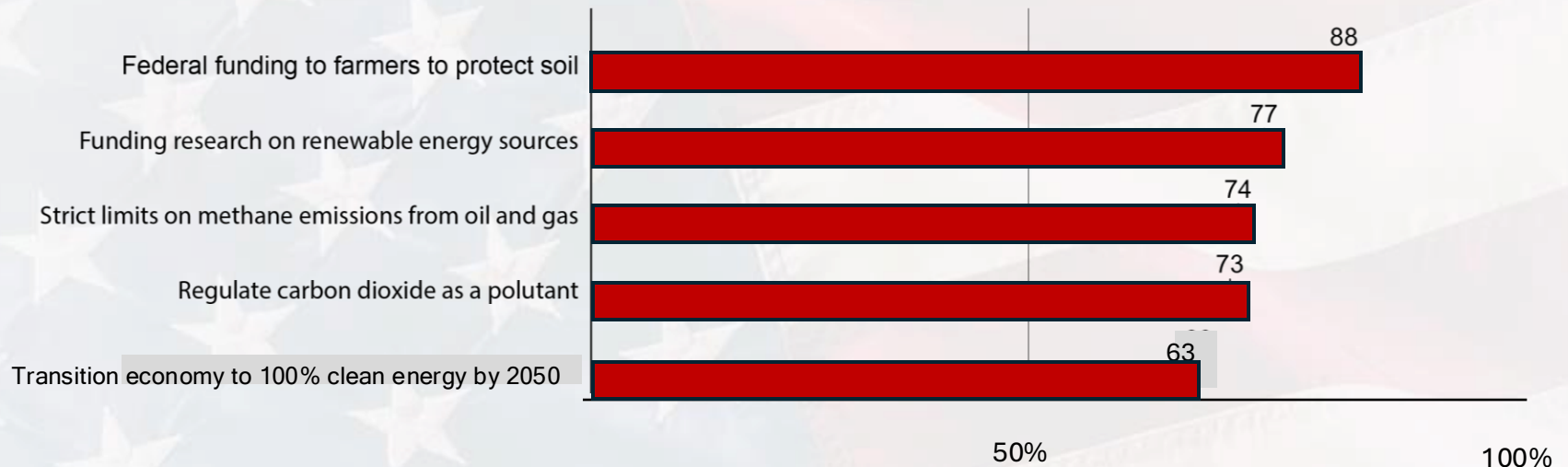
Ozone hole over
Antarctica



Reminder: Americans are more united than we think

Most registered voters support climate-friendly policies - % "strongly" or "somewhat" support -

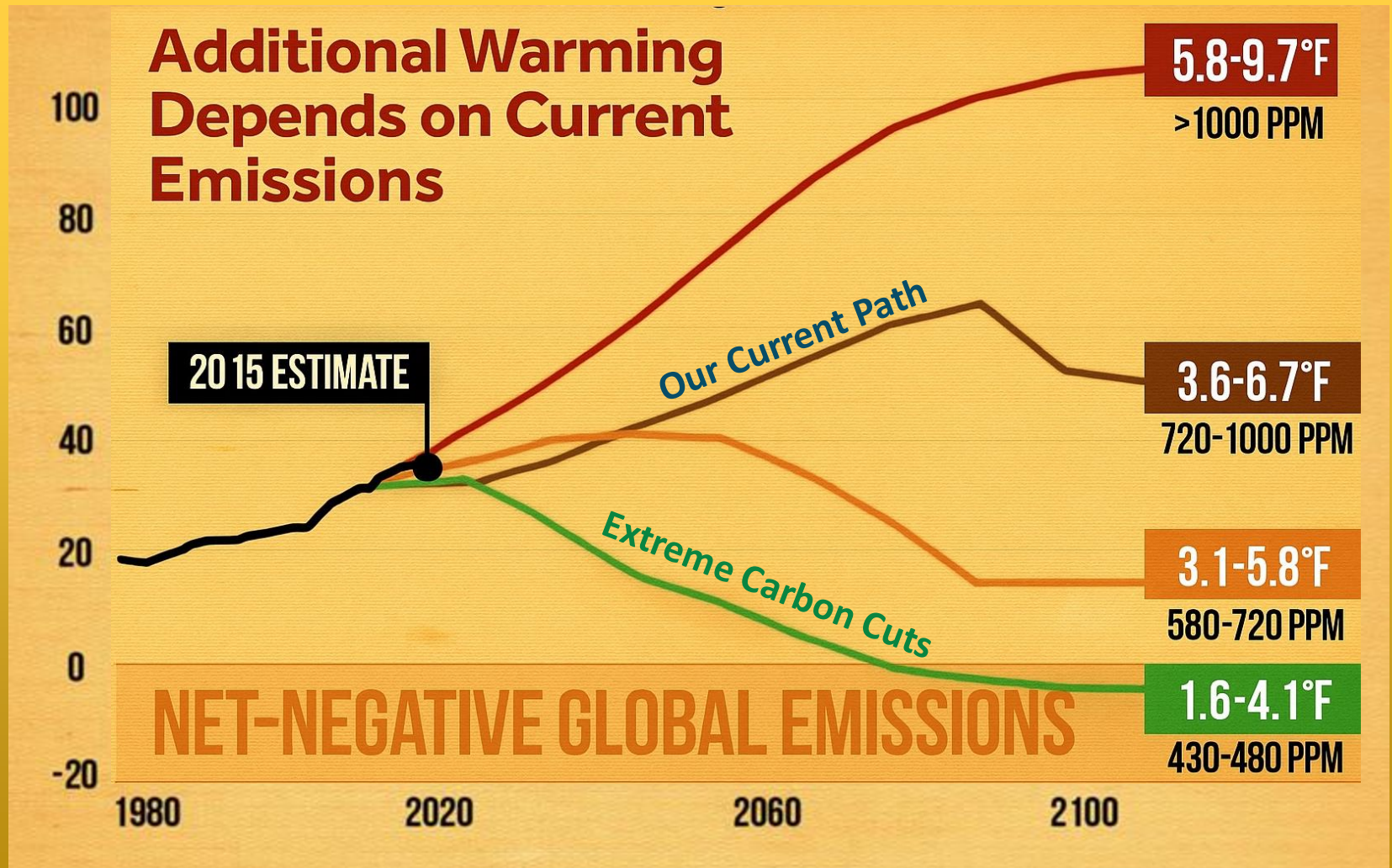
+ All Reg Voters



Reminder: Young conservatives and growing eco-right care deeply



Losing the emissions race



CO₂'s atmospheric lifetime – up to 1000 years



Meet generation Beta: 2025 -



We can invest time and money to prepare for tomorrow

- 1) Talk about it – build the social consensus for action



We can invest time and money to prepare for tomorrow

- 1) Talk about it – build the social consensus for action
- 2) Help C-Change Conversations reach others



We can invest time and money to prepare for tomorrow

- 
- A background image showing several hands of different skin tones working together to assemble white puzzle pieces. The hands are positioned around the center, with some pieces already connected and others being placed. The image is overlaid with a semi-transparent dark grey rounded rectangle containing the text.
- 1) Talk about it – build the social consensus for action
 - 2) Help C-Change Conversations reach others
 - 3) Vote – and tell politicians you care about climate

We can invest time and money to prepare for tomorrow

- 
- A background image showing several hands of different skin tones working together to assemble white puzzle pieces. The hands are positioned around the center, with some pieces already connected and others being placed. The image is overlaid with a semi-transparent dark grey rounded rectangle containing the text.
- 1) Talk about it – build the social consensus for action
 - 2) Help C-Change Conversations reach others
 - 3) Vote – and tell politicians you care about climate
 - 4) Volunteer

We can invest time and money to prepare for tomorrow

- 
- A background image showing several hands of different skin tones working together to assemble white puzzle pieces. The puzzle pieces are interlocking and form a central shape. The hands are positioned around the puzzle, with some fingers pointing towards the center. The background is a soft, out-of-focus blue and white.
- 1) Talk about it – build the social consensus for action
 - 2) Help C-Change Conversations reach others
 - 3) Vote – and tell politicians you care about climate
 - 4) Volunteer
 - 5) Support broader climate education at your schools

We can invest time and money to prepare for tomorrow

- 
- A background image showing several hands of different skin tones working together to assemble white puzzle pieces. The puzzle pieces are interlocking, symbolizing teamwork and collective effort. The image is slightly blurred and has a dark, semi-transparent overlay where the text is placed.
- 1) Talk about it – build the social consensus for action
 - 2) Help C-Change Conversations reach others
 - 3) Vote – and tell politicians you care about climate
 - 4) Volunteer
 - 5) Support broader climate education at your schools
 - 6) Take personal action (and then talk about it)



What will we do?





Thank you for attending

Sign up for our newsletter and read our blog:

c-changeconversations.org

C-CHANGE SURVEY
DATE: _____

Did this presentation increase your level of understanding of climate change?

☐ Yes
☐ Mostly
☐ Somewhat
☐ No

Did you find it to be non-partisan?

☐ Yes
☐ Mostly
☐ Somewhat
☐ No

Did you find it to be persuasive?

☐ Yes
☐ Mostly
☐ Somewhat
☐ No

Providing non-partisan, science-based education on the national and global risks of changing climate.

YOU CAN BE PART OF THE SOLUTION
Book a future presentation at www.c-changeconversations.org

“Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has.”
— Margaret Mead
Cultural Anthropologist
1901 - 1978

Would you recommend this presentation to a friend, club, business, or association?

☐ Yes
☐ Probably
☐ I'm not sure
☐ No

After hearing the presentation, to what degree do you feel climate change is a risk to your health, economy, and geopolitical stability?

☐ No risk
☐ Low risk
☐ Moderate risk
☐ High risk

Any additional comments?

To receive more information about the climate and future C-Change events, please provide your name and email. Thank you for attending today!

NAME _____

EMAIL _____



Questions?

Peter Girard

Advisor and Presenter

peter.girard@c-changeconversations.org