The Climate Policy Pendulum

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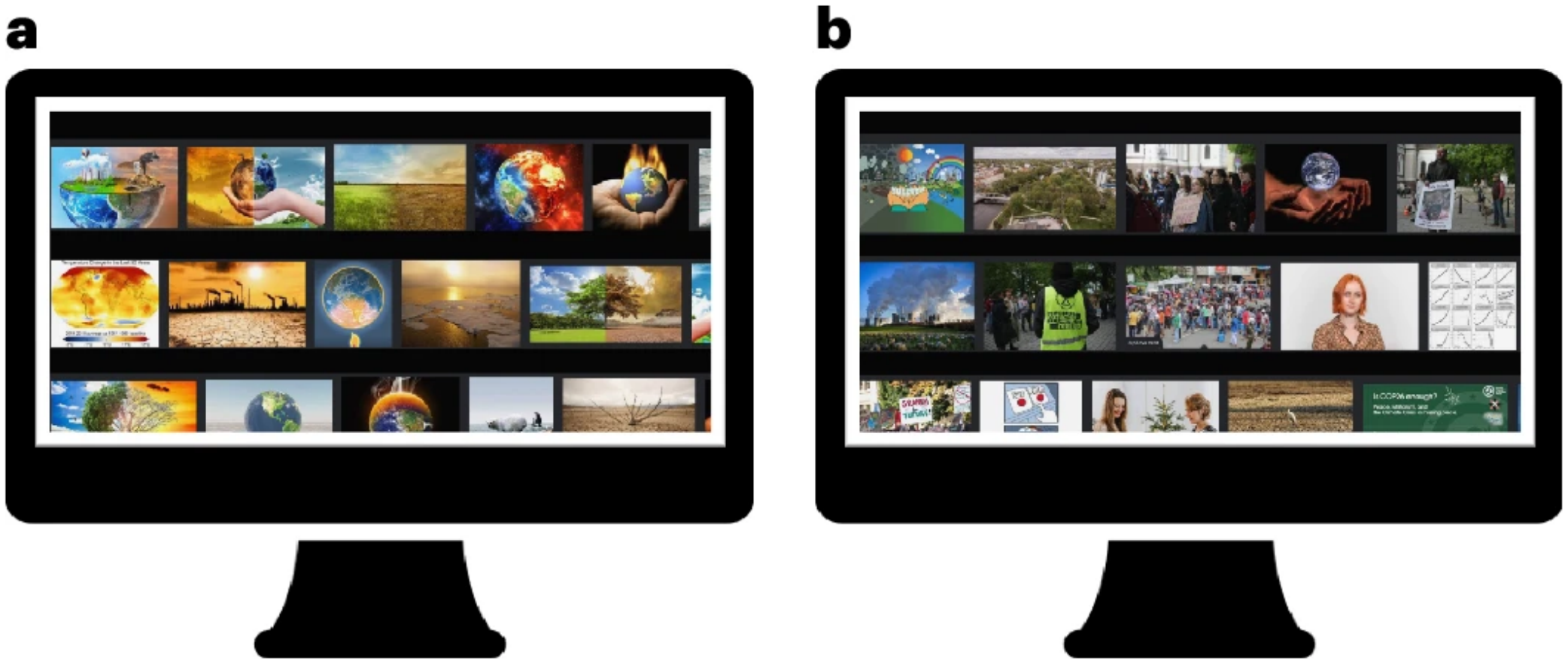
Columbia Business School
AT THE VERY CENTER OF BUSINESS

Please Take Out Your Phone

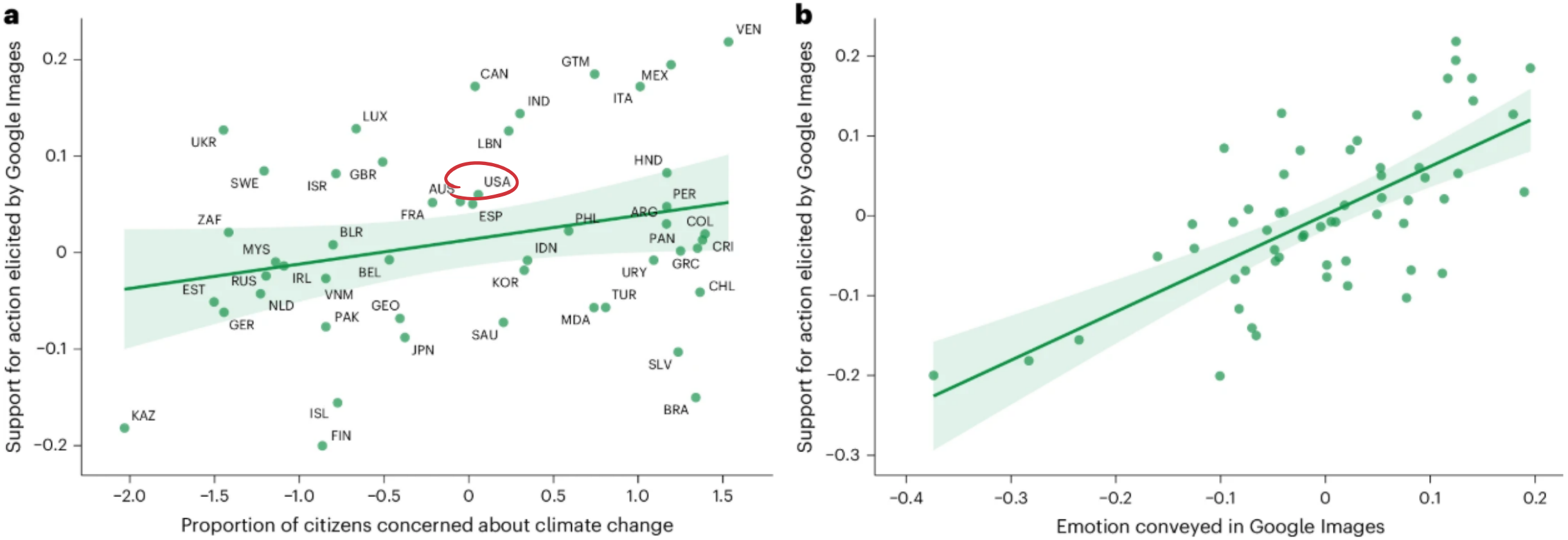
Search for “climate change” images

Source: Michael Berkebile-Weinberg *et al*. (*Nature Climate Change*, 2025)



a, Climate change internet search outputs (from Google Image Search) from a nation high in pre-existing climate concern. **b**, Climate change internet search outputs (from Google Image Search) from a nation low in pre-existing climate concern. Total number of images presented was equal across conditions. Credits for all of the images are listed in Supplementary Table 4.

Source: Michael Berkebile-Weinberg *et al*. (*Nature Climate Change*, 2025)



a, Subjective pre-existing climate change concern per nation (operationalized as percentage of people concerned about climate change) predicting support for collective climate action elicited by climate change internet search outputs (Google Image Search results). See Supplementary Table 3 for a list of country codes. **b**, Support for collective climate action elicited by climate change internet search outputs as a function of emotionality elicited by the same images. The lines represent the best-fit regressions; the error bands represent the 95% confidence intervals around the mean (49 nations total; rated by a sample of 383 participants; all variables standardized).

Source: Michael Berkebile-Weinberg *et al*. (*Nature Climate Change*, 2025)

nature climate change

Article

https://doi.org/10.1038/s41558-024-02178-w

Internet image search outputs propagate climate change sentiment and impact policy support

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Check for updates

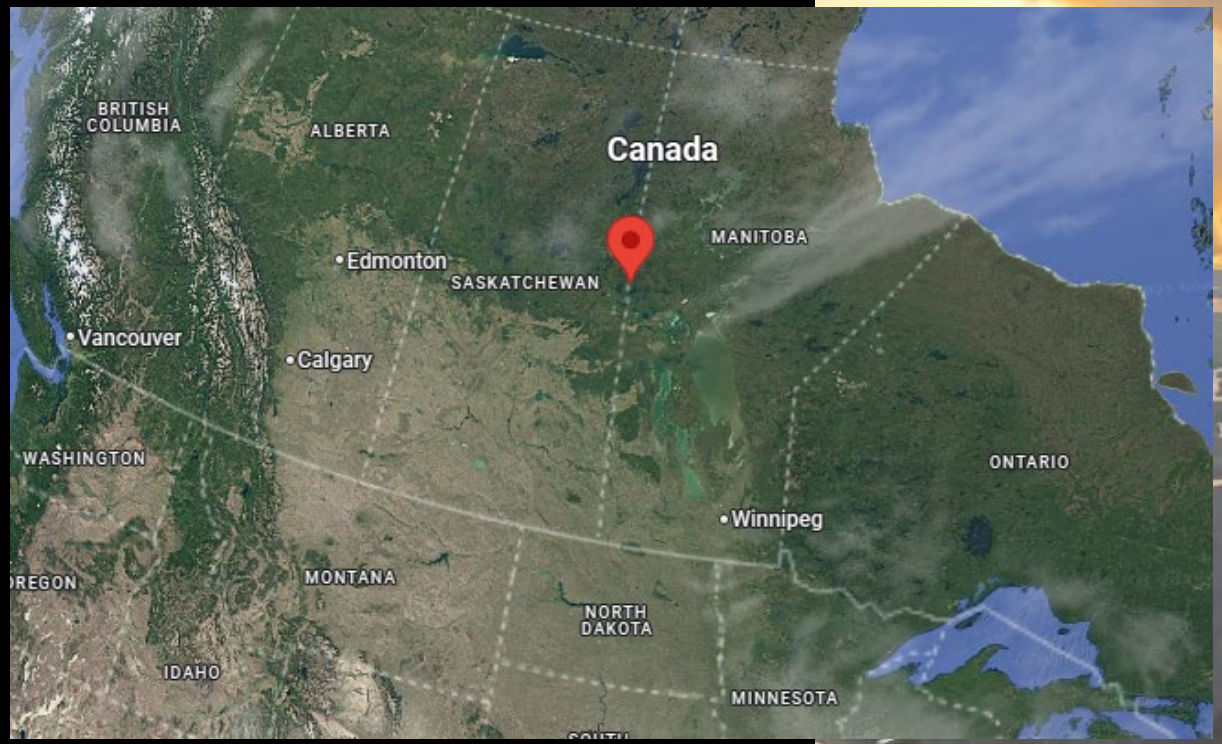
Michael Berkebile-Weinberg[1,2], Runji Gao[2], Rachel Tang[2] & Madalina Vlasceanu[2,3]

A critical step in tackling climate change involves structural, system-level changes facilitating action. Despite their ubiquity, little is known about how internet search algorithms portray climate change, and how these portrayals impact concern and action. In a sample of 49 countries, we found that nationwide climate concern, but not nation-level climate impact, predicted the emotional arousal caused by climate change Google Image Search outputs, as rated by a naive sample (n = 383). In a follow-up experiment we randomly assigned another sample (n = 899) to receive the climate change image outputs resulting from searches conducted in countries high or low in pre-existing climate concern, and found that participants exposed to images from countries with high pre-existing concern (compared to low) became more concerned about climate change, supportive of climate policy and likely to act pro-environmentally, suggesting a cycle of climate sentiment propagation systemically facilitated by internet search algorithms. We discuss the implications of these findings for climate action interventions.

Michael Berkebile-Weinberg *et al.* (*Nature Climate Change*, 2025)

Blatten, Switzerland, 28 May 2025

Flin Flon, Manitoba (*NPR*, 30 May 2025)



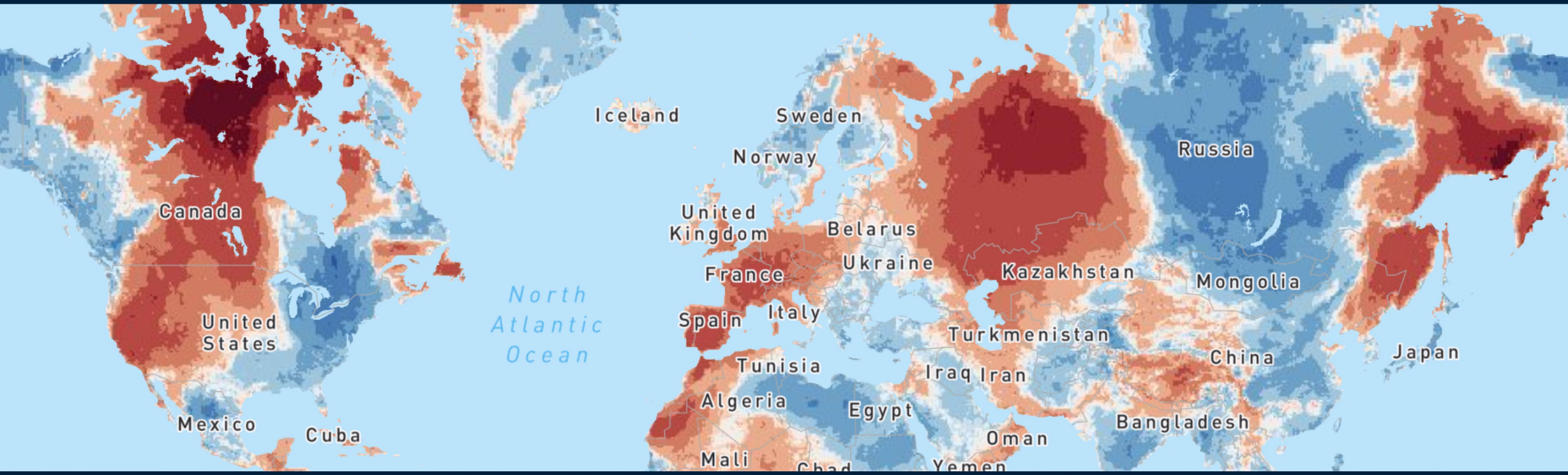
Flin Flon, Manitoba (*NPR*, 30 May 2025)

Difference from Normal

May 31, 2025

Temperature anomalies (°C)

-14 -10 -6 -3 -1 -0.5 0 0.5 1 3 6 10 14



Anomalies for average temperatures.
Based on NOAA GFS forecasts through 2025-05-30T18Z.
Anomalies are from 1991-2020 normal.

CLIMATE CENTRAL

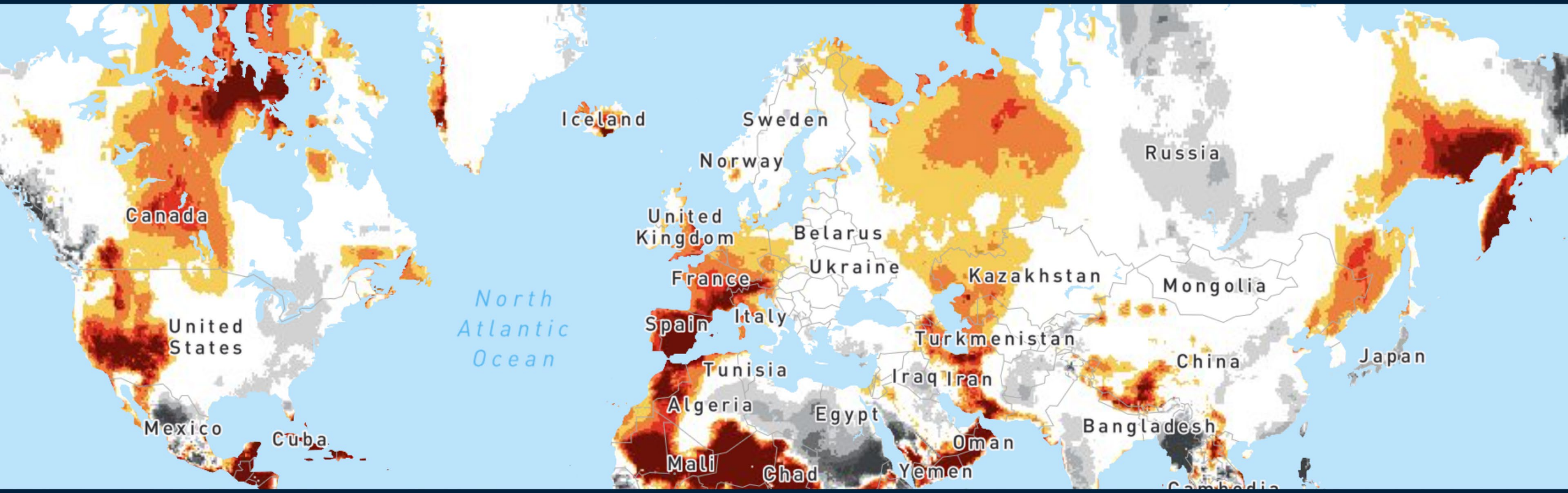
Source: climatecentral.org/climate-shift-index

Climate Shift Index

May 31, 2025

Change in likelihood due to climate change

-5 -4 -3 -2 -1 0 1 2 3 4 5 Uncertain



Climate Shift Index for average temperatures.
Based on NOAA GFS forecasts through 2025-05-30T18Z.

CLIMATE CENTRAL

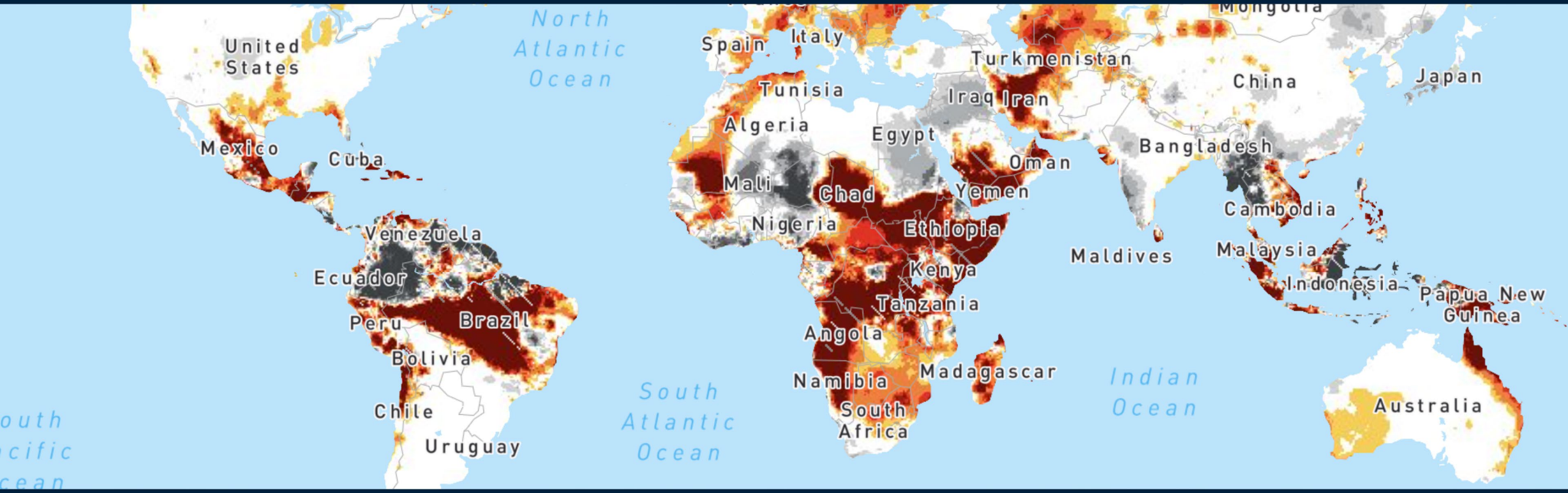
Source: climatecentral.org/climate-shift-index

Climate Shift Index

Jun 3, 2025

Change in likelihood due to climate change

-5 -4 -3 -2 -1 0 1 2 3 4 5 Uncertain



Climate Shift Index for average temperatures.
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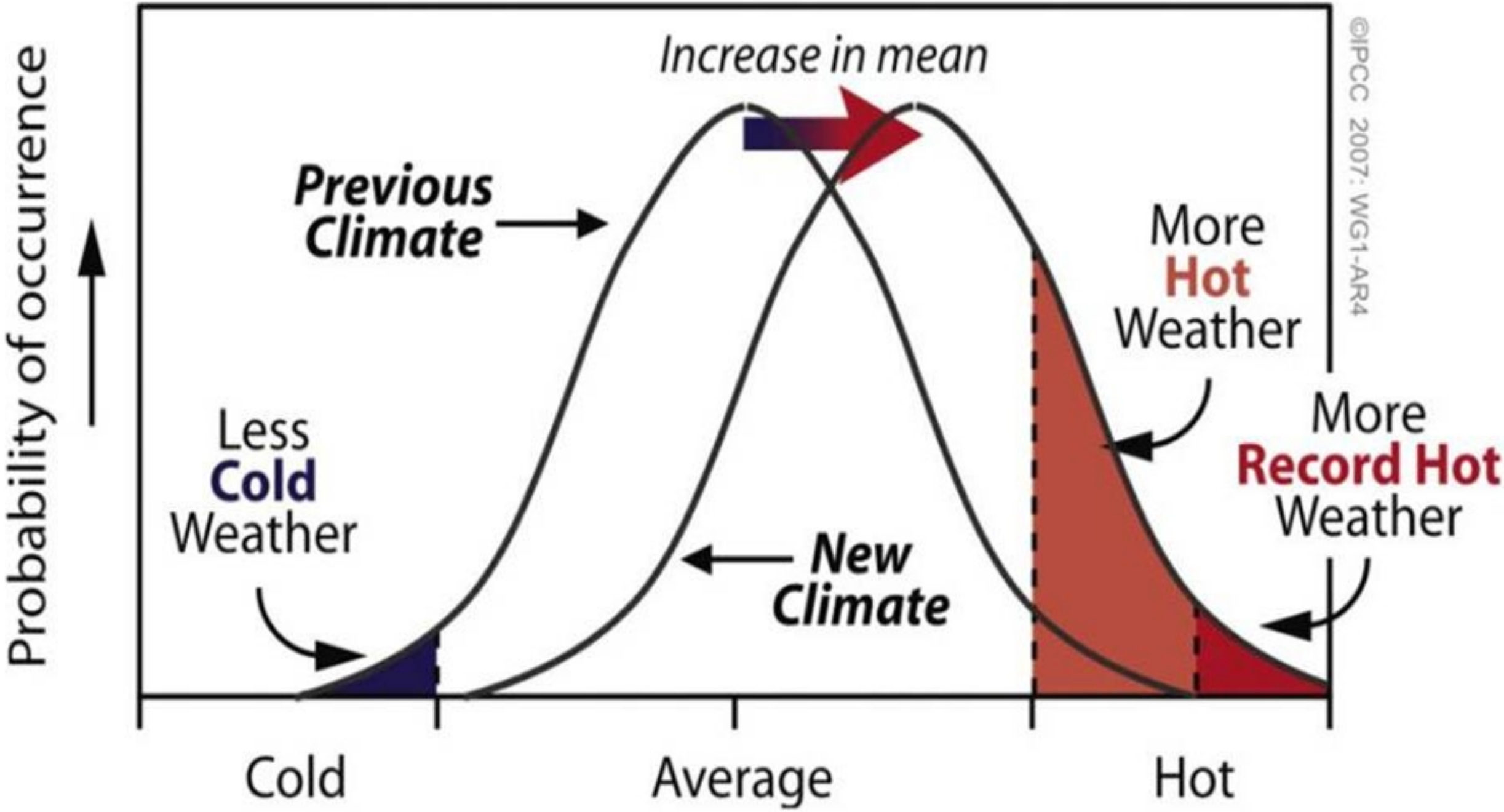
Increase in mean
Previous Climate
Probability of occurrence
More Hot Weather
More Record Hot Weather
Less Cold Weather
New Climate
Cold
Average
Hot
©IPCC 2007: WG1-AR4

Climate risk = Financial risk

Wagner, “Climate risk is financial risk” (*Science*, 2022)

Climate risk = Financial risk

Climate risk = Policy risk

Wagner, “Climate risk is financial risk” (*Science*, 2022)

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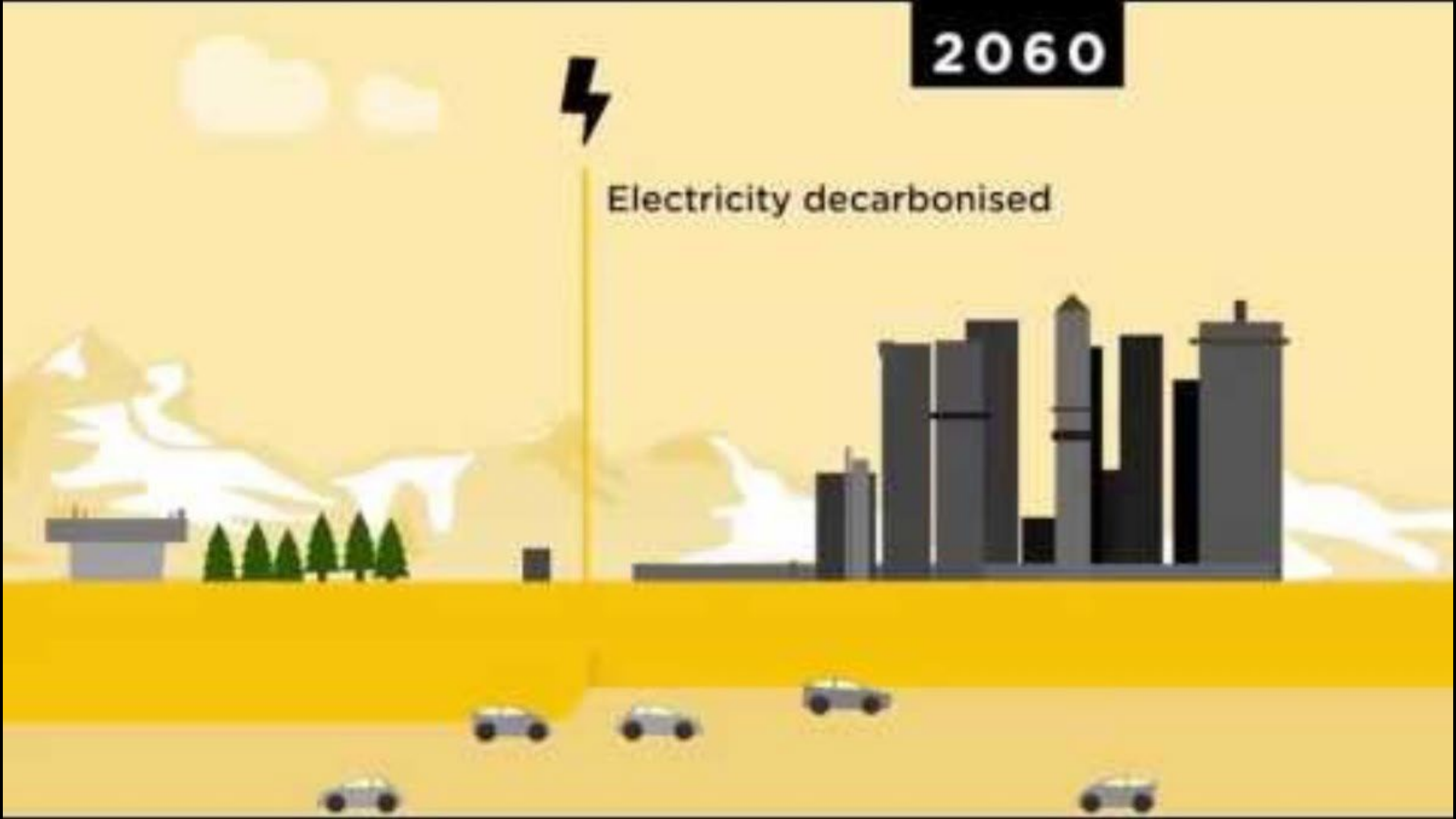
Climate risk = Reputational risk

Climate risk = Legal risk

Wagner, “Climate risk is financial risk” (*Science*, 2022)


2060
Electricity decarbonised

Oceans

“by 2070, solar is largest energy source”

Mountains

“electricity carbon-neutral as early as 2060”

“and yet, by interfering in the free market…”

Following the storms, a coalition of environmental NGOs brings a class-action suit against the US government and fossil-fuel companies on the grounds of neglecting what scientists (including their own) have been saying for years: that something must be done. A social reaction to the use of fossil fuels grows, and individuals become 'vigilante environmentalists' in the same way, a generation earlier, they had become fiercely anti-tobacco. Direct-action campaigns against companies escalate. Young consumers, especially, demand action.

OECD governments, under intense pressure from citizens, decide they must also act. Accelerated development of renewable energy commences, along with plans to develop a new generation of nuclear power stations in Europe. Strong new CAFE type legislation is hastily drawn up in 2011. The power, auto, and oil industries see billions wiped off their market value overnight.

Shell Internal "There is no alternative" (TINA) Group Scenarios 1998-2020 Report (1998)

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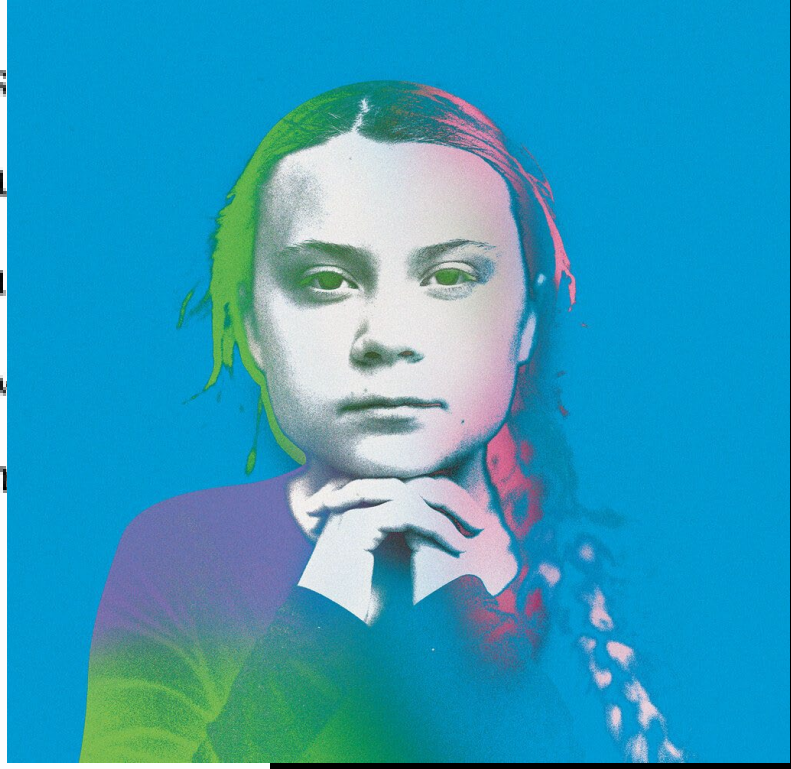
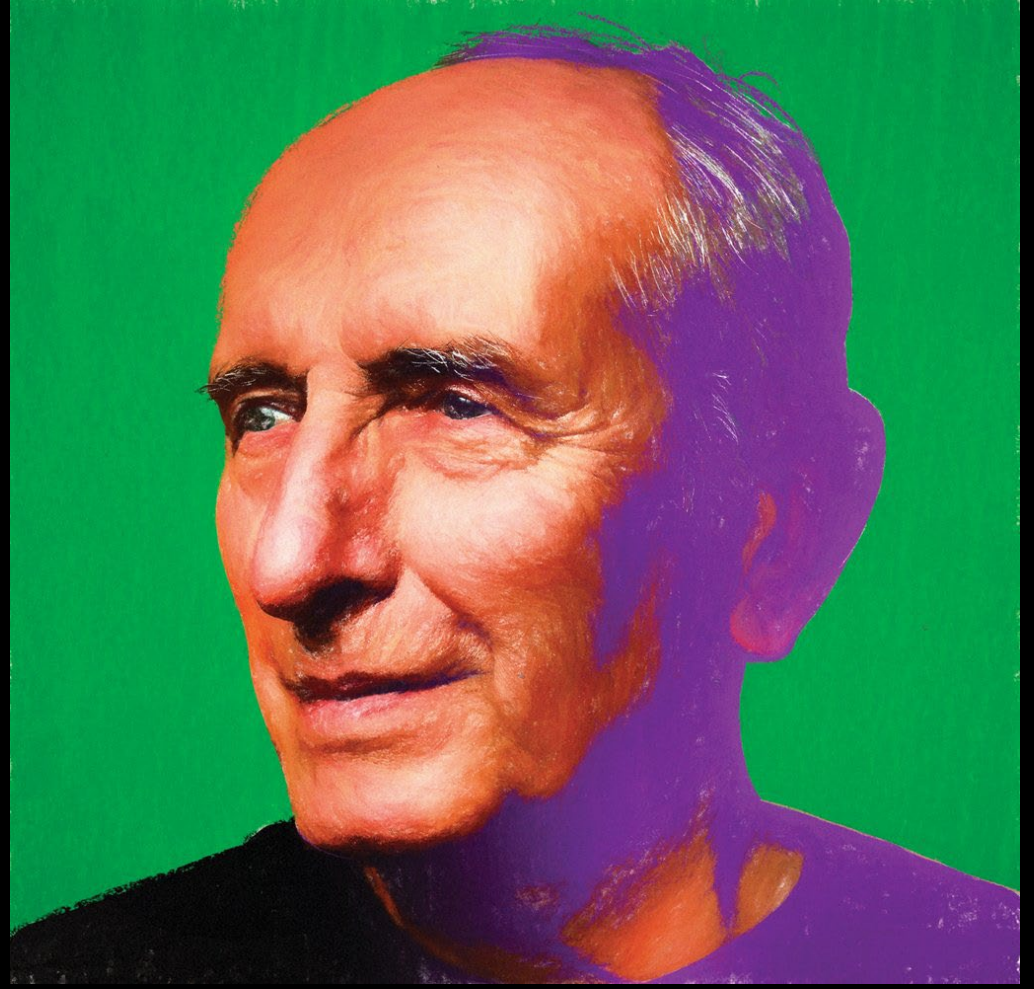


Born: 3 January 2003

Shell Internal “There is no alternative” (TINA) Group Scenarios 1998-2020 Report (1998)

strikes that she helped inspire. “There’s this false image that I’m an angry, depressed teenager,” says Thunberg, whose rapid rise is the subject of “I Am Greta,” a new documentary on Hulu. “But why would I be depressed when I’m trying to do my best to change things?”

NYT Magazine (2020), nyti.ms/38oA9hX



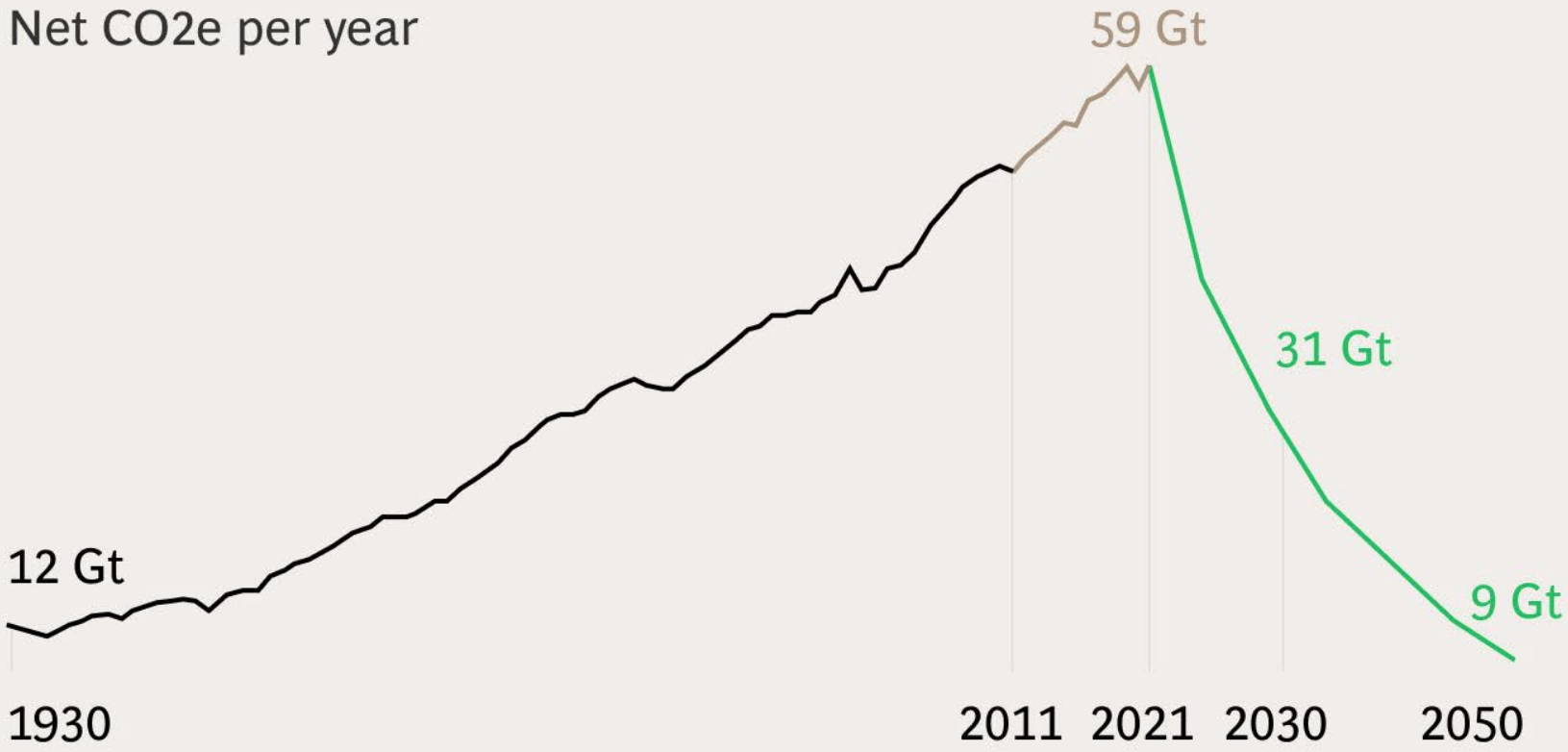
global warming. “I am not talking about what *could* be done,” says Smil, who is 78 and who counts Bill Gates among his many devotees. “I’m looking at the world as it *is*.”

NYT Magazine (2022), nyti.ms/3kdBbAf

Little here is *if*, it's *when*

The *when* makes all the difference

Major course correction needed to achieve the 1.5°C ambition



-7%
annual reduction in emissions needed by 2030 to meet the 1.5°C pathway

+1.5%
recent annual increase in emissions from 2011-2021

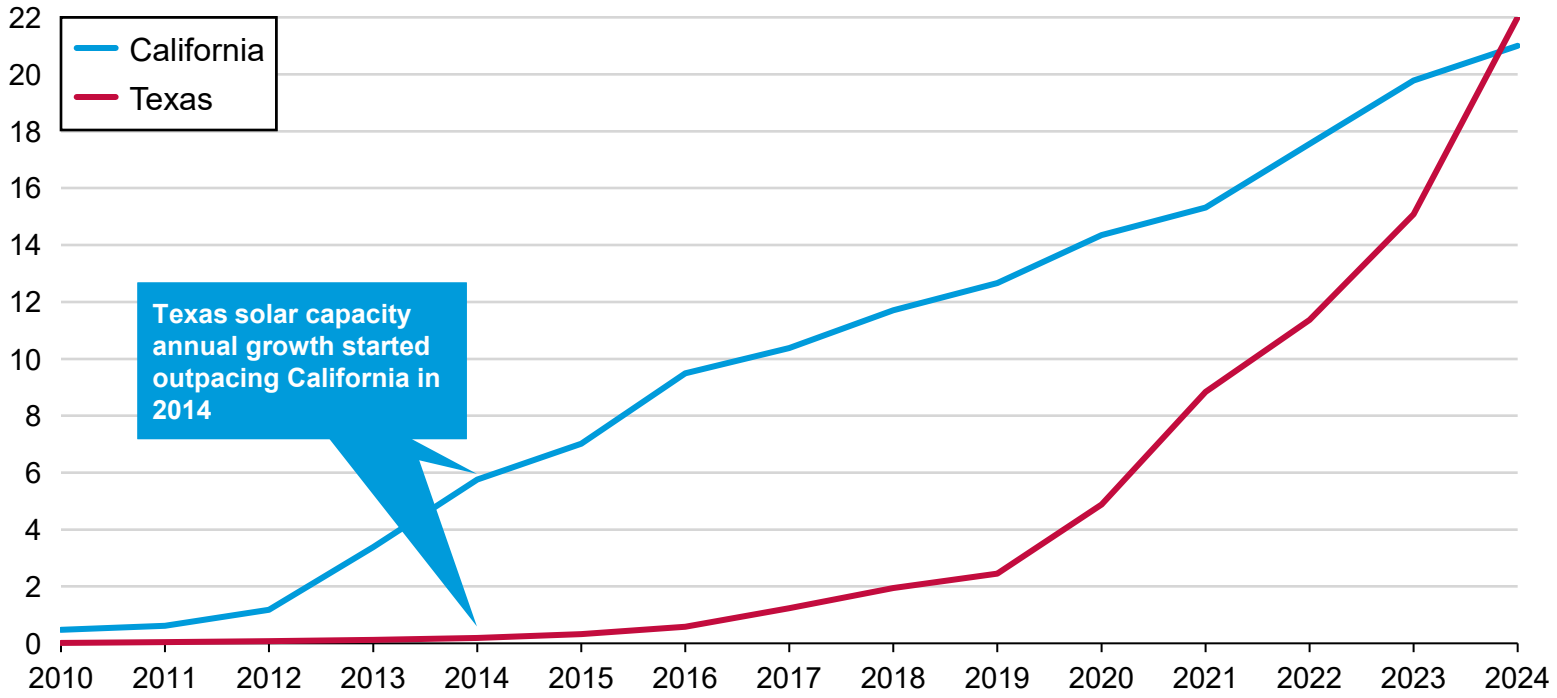
Sources: IPCC, PIK, BCG analysis

Wagner, “The Climate Policy Pendulum” (16 January 2025)

Deregulated Texas energy market boon for solar, surpassing California in 2024

Total installed utility-scale solar capacity in Texas and California, *GW*

CAGR '10-'15	CAGR '15-'20	CAGR '20-'24
CA: 71%	CA: 15%	CA: 10%
TX: 87%	TX: 73%	TX: 46%



Observations

- **Texas surpassed California** as leading solar PV state after **adding 1.6 GW in Q2 of 2024** (ACP).
- Texas installed nearly **9 GW of new solar by the end of 2024** – over one-fourth of the U.S. 2024 additions – for a **total capacity of 27.5 GW** (ACP).
- Texas is **expected to install 11.6 GW** new utility-scale solar in 2025 (EIA).
- **Texas' advantage:**
  - ⊕ Deregulated, electricity-only energy market
  - ⊕ Streamlined approval process
  - ⊕ Abundant land
  - ⊖ Minimal state-incentives
- **California's challenge**:
  - ⊕ Strong state incentives
  - ⊖ Strict regulations
  - ⊖ Interconnection delays

Source: ACP, Clean Power in 2024 (2025); EIA, Solar, battery storage to lead new U.S. generating capacity additions in 2025 (2025).
Credit: Hyae Ryung Kim, Taicheng Jin, Isabel Hoyos, and Gernot Wagner. Share with attribution: Kim *et al.,* "Scaling Solar" (20 March 2025).

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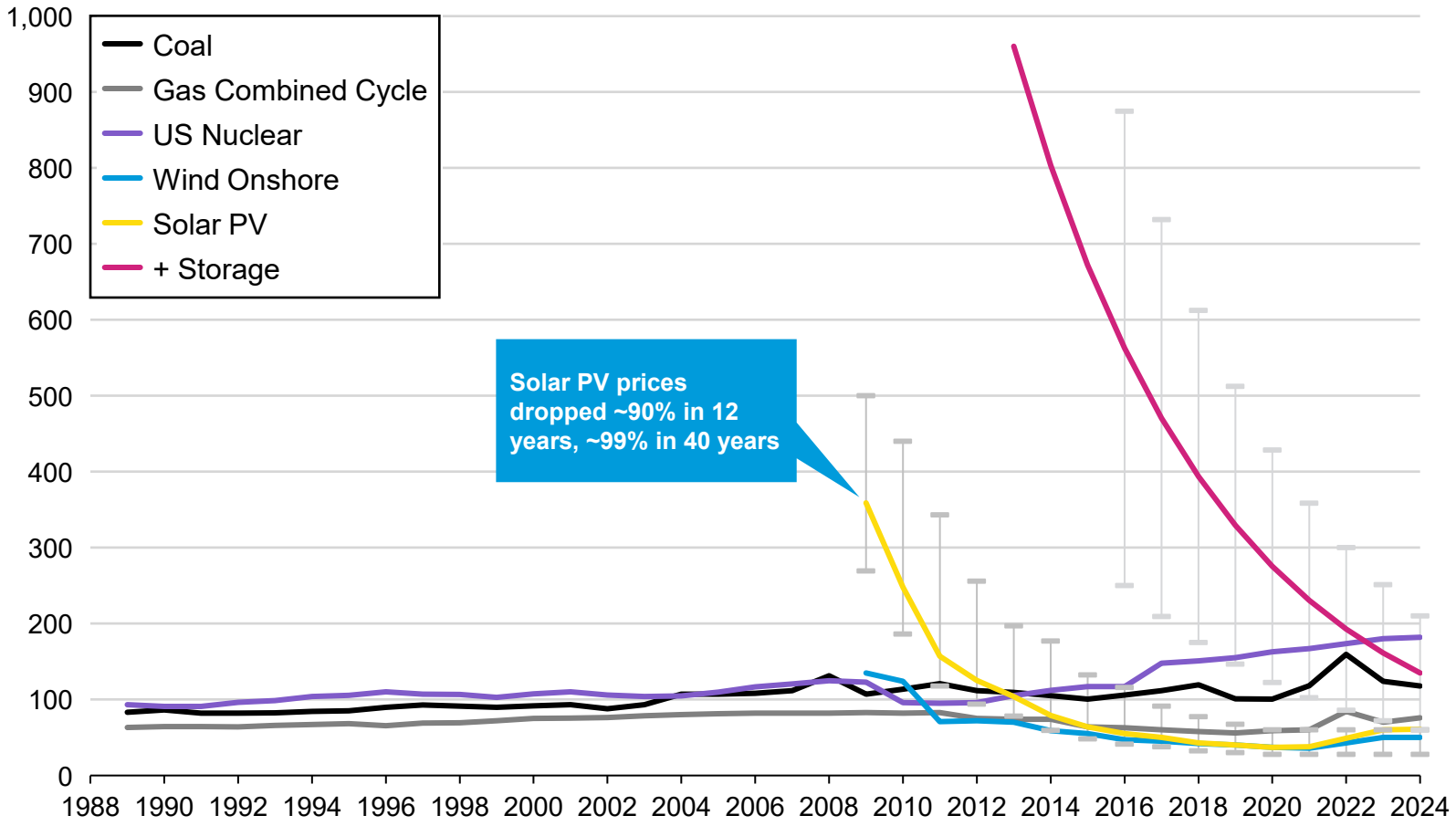
Go to

gridstatus.io/ercot

Utility-scale solar and wind now cheaper than fossil fuels, battery storage costs not far behind, falling fast

Levelized Cost of Electricity (LCOE) & Storage (LCOS), *US$/MWh*



Observations

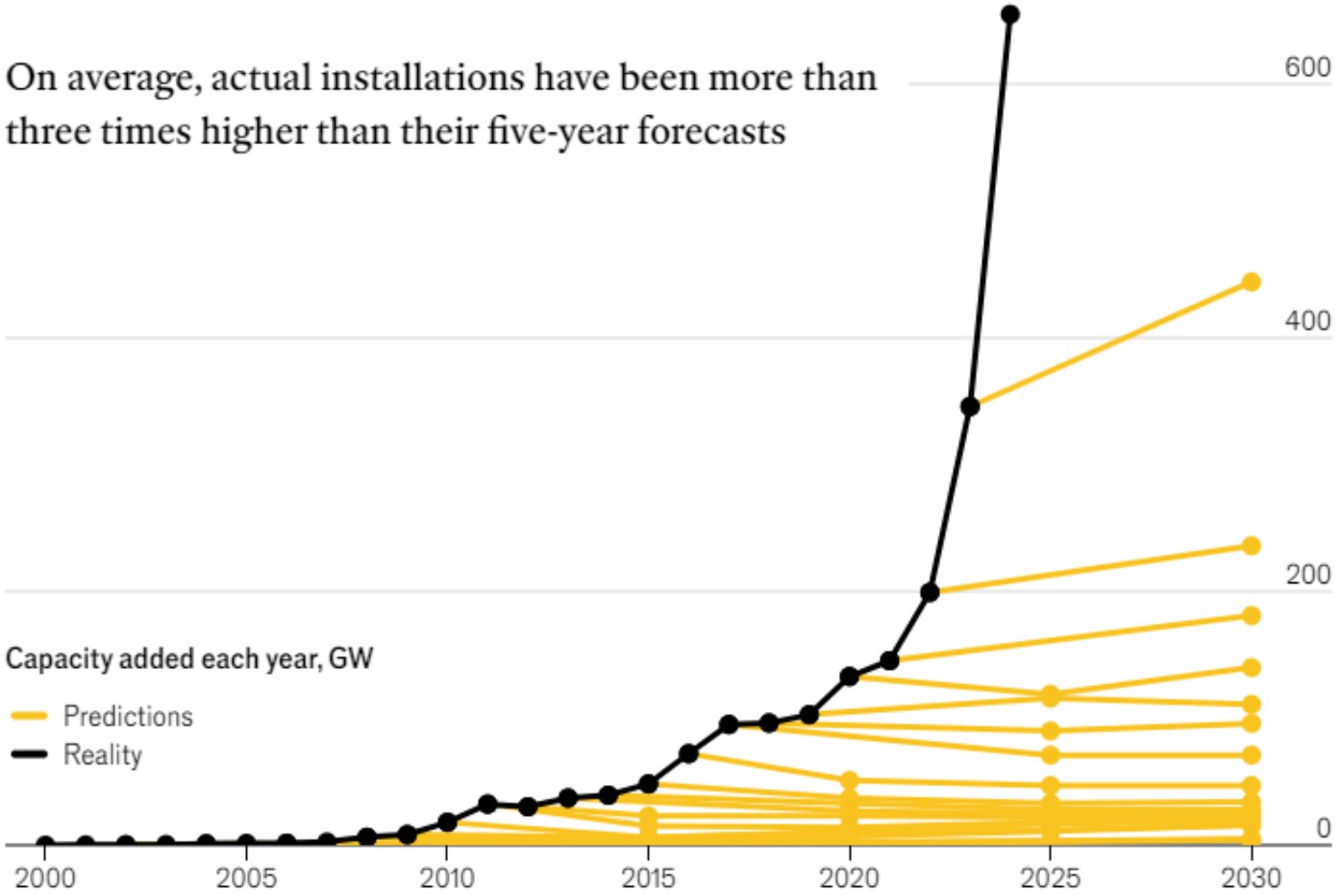
- **Solar photovoltaic (PV) prices dropped ~80% in past decade, wind by ~70%, lithium-ion battery costs by ~90%.**
  - PV price drop primarily driven by **improvements in module efficiency** and **economies of scale** (Kavlak *et al*)
  - Onshore **wind cheap the longest**, now only beaten by PV (Lazard).
  - Lithium-ion **battery costs fell 20% in 2023** alone (BNEF).
- **Gas combined cycle** power plants **cheaper than coal**, more expensive than both solar and wind.
  - Rapid scale-up of utility-scale batteries “killer app” to replace gas on grid.
  - **Battery prices expected to continue to fall** due to cell manufacturing overcapacity, economies of scale, and switch to lower-cost lithium-iron-phosphate (LFP) batteries.

Sources: Lazard, LCOE+ (2024); Our World in Data (2024); Energy Institute, Statistical Review of World Energy (2024); BNEF, Battery Price Survey (2024); Kavlak *et al.* (2018).
Credit: Hyae Ryung Kim, Xiaodan Zhu, and Gernot Wagner. Share with attribution: Kim *et al.*, “Scaling Solar” (8 April 2025).

Columbia Business School

↓ **EASY PV** *how solar outgrew expectations*

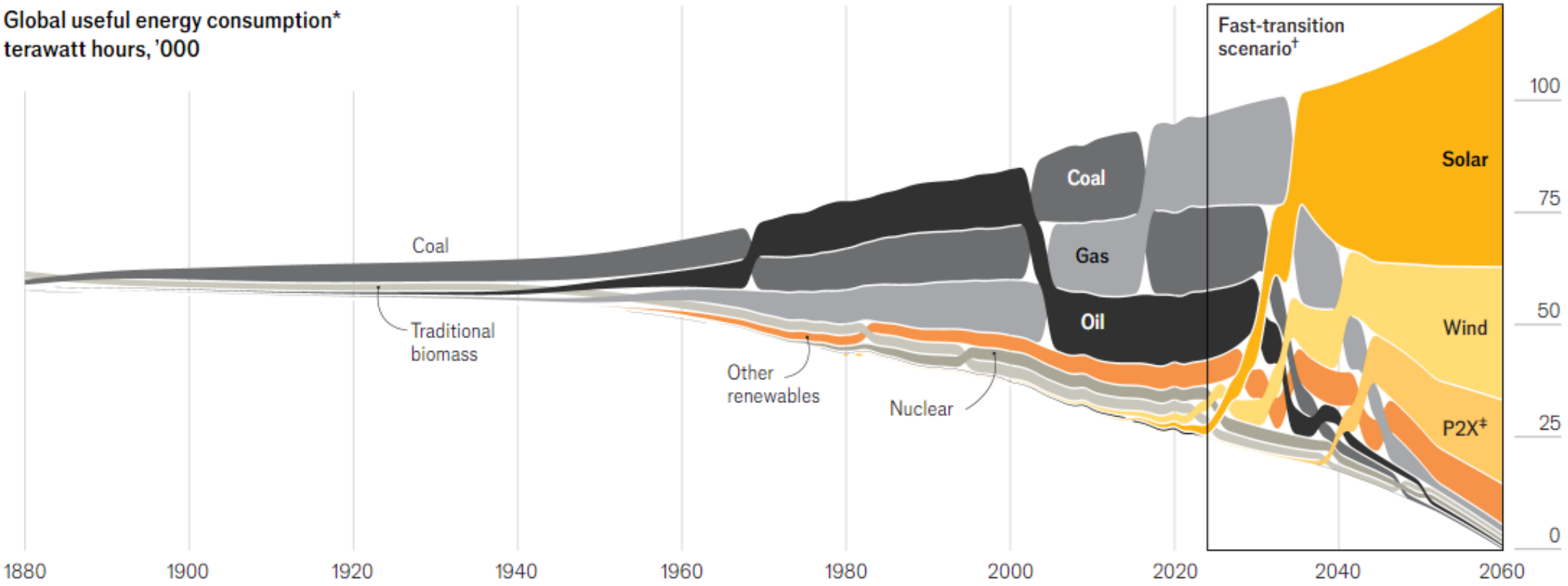
On average, actual installations have been more than three times higher than their five-year forecasts



Installations for 2024 are an estimate from BloombergNEF for direct current solar capacity

Sources: IEA; Energy Institute; BloombergNEF

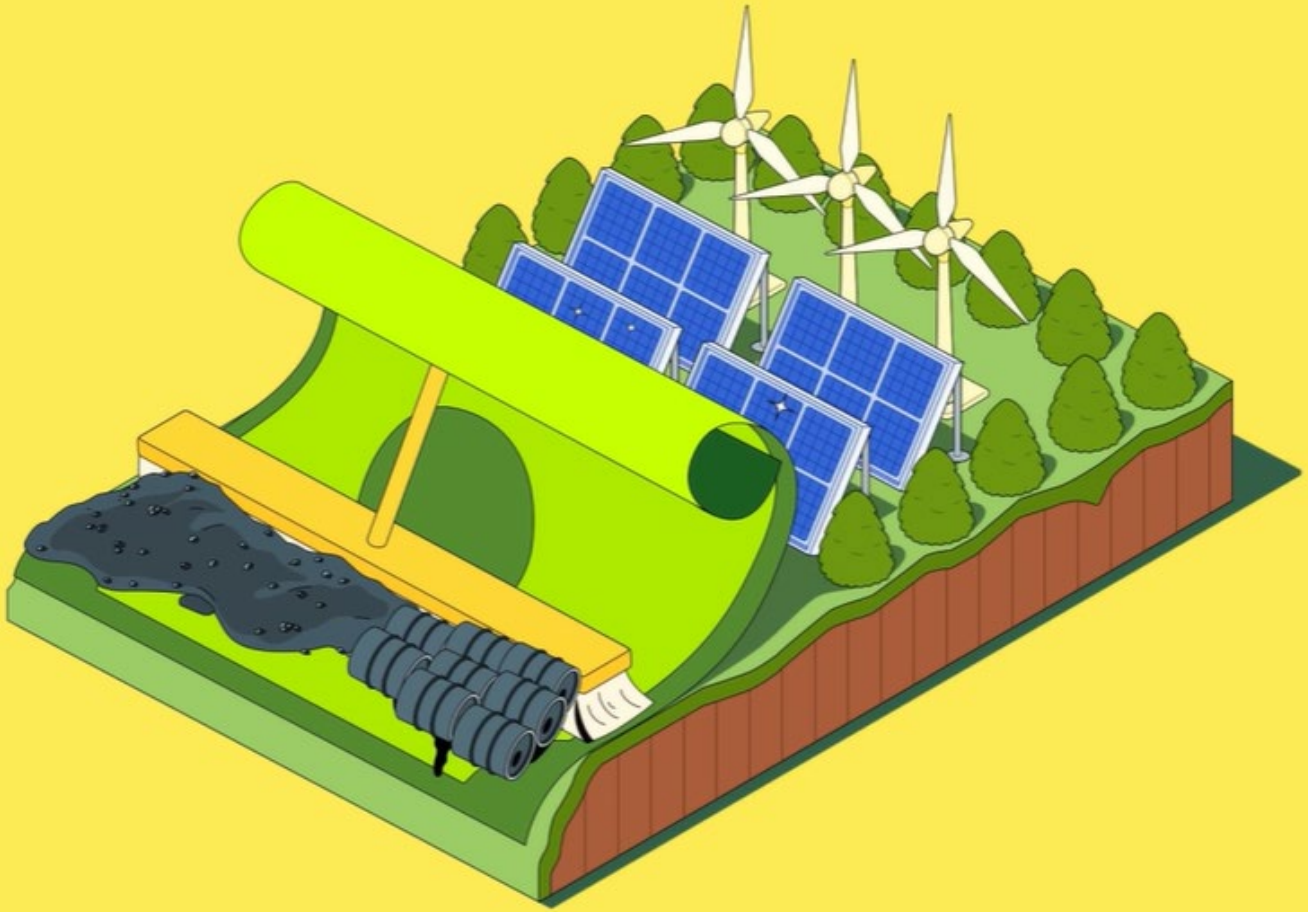
↓ HERE COMES THE SUN *the past and a possible future*



Sources: Rupert Way; Our World in Data

*Primary energy adjusted for waste-heat losses †From Way et al. (2022) ‡Electricity-conversion technologies (eg green hydrogen)

Source: *Economist* "Sun Machines" (20 June 2024)



Briefing | Carbon bargain

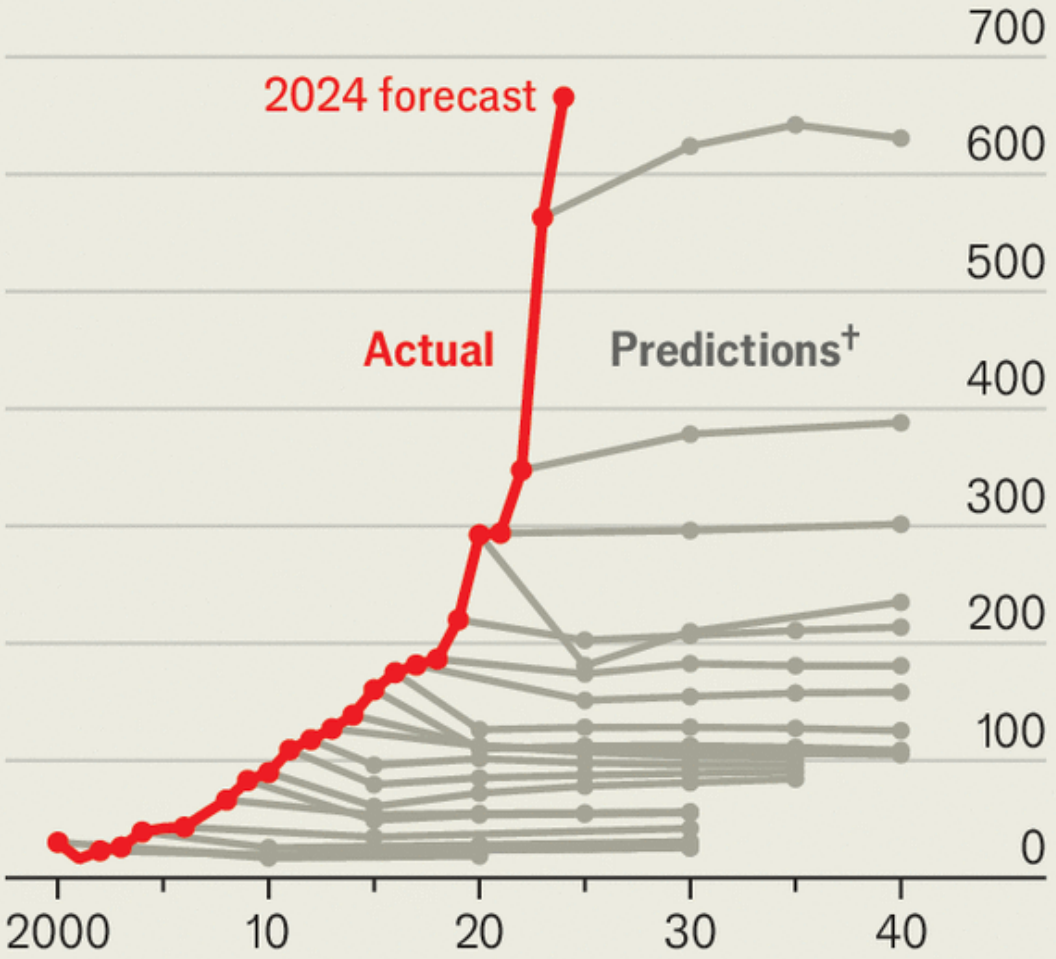
The energy transition will be much cheaper than you think

Most analysts overestimate energy demand and underestimate technological advances

Unshakable pessimism

2

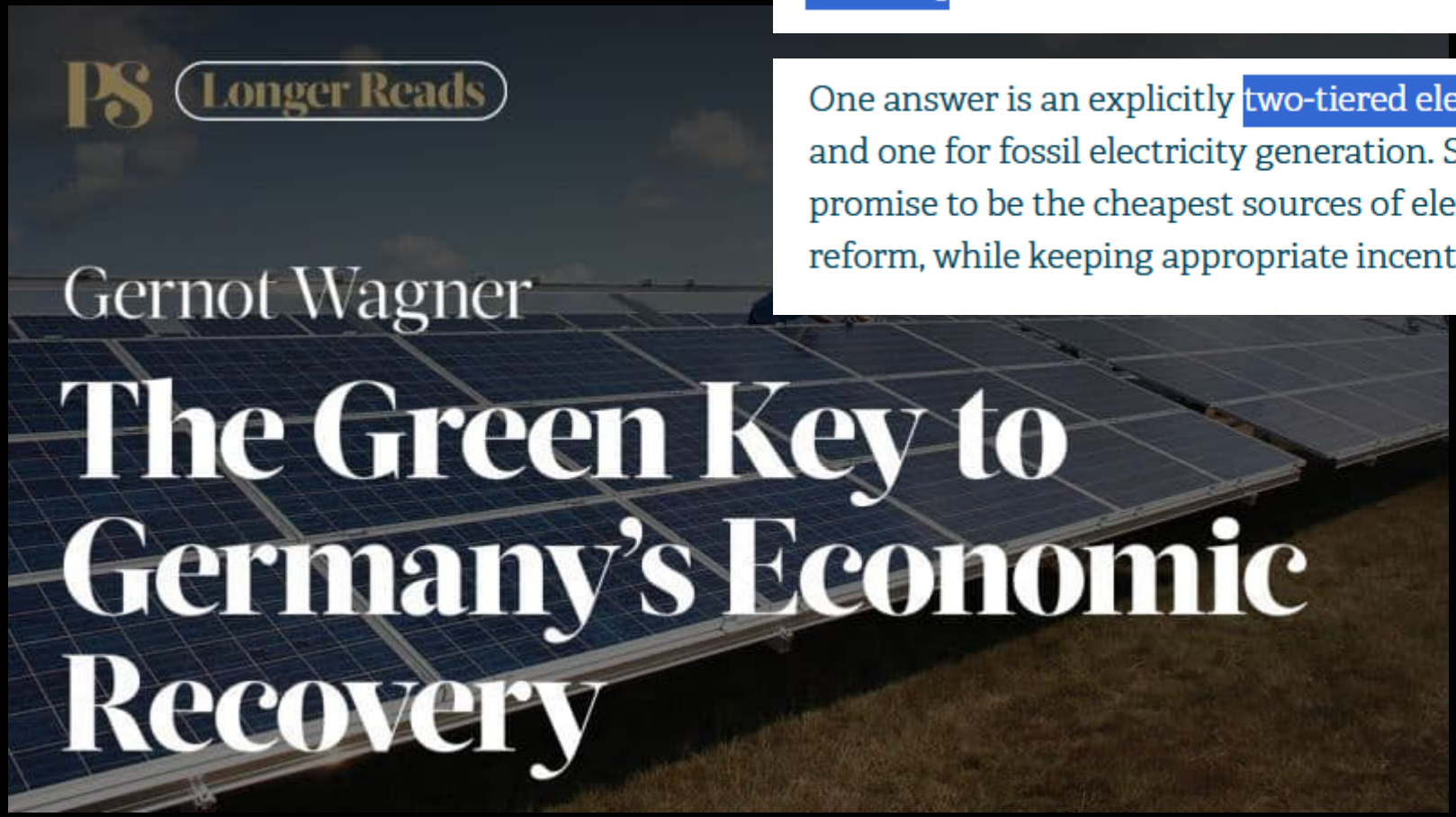
Global renewable energy*, capacity added each year, GW



*Includes solar, wind, hydropower, bioenergy, geothermal and marine †Existing-policies scenario, lower-end estimates

Source: IEA

It is tempting to look to Texas, which has become the North Star of electricity-market liberalization. The state recently surpassed California in total solar-power deployment. On most days, a live view of its grid shows that wind, solar, and battery storage provide the majority of electricity – and at rock-bottom rates. After accounting for nuclear, which provides around 10% of baseload power, the state's power grid often has a smaller relative carbon footprint than those in California or Germany.



One answer is an explicitly two-tiered electricity pricing system – one for renewables, and one for fossil electricity generation. Solar, wind, and, increasingly, batteries promise to be the cheapest sources of electricity. Making this a reality requires market reform, while keeping appropriate incentives for the necessary investments.

Wagner (16 May 2025), gwagner.com/german-recovery

Not *if*, *when*

The New York Times

There's Only One Way to Fix New York's Traffic Gridlock

June 8, 2023

Congestion pricing is the only durable antidote to persistent traffic congestion. The Columbia University economist and Nobel laureate William Vickrey demonstrated 60 years ago that there's no way out of gridlock without making drivers pay for taking up limited street space. Otherwise, there will always be more car owners wanting to use the available space than there is space to accommodate them.

Komanoff & Wagner, *NYT* (8 June 2023), gwagner.com/congestion-pricing

> $150 / car entering NYC*

* at peak travel times, Manhattan below 60th Street

Komanoff & Wagner (July 2023), gwagner.com/nyc-15-9-3

The New York Times

What's changed since the toll began?

Cars on the street	**Fewer**
Traffic speeds	**Faster**
Peak commute times	**Faster still**
Local buses	**Faster, less delayed**
Traffic outside the zone	Not worse
New Jersey commutes	**Faster**
Transit ridership	**Up, up, up**
Yellow taxi trips	**Up**
Citi Bike trips	Up in and out of the zone
Car crash injuries	**Down**
Parking violations	**Down**
Traffic noise complaints	**Down**
Fire response times	**Slightly down**
School bus delays	**Fewer**
Visitors to the zone	**Up**
Restaurants, Broadway	Holding up

"Here Is Everything That Has Changed Since Congestion Pricing Started in New York," *NYT* Upshot (11 May 2025)

The rewards the city reaps will not only be reputational. If New York cracks this decarbonization nut (as it started to do under Mayor Michael Bloomberg with transport and especially bike lanes), the city's hard-to-bear summers, when the asphalt, steel and brick absorb the sun's rays and turn the city into a heat island will mellow. The noise from air-conditioners and boilers will ebb.

It will be a much nicer place to live.

Greenberg & Wagner, *NYT* (7 February 2023)
gwagner.com/ll97

The New York Times

Our City Could Become One of the World's Greenest, but It Won't Be Easy

Feb. 7, 2023

Policy Pendulum driven by

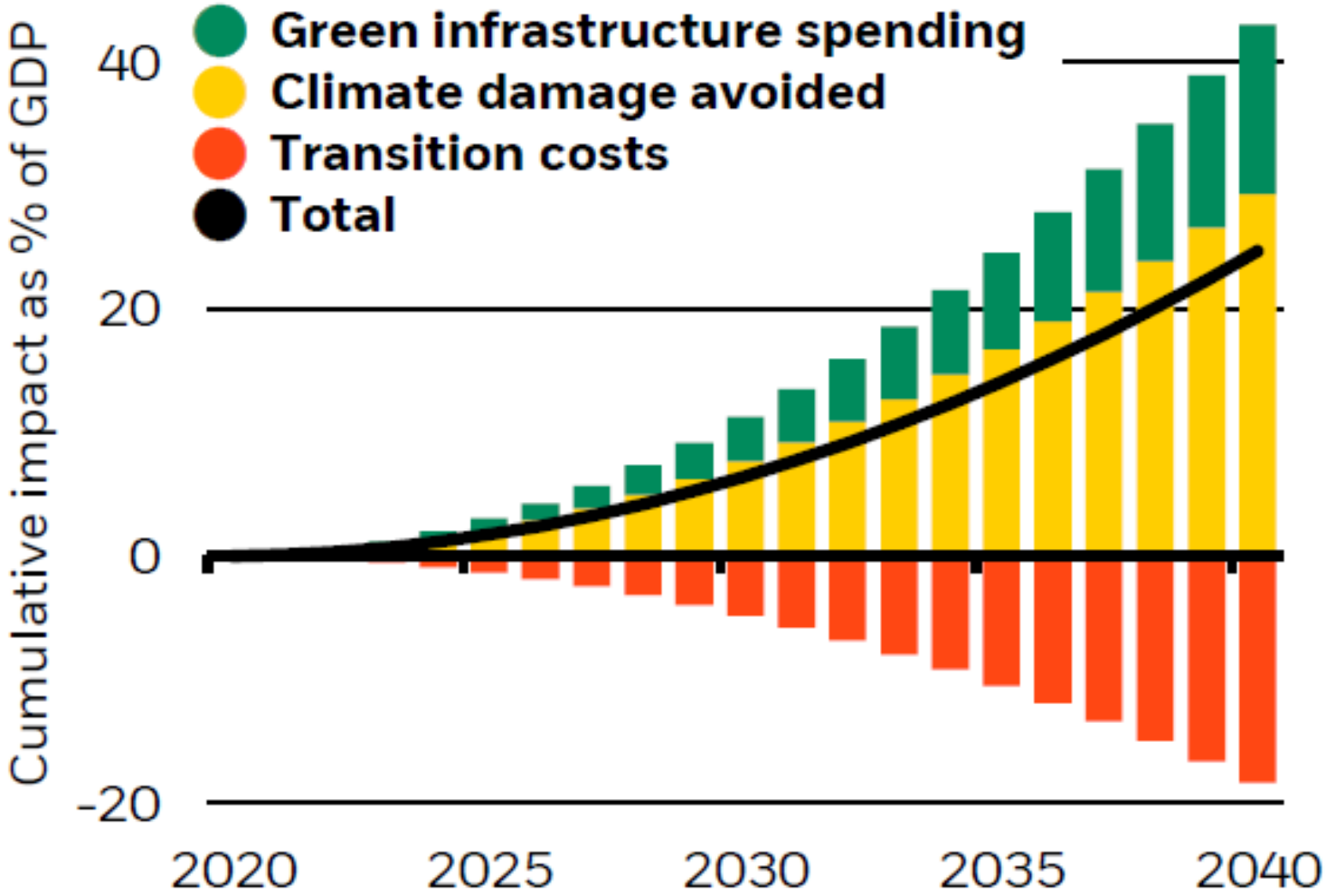
+ climate tech
+ cities
+ companies(!?)

BlackRock®

Managing the net-zero transition

Transition results in net economic gain

Estimated cumulative GDP impact of transition, 2020-40



BlackRock

SUSTAINABILITY AT BLACKROCK

BlackRock's 2030 net zero statement

April 2022

Currently, approximately 25% of BlackRock assets under management ("AUM") with respect to corporate and sovereign issuers is invested for clients in issuers with science-based targets or equivalent. **As the transition proceeds and issuers and asset owners continue to position themselves in front of it, we anticipate that by 2030, at least 75% of BlackRock corporate and sovereign assets managed on behalf of clients will be invested in issuers with science-based targets or equivalent.**

blackrock.com/corporate/sustainability/2030-net-zero-statement (accessed 24 March 2025)

Opinion

Do financiers believe in sustainability or not?

INVESTMENT

Stuart Kirk

Don't let the happy smiley face in my photo deceive you. I seethe at losing my job to this day. The stress on my family. Giving up our London home. Being broke.

The worst thing is that my heretical speech almost three years ago — in which I mused that climate change isn't as material to portfolios as other risks, such as, you know, recessions and stuff — wouldn't raise a murmur now. That's because under Donald Trump the financial sector has performed one of its most hypocritical acts of apostasy ever. It no longer seems to believe in sustainability.

The Net-Zero Banking Alliance has lost its flock and emissions targets linked to financing are being revised, to put it kindly. Meanwhile, good luck finding a portfolio manager who prays to environmental, social and governance-based investing any more. They'll be too busy dropping once firmly held commitments to divest from fossil fuel companies.

Such is their loss of faith that the Net Zero Asset Managers Initiative "suspend[ed] its activities" in January. The insurance version is also dead. How they judged me in 2022 when I wrote in these pages that such initiatives were "claptrap".

Were it simply a matter of pragmatism, I'd sympathise. The woke pendulum has swung the other way. Businesses have always followed the money — especially banks. When I ran responsible investment at a big one, survey after survey said clients were turning green. Mums and dads and institutions alike wanted their savings "to do good". Inflows into sustainable funds hit $645bn globally in 2021, according to Morningstar data, including ESG products. That was a quarter of all inflows.

Banks were also making fortunes out of everything from green bonds to research, as were index providers, consultants, data analytics firms and more. So yes, the demand was there. And now it isn't. Sustainable inflows last year, for example, were a godless $36bn out of $1.5tn overall.

But hang on. Net zero targets or ESG were never sold to us as shareholder friendly, profit-maximising opportunities. If they were, fair enough. Ditch them — the world has changed. No, they were marketed from the beginning as essential beliefs. Sustainability was one of every bank's core values. Saving our planet was an asset manager's purpose.

Such platitudes were never tongue in cheek. They were taken very seriously indeed — as sceptics like me learnt to our cost. But was it all a lie? If not, it is pathetic how easily the finance industry lost its religion. If they never believed in sustainability in the first place, we've all been taken on a ride. Who would trust a banker or portfolio manager ever again?

Not to mention the potential mis-selling claims. Hence in my view the finance industry has no choice but to find its faith again. It must quickly remind us of the vital role it plays in making the world a better place.

I still believe this. So do many others. The trouble is that much of Sustainable Finance 1.0 was flawed. Never mind.

> They need to find faith again and remind us of their vital role in making the world a better place

What matters is bankers convincing us they were genuine in trying. And will be again. So the current backlash is an opportunity — to shed the misguided practices, improve the good bits, while preaching the message that finance is a force for good.

Let's start with banks. If I were a global head of sustainability, I would remind shareholders that 80 per cent of the world's energy still comes from fossil fuels. You really want the lights to go out? Mindlessly cutting finance to coal, oil or gas companies makes no sense. Better to engage, help them transition, and spur the economic growth needed to invest in renewables.

I would also point out that half of greenhouse emissions come from just three dozen companies — and 16 of those are state owned. Banks, as well as governments and regulators, should focus their efforts where it counts. Investors too. But asset owners and managers must rectify another costly distraction first. As I have written before, they confuse investing with trading.

Buying or selling shares in a secondary market in itself makes no difference to anything. Equity is permanent capital and for every divestment there must be a buyer — and vice versa. To influence a company you need to own its shares to vote. Exclusion strategies are thus perverse. They are also immoral as you are forcing someone else to own the stocks you exclude. The only "investing" that moves the needle happens in primary markets — venture capital, private equity, direct lending and so on — where actual money is given or withdrawn. Sustainable Finance 2.0 should start here.

And, finally, what of ESG? Despite being blamed for its demise, I am a fan. Not as an approach to picking stocks, although it's no less legitimate than any form of active management. It sometimes works, mostly doesn't. Rather, ESG is useful as a measure of "goodness" beyond risk and return. As opposed to the above, regulation here is needed. One score per company, no argument. Only then will people know what they are buying.

Indeed, without trust sustainable finance has no chance. That means being realistic, honest and pragmatic. Fewer trees hugged, more data and coherent solutions. But first bankers must prove to us they believe in it.

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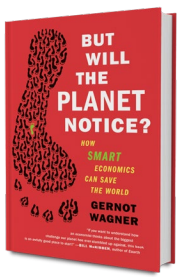
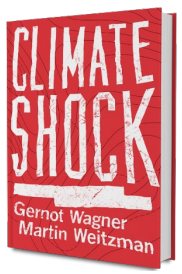
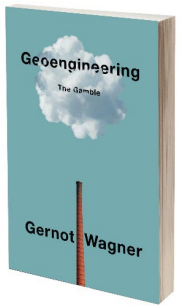
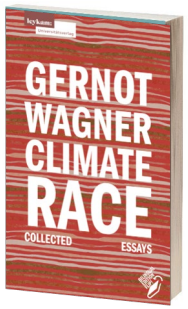
Kirk, *FT* (21 March 2025); for earlier "debate": Wagner, "Climate risk is financial risk" (*Science*, 2022)









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