

Hva er status om klimautviklingen?

- trender, drivere og tiltak

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Senioruniversitetet i Lillestrøm

02.09.2025, Lillestrøm

Hvilke trender ser vi i det globale klimaet?

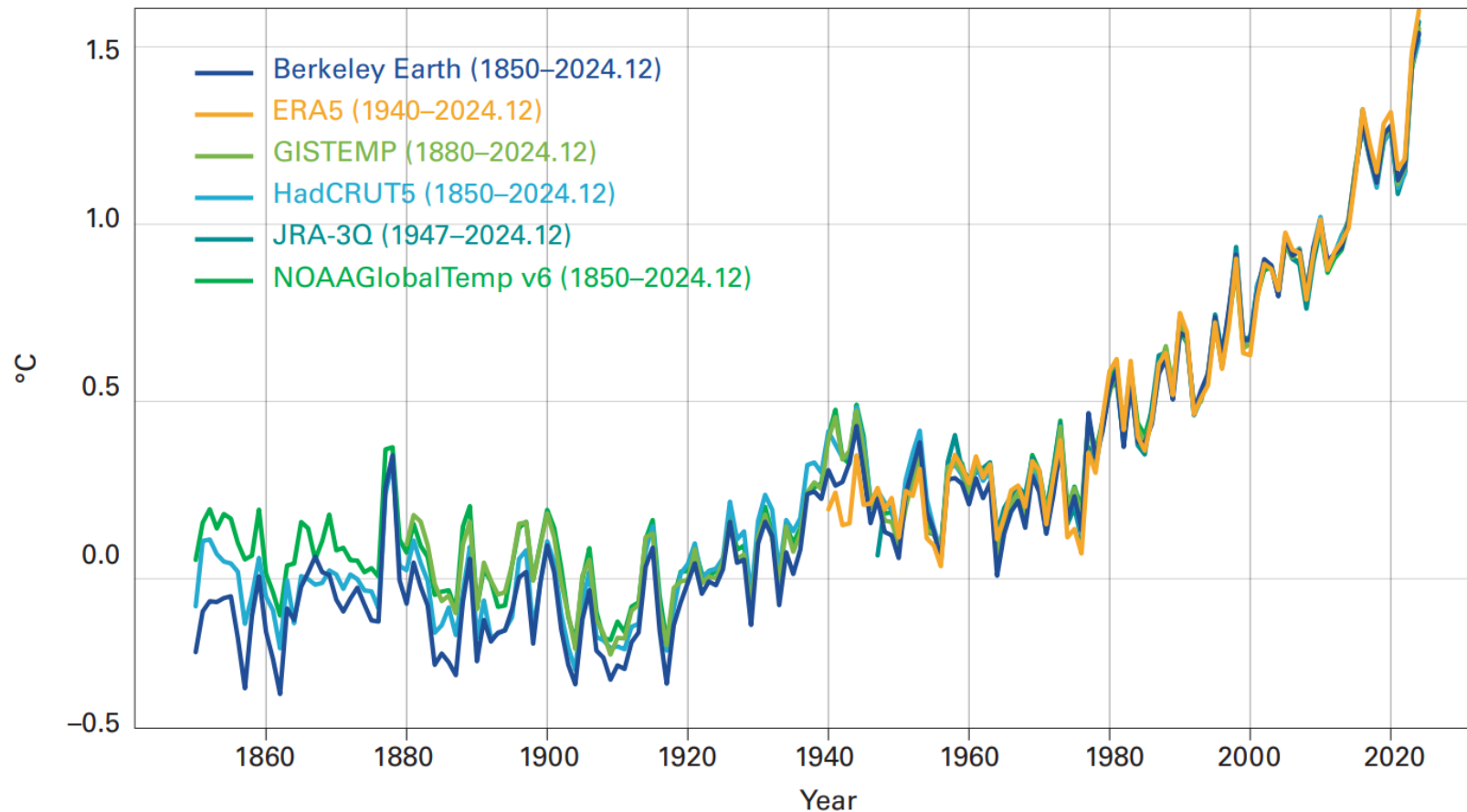


Figure 2. Annual global mean temperature anomalies relative to a pre-industrial (1850–1900) baseline shown from 1850 to 2024

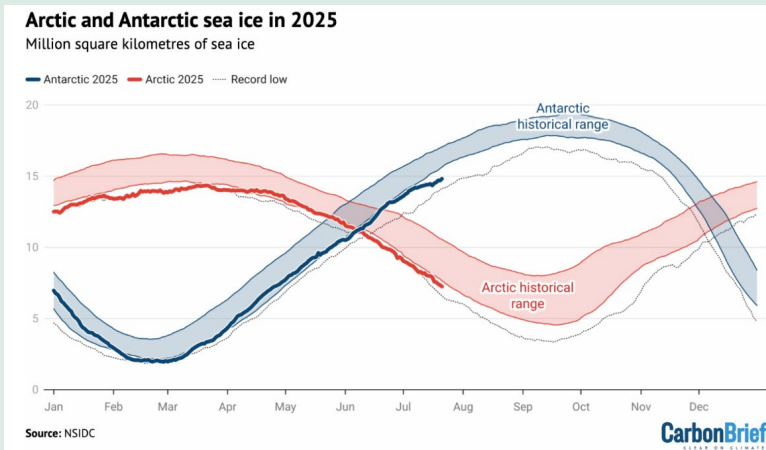
Source: Data are from the six datasets indicated in the legend. For details see [Datasets and methods](#).

Hvilke trender ser vi i det globale klimaet?

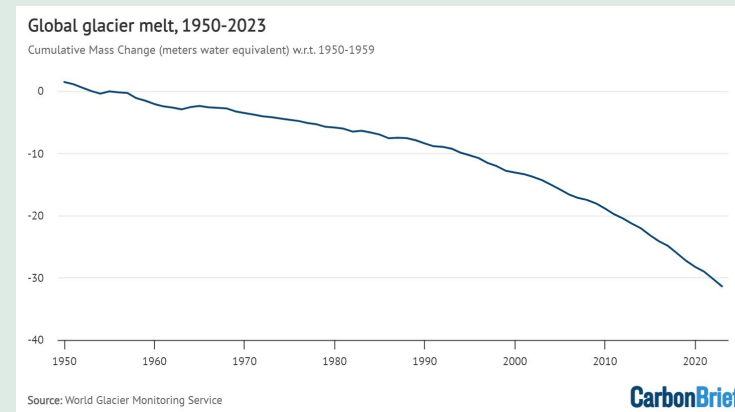
Sjøis

Arktisk sjøis: Rekordlav vinter 2025.

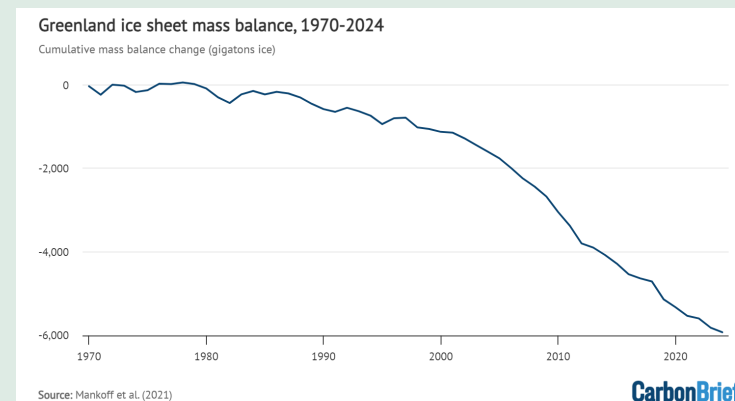
Sjøis utenfor Antarktis: I den nedre delen av hva som historisk er observert.



Isbreer: Mister masse



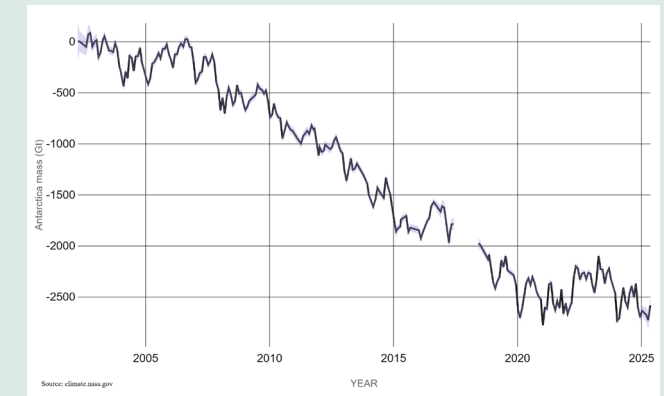
Grønlandsisen: Mister masse



Isen på Antarktis:

Mister masse

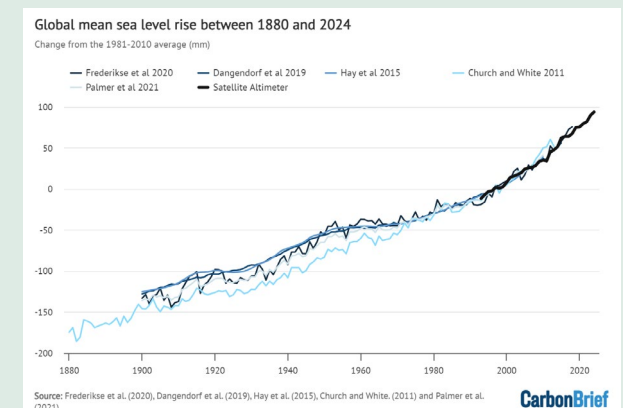
[Ice Sheets](#) | [Vital Signs - Climate Change: Vital Signs of the Planet \(nasa.gov\)](#)



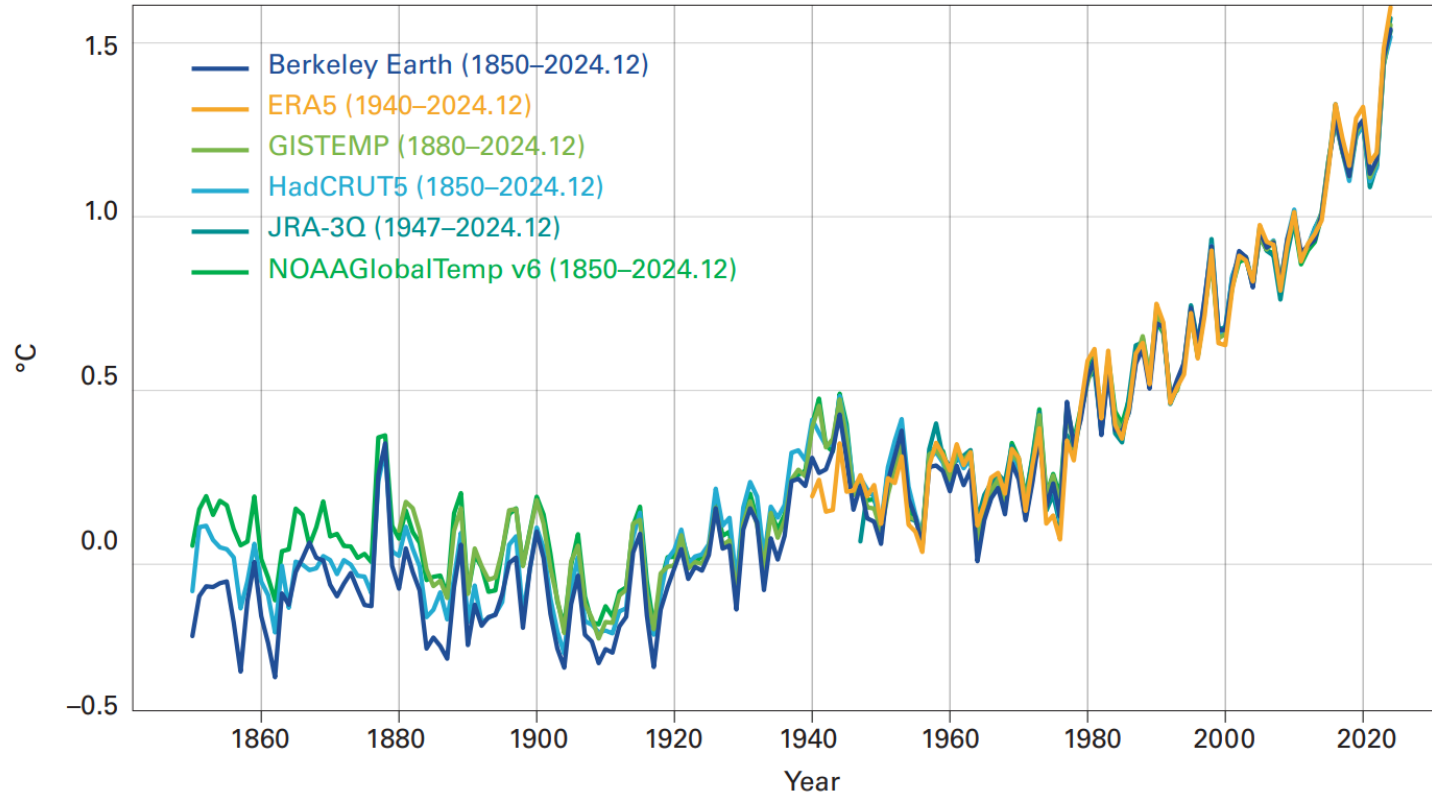
Aug 25

Havnivåstigningen fortsetter:

På grunn av at havet blir varmere og is på land smelter.



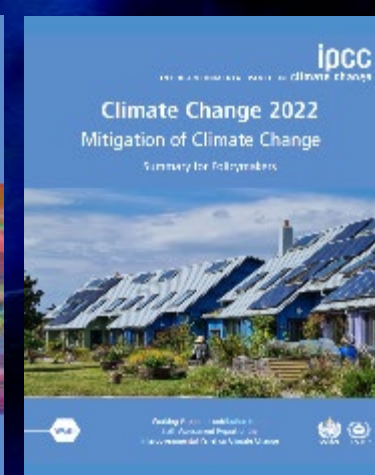
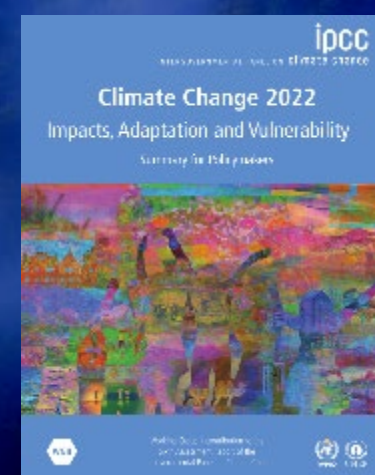
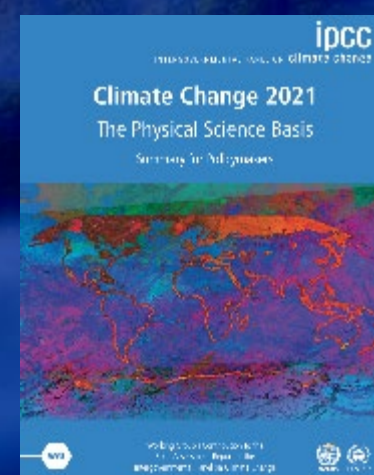
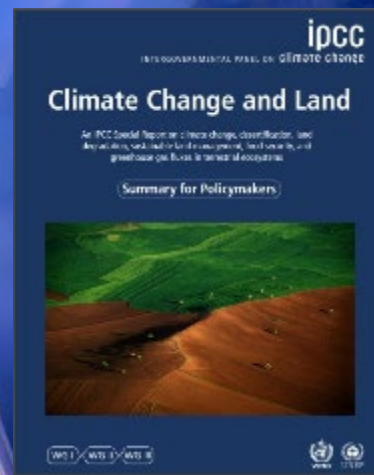
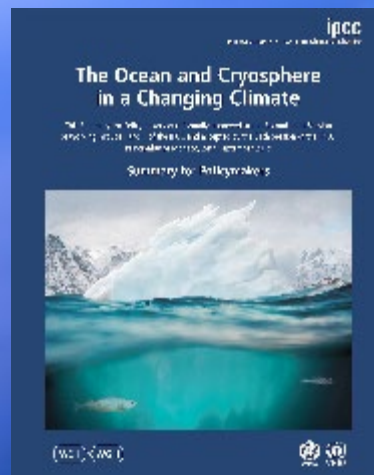
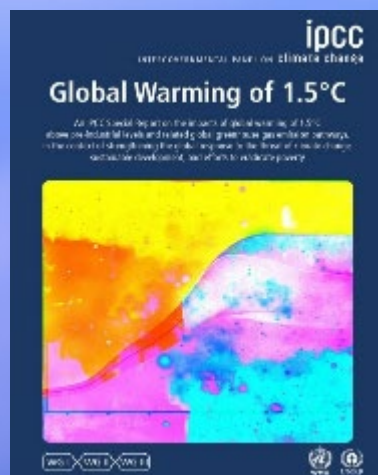
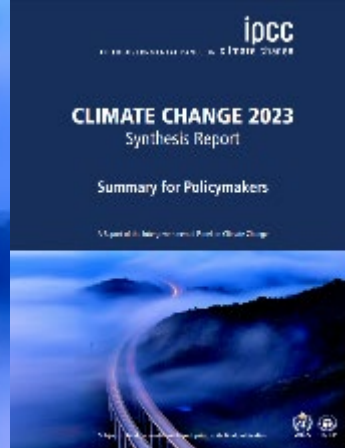
2023 og 2024 har vært eksempler på år med global temperatur rundt 1.5° C over førindustriell tid



- Hva slags ekstremvær har vi sett disse årene?
- I hvor stor grad er det påvirket av oppvarmingen?
- Og, hva ble vi forespeilet?

Figure 2. Annual global mean temperature anomalies relative to a pre-industrial (1850–1900) baseline shown from 1850 to 2024

Source: Data are from the six datasets indicated in the legend. For details see [Datasets and methods](#).



Fog Opening the Dawn
Jeong Jinsil
Weather and Climate Photography & Video Contest 2021
Korea Meteorological Administration

SIXTH ASSESSMENT REPORT

Working Group I – The Physical Science Basis

ipcc
INTERGOVERNMENTAL PANEL ON climate change



Hetebølger

Hyppigere

Mer intense



Kraftig regnskyll

Hyppigere

Mer intense



Tørke

Økning i noen
regioner



Skogbrannfare

Hyppigere



Havet

Varmere

Surere

Taper oksygen

2022: Pakistan



2023: Norge

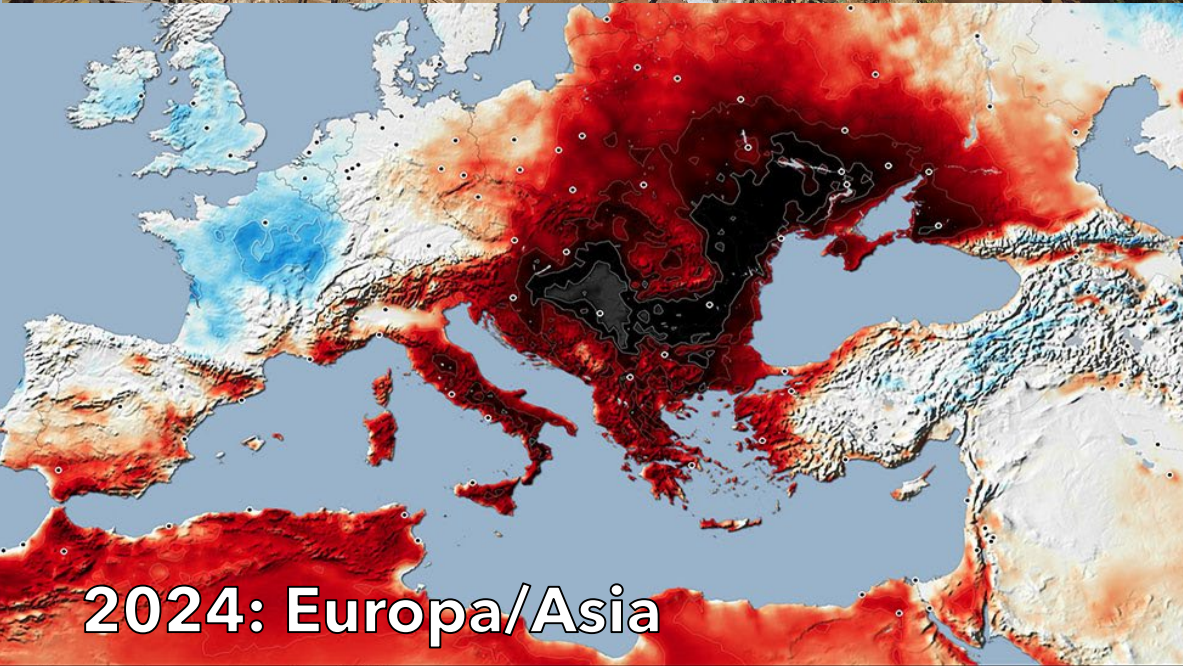


2023: Canada



2023: Europa





um temperature anomalies [°C] Maximum temperature anomalie

World Weather Attribution: Studier av ekstremvær i 2024

Hazard

- Heatwave: 79
- Cold spell: 8
- Flood: 54
- Storm: 48
- Drought: 11
- Wildfire: 19

Region

- Africa: 26
- Americas: 68
- Asia: 63
- Europe: 28
- Oceania: 16
- Cross-continental: 18

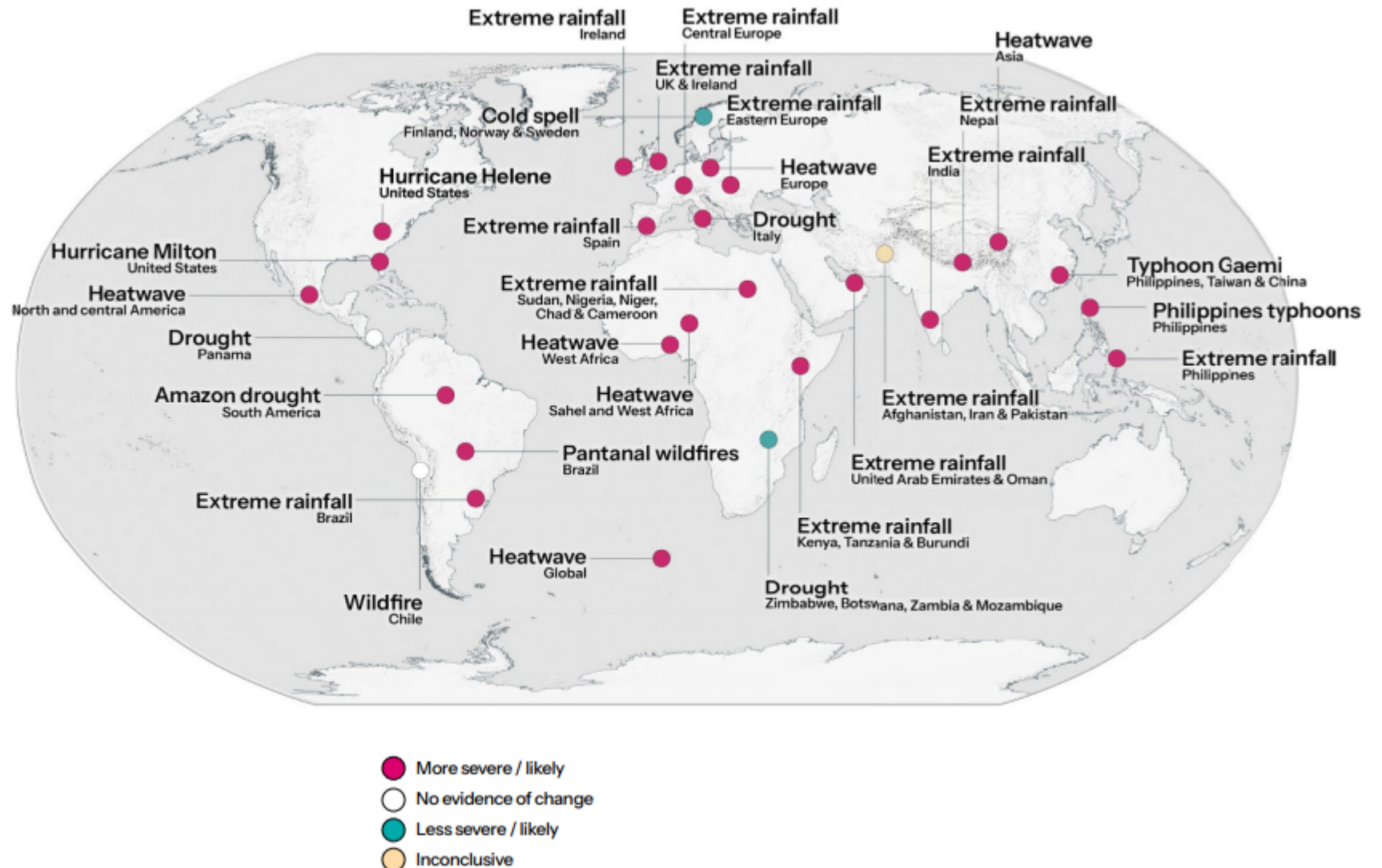
We studied 29 of these events:

Hazard

- Heatwave: 5
- Cold spell: 1
- Flood: 8
- Storm: 9
- Drought: 4
- Wildfire: 2

Region

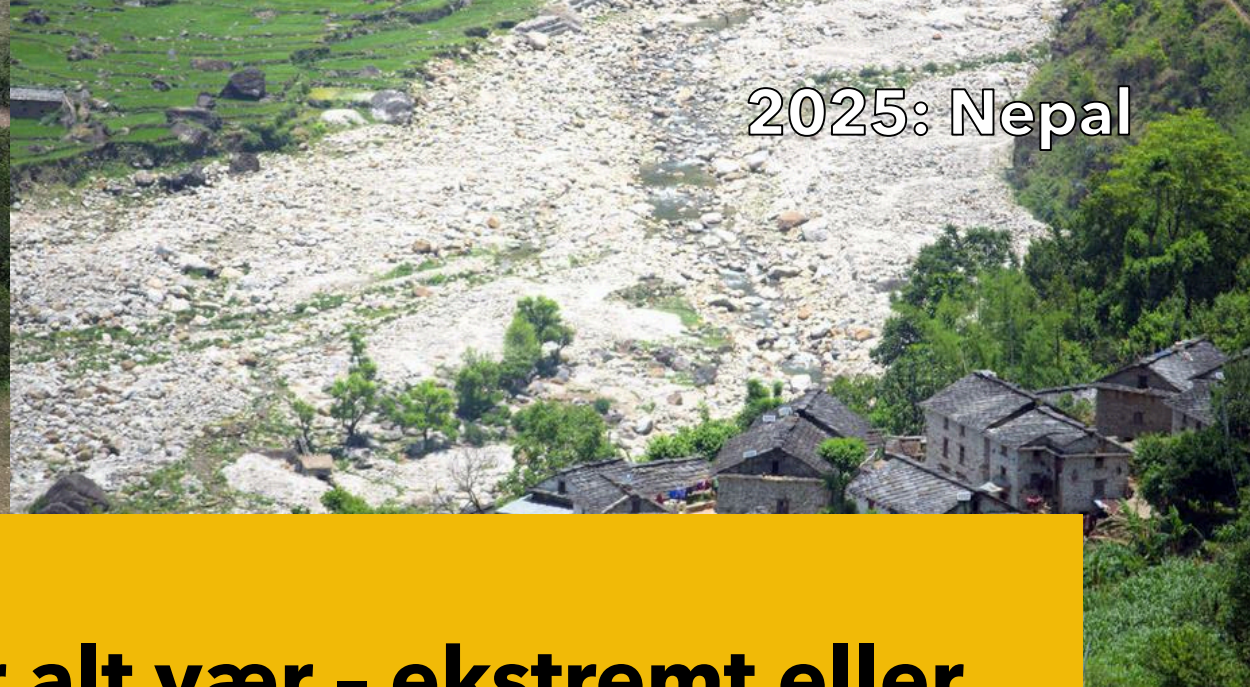
- Africa: 5
- Americas: 8
- Asia: 8
- Europe: 8
- Oceania: 0



2025: Texas, USA

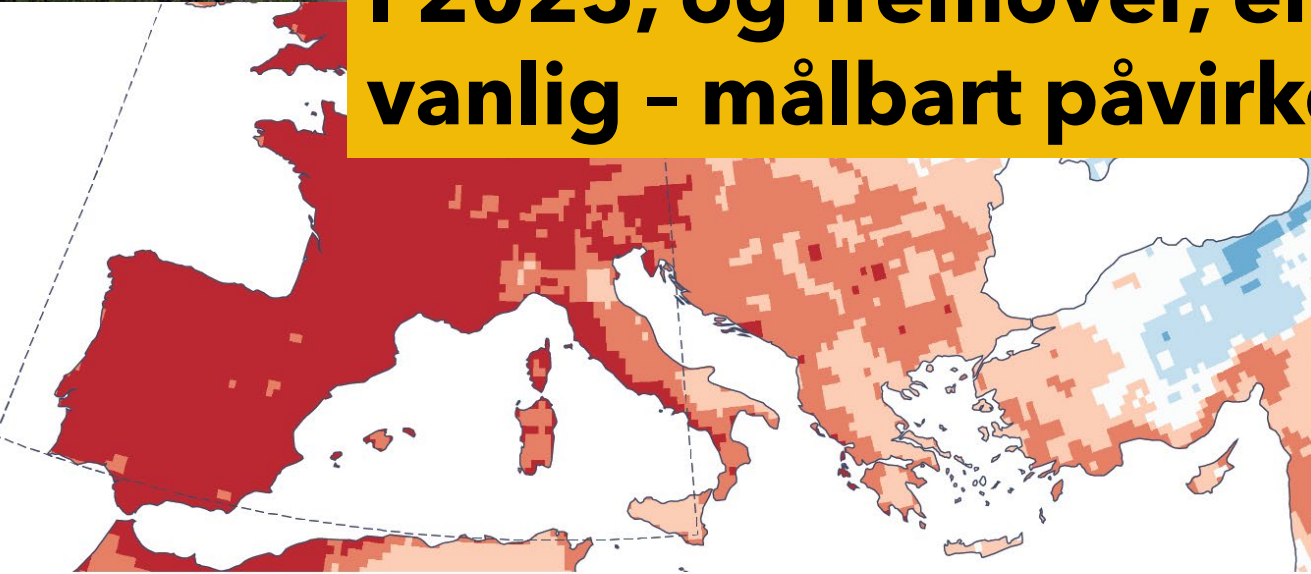


2025: Nepal

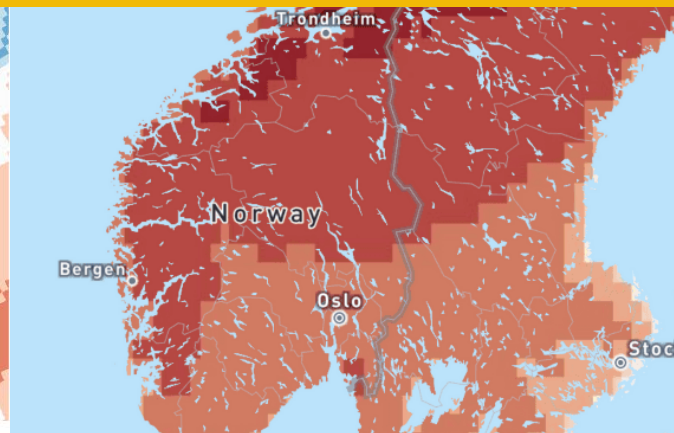


Tommelfingerregel:
I 2025, og fremover, er alt vær - ekstremt eller vanlig - målbart påvirket av global oppvarming

2025: Europa



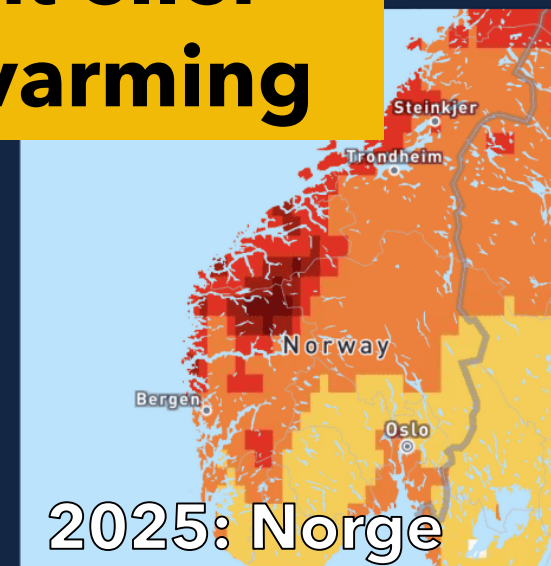
Coollest Much cooler than average Cooler than average Near average Warmer than average Much warmer than average Warmest



Temperature departure (°C)

-14° -3° 0° +3° +14°

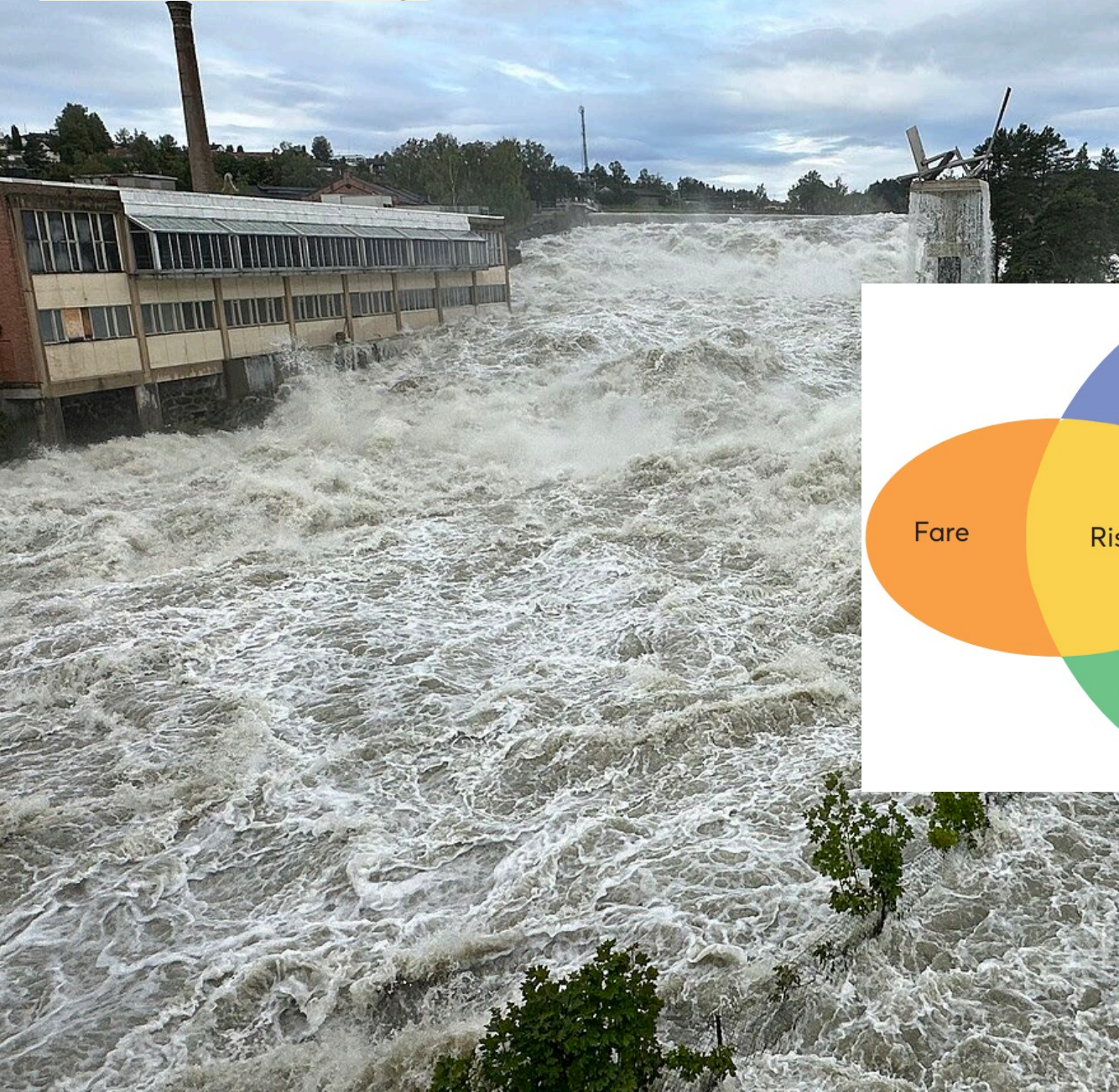
2025: Norge



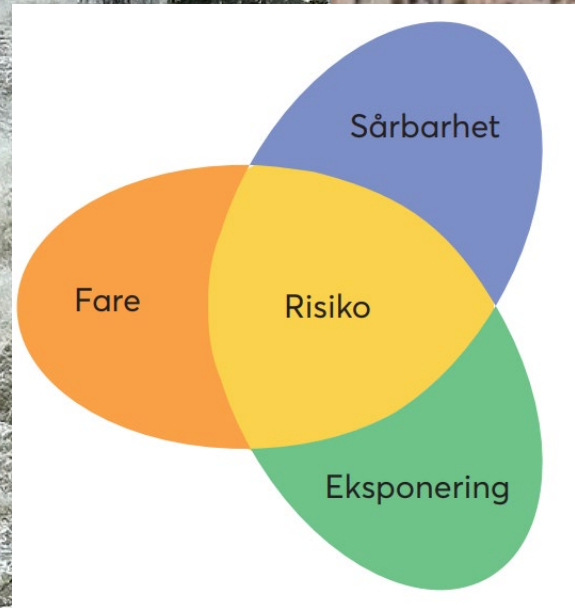
Climate Shift Index

-4 -2 0 10 2

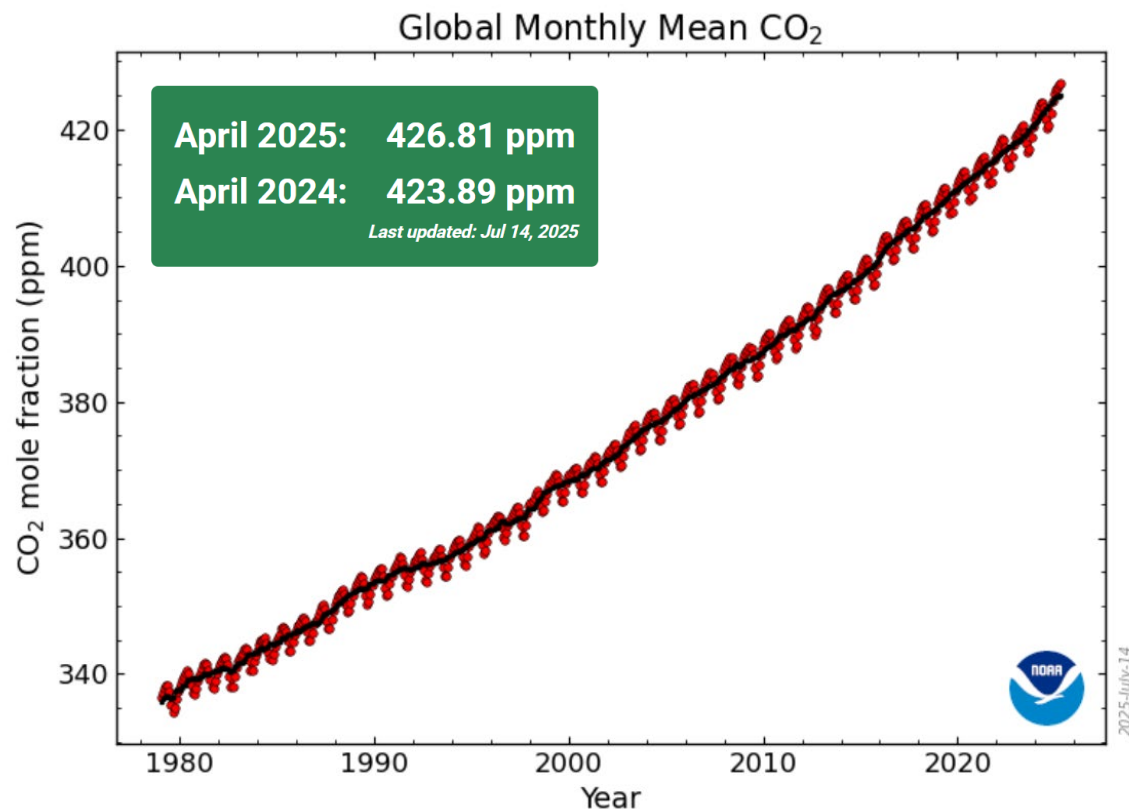
Hans/Norway



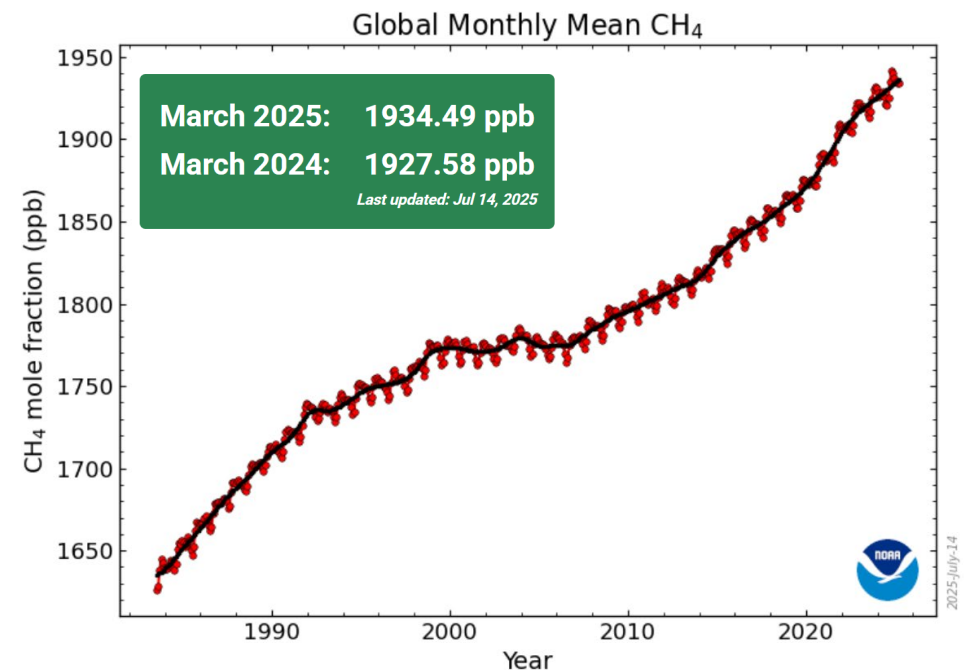
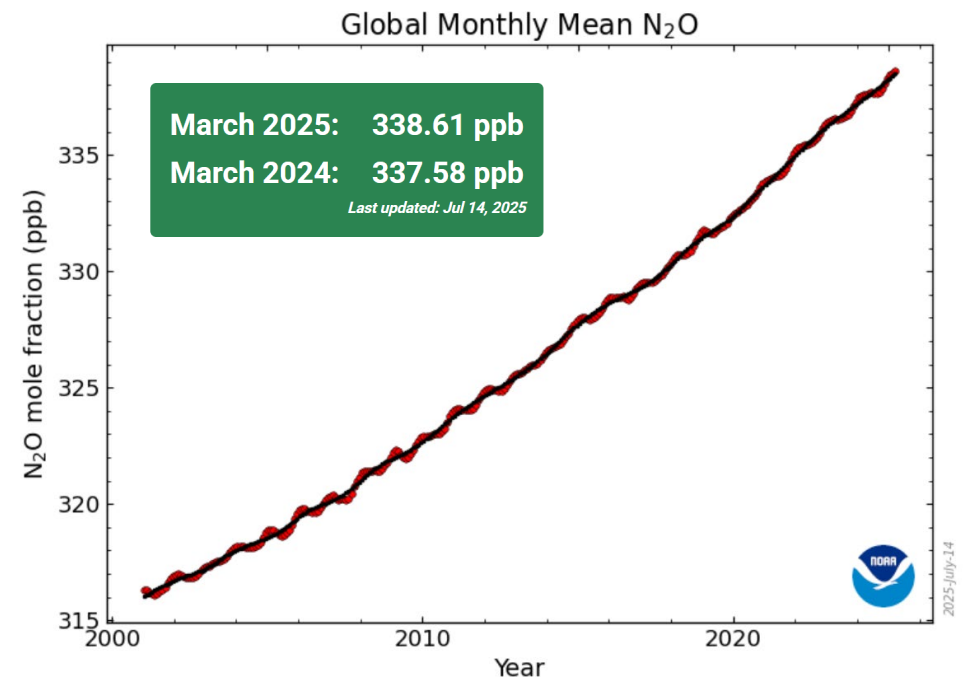
Daniel/Libya



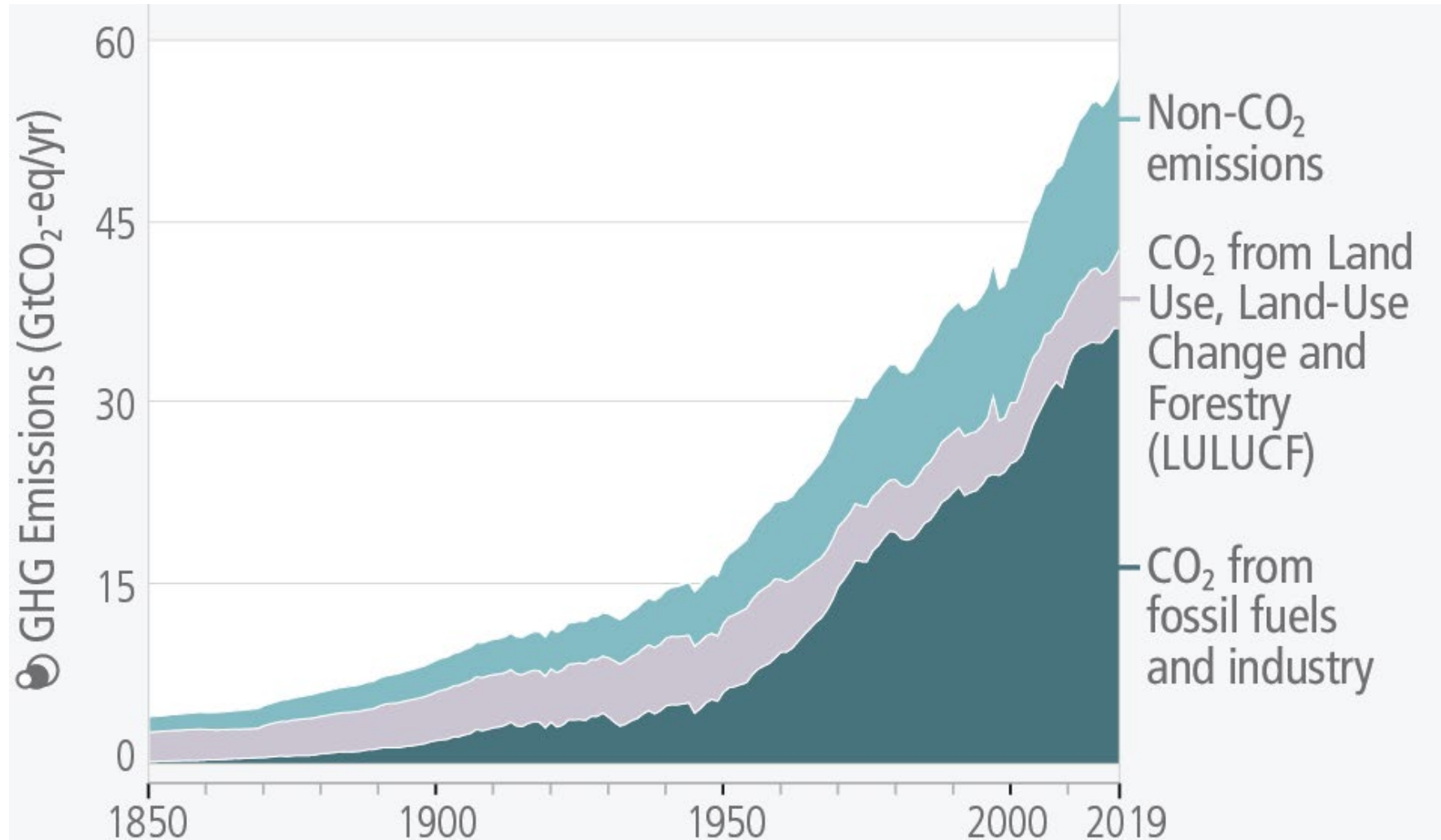
Hva driver klimaendringene?



Global monthly means since 1980

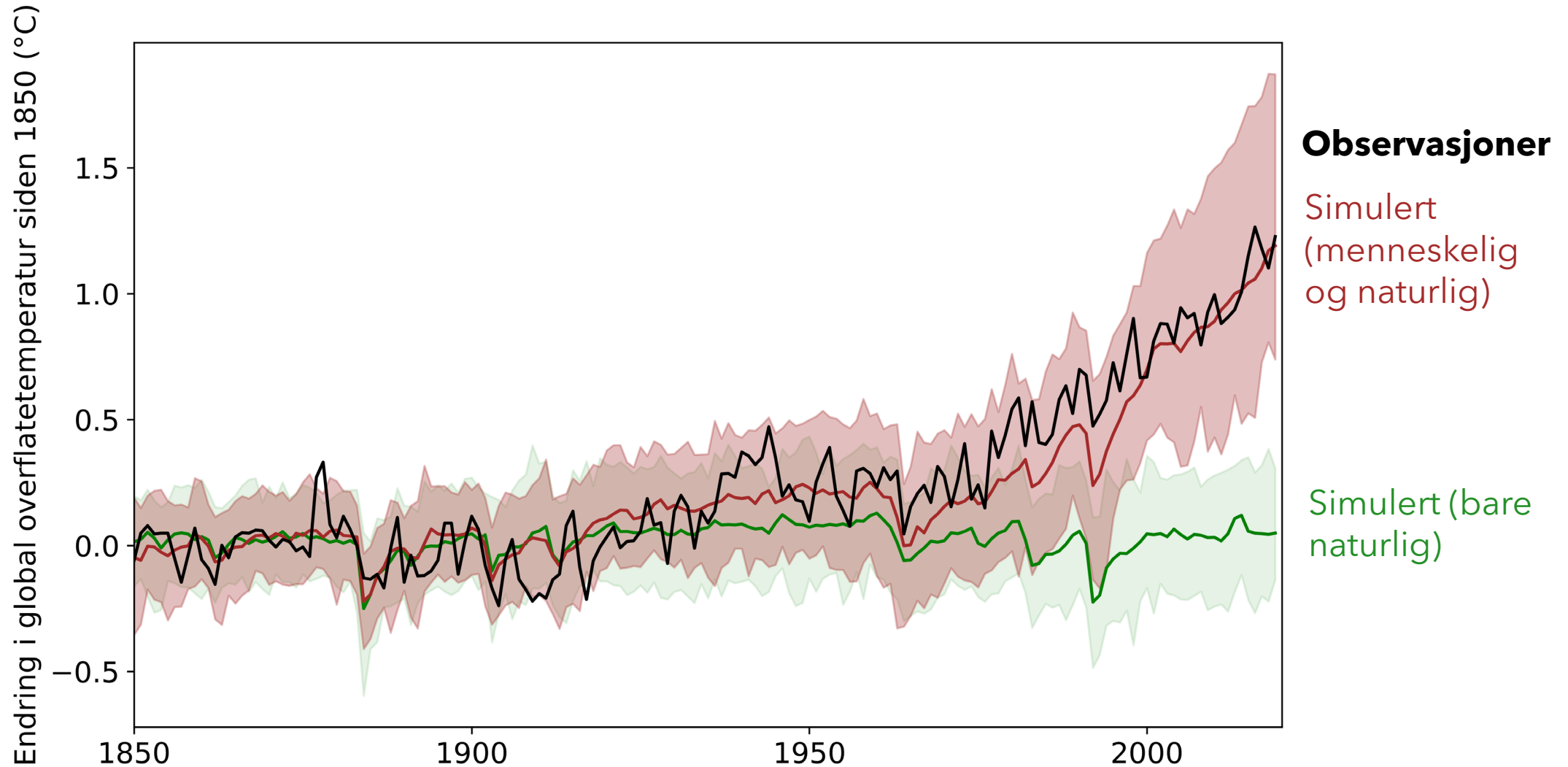


Hva driver klimaendringene?



IPCC's synthesis report, 2023

Klimaet med og uten menneskelig påvirkning (fra klimamodeller)



Går klimaendringene raskere og raskere?

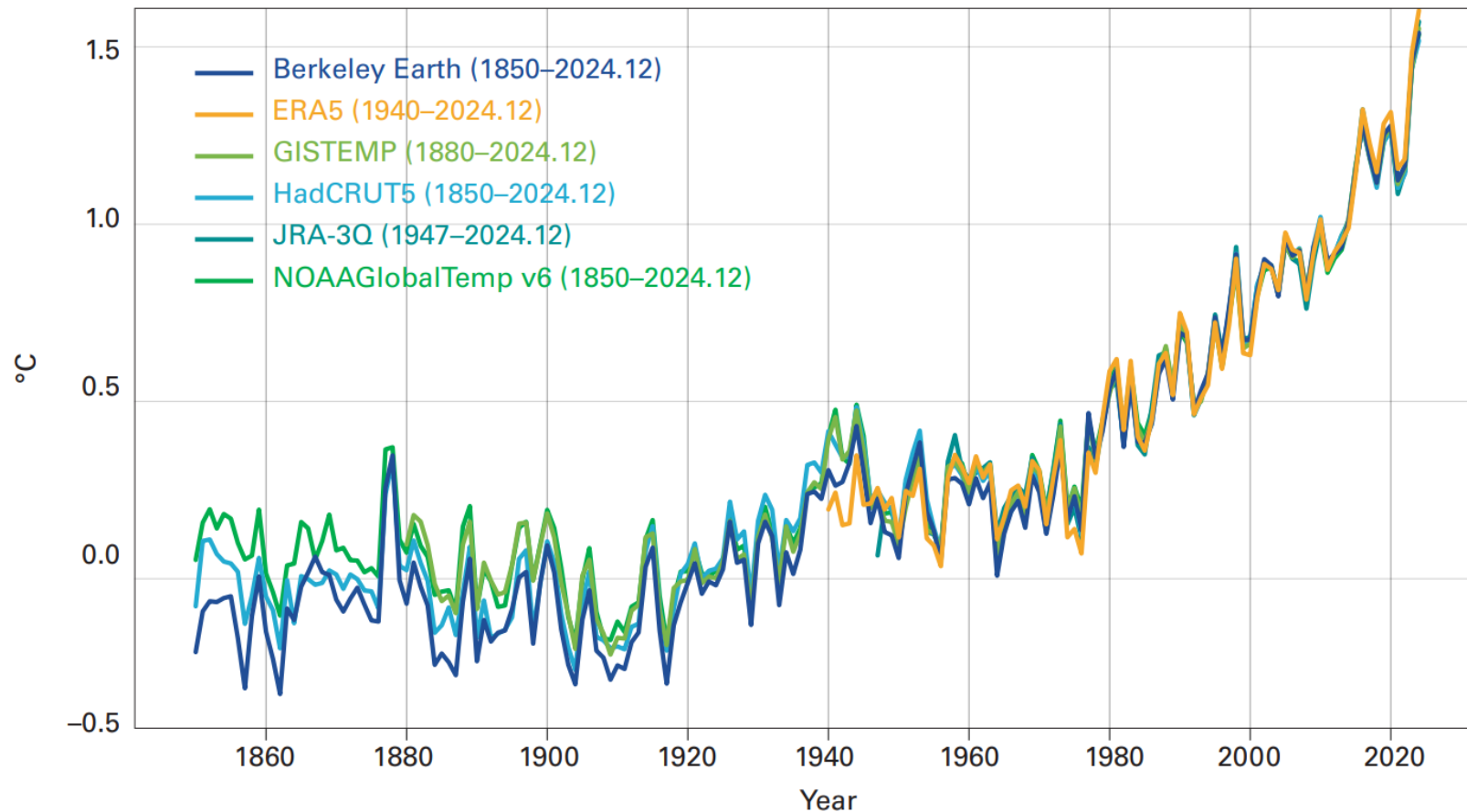
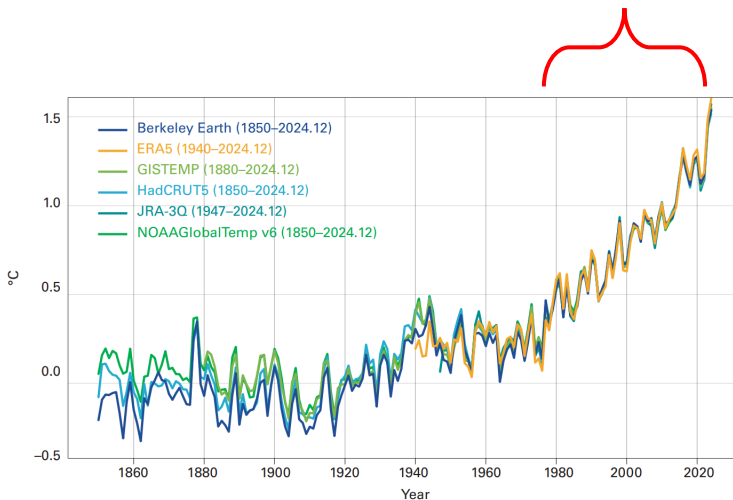
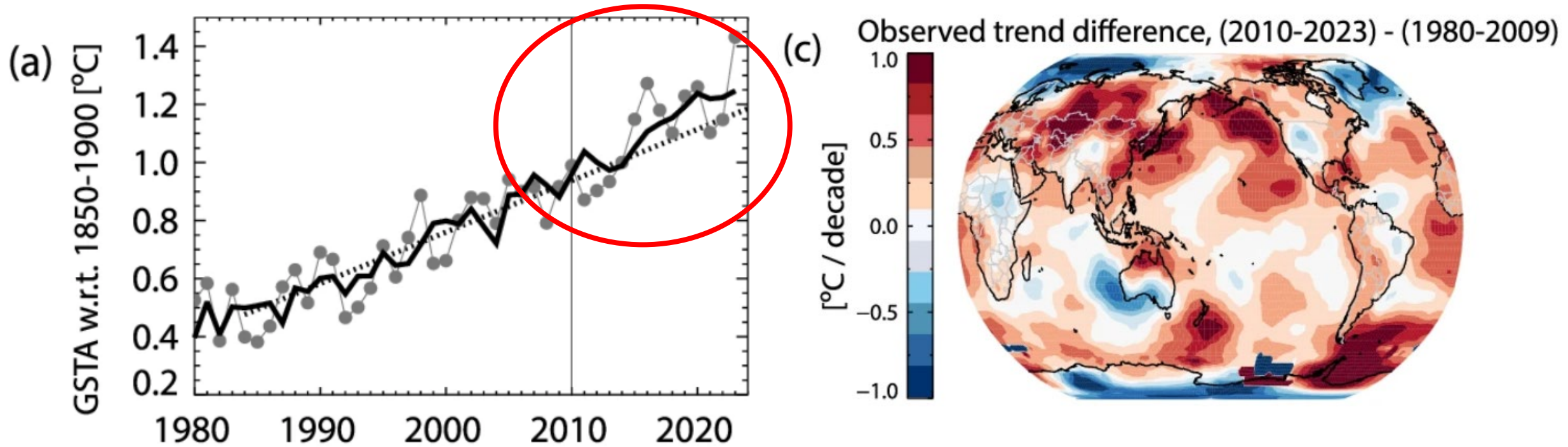


Figure 2. Annual global mean temperature anomalies relative to a pre-industrial (1850–1900) baseline shown from 1850 to 2024

Source: Data are from the six datasets indicated in the legend. For details see [Datasets and methods](#).

Ja, global oppvarming går litt raskere. Spesielt raskt nord i Stillehavet.



Det betyr at vi når temperaturgrensene enda litt raskere enn vi hadde fryktet. Hvorfor skjer det?

Figure 2. Annual global mean temperature anomalies relative to a pre-industrial (1850-1900) baseline shown from 1850 to 2024

Source: Data are from the six datasets indicated in the legend. For details see [Datasets and methods](#).



En hovedgrunn er at Kina har jobbet hardt med å rydde opp i utslipp av luftforurensing

Luftforurensing fungerer som en solskjerm, og har gitt global avkjøling siden ca 1970.

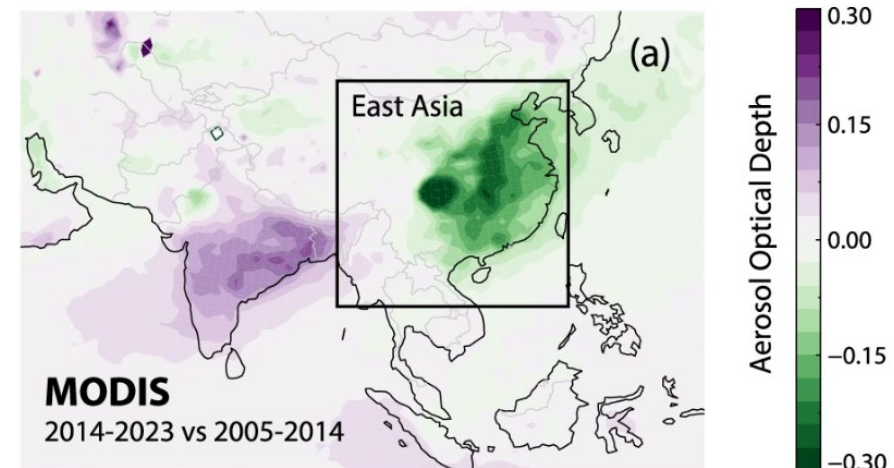
Nå har en hovedkilde blitt ryddet opp i. Vi ser det som "ekstra" global oppvarming, selv om grunnen egentlig er drivhusgassene.

Article | [Open access](#) | Published: 14 July 2025

East Asian aerosol cleanup has likely contributed to the recent acceleration in global warming

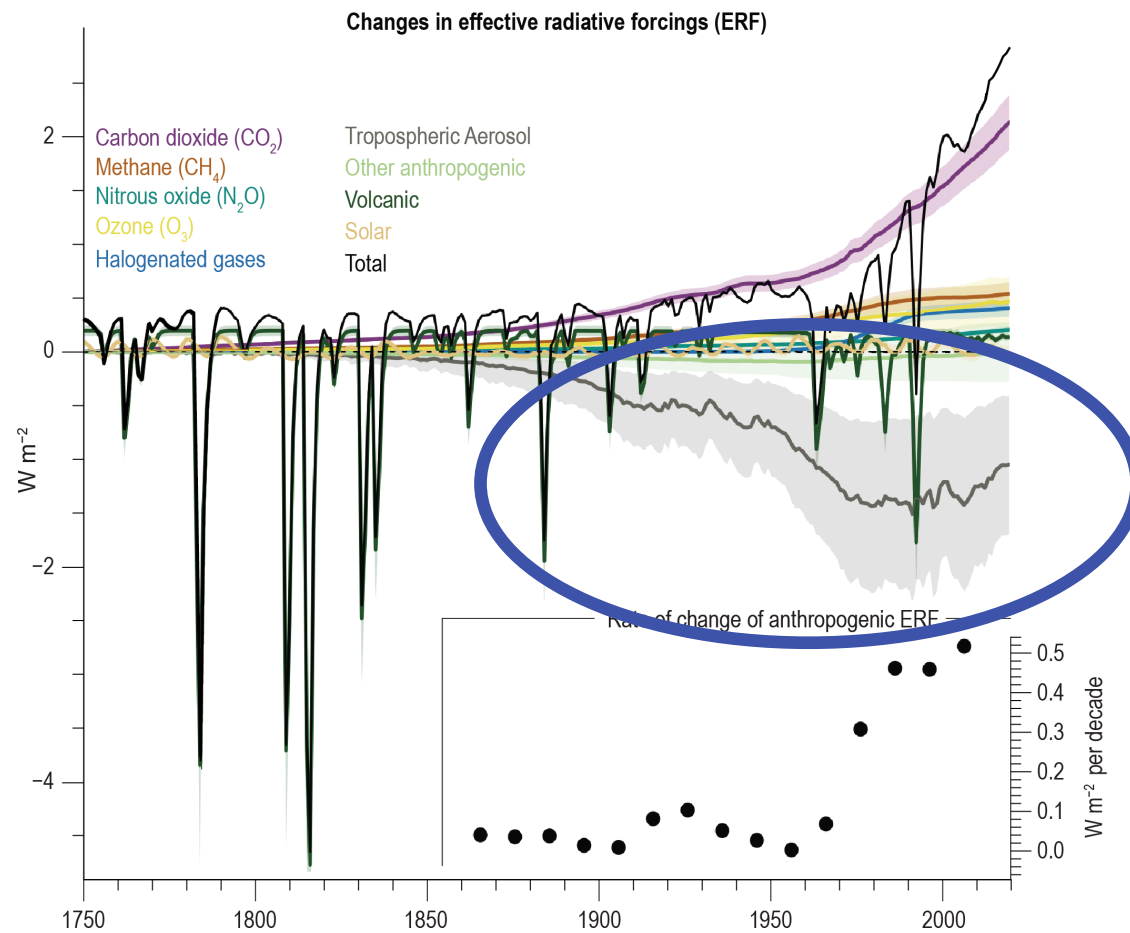
[Bjørn H. Samset](#) , [Laura J. Wilcox](#), [Robert J. Allen](#), [Camilla W. Stjern](#), [Marianne T. Lund](#), [Sharar Ahmadi](#), [Annica Ekman](#), [Maxwell T. Elling](#), [Luke Fraser-Leach](#), [Paul Griffiths](#), [James Keeble](#), [Tsuyoshi Koshiro](#), [Paul Kushner](#), [Anna Lewinschal](#), [Risto Makkonen](#), [Joonas Merikanto](#), [Pierre Nabat](#), [Larissa Narazenko](#), [Declan O'Donnell](#), [Naga Oshima](#), [Steven T. Rumbold](#), [Toshihiko Takemura](#), [Kostas Tsigaridis](#) & [Daniel M. Westervelt](#)

[Communications Earth & Environment](#) **6**, Article number: 543 (2025) | [Cite this article](#)



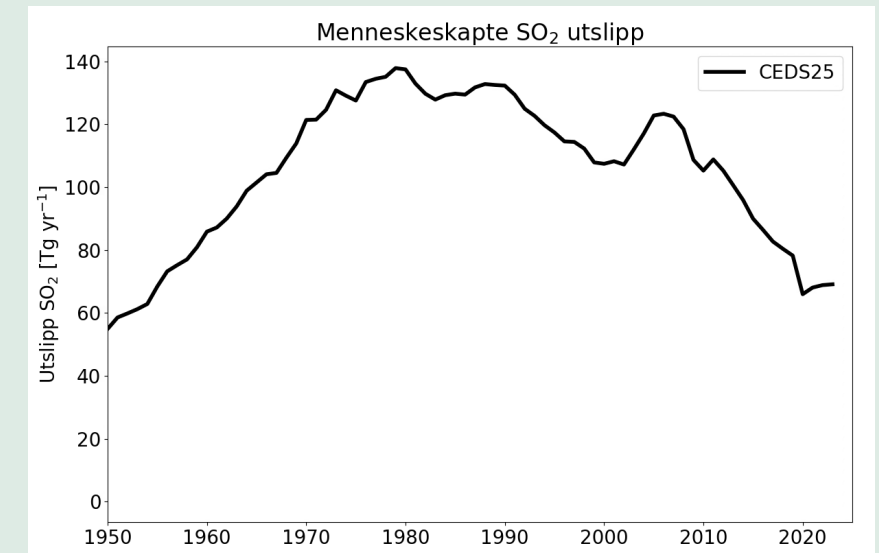
Partikler har skjult noe av oppvarmingen

Endring i klimapådriv frem til 2019:



Utslipp av SO₂ (svoveldioksid) :

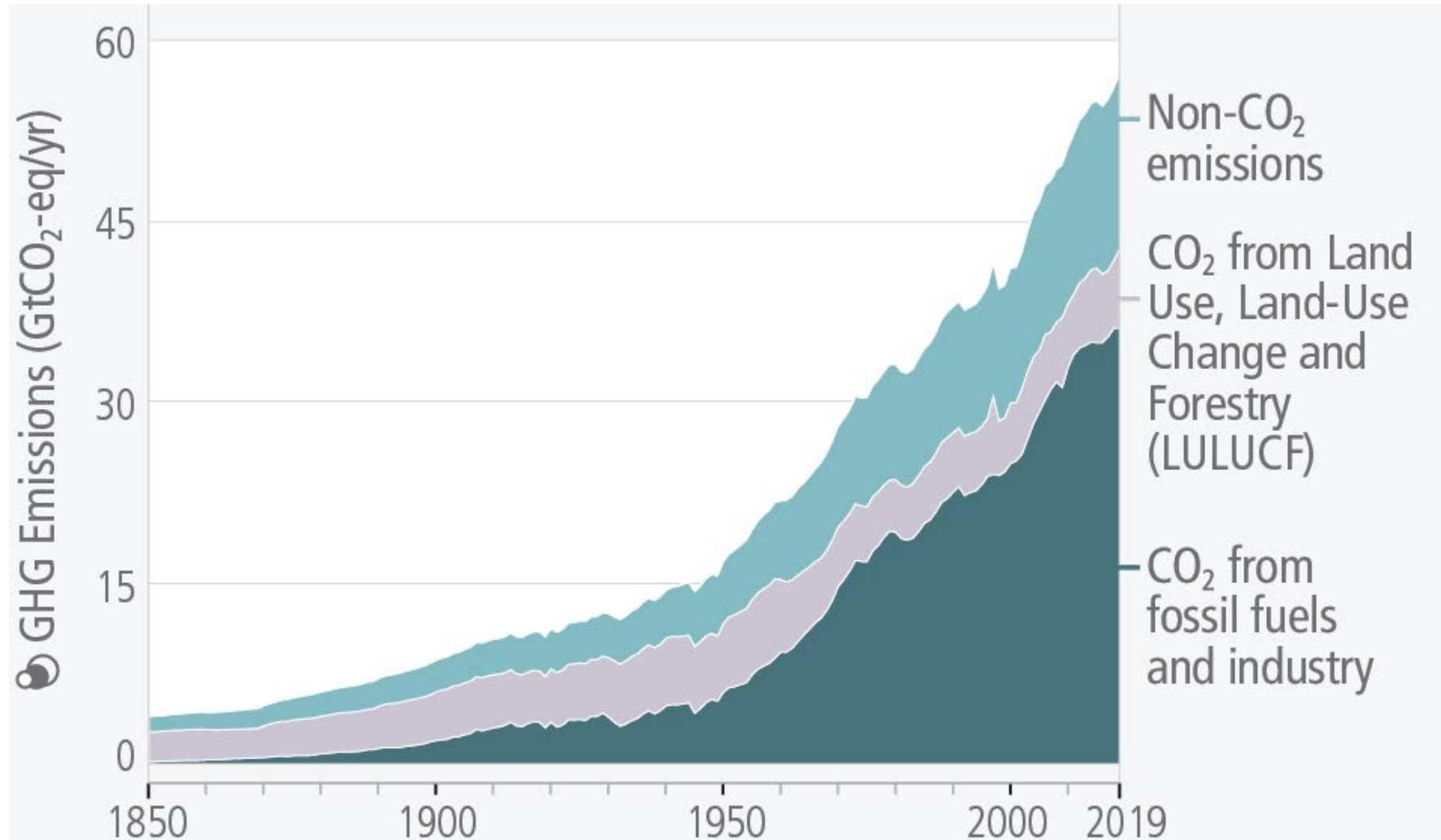
Globale utslipp av SO₂ 1950-2023:



CEDS25: [JGCRI/CEDS: Community Emissions Data System \(CEDS\)](https://github.com/JGCRI/CEDS)
(github.com)

Hva må skje nå?

Hva driver klimaendringene?



IPCC's synthesis report, 2023

Parisavtalen - hva har vi bestemt oss for?



PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21-CMP11



United
Nations

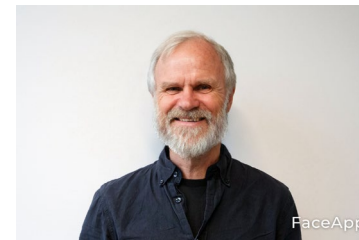
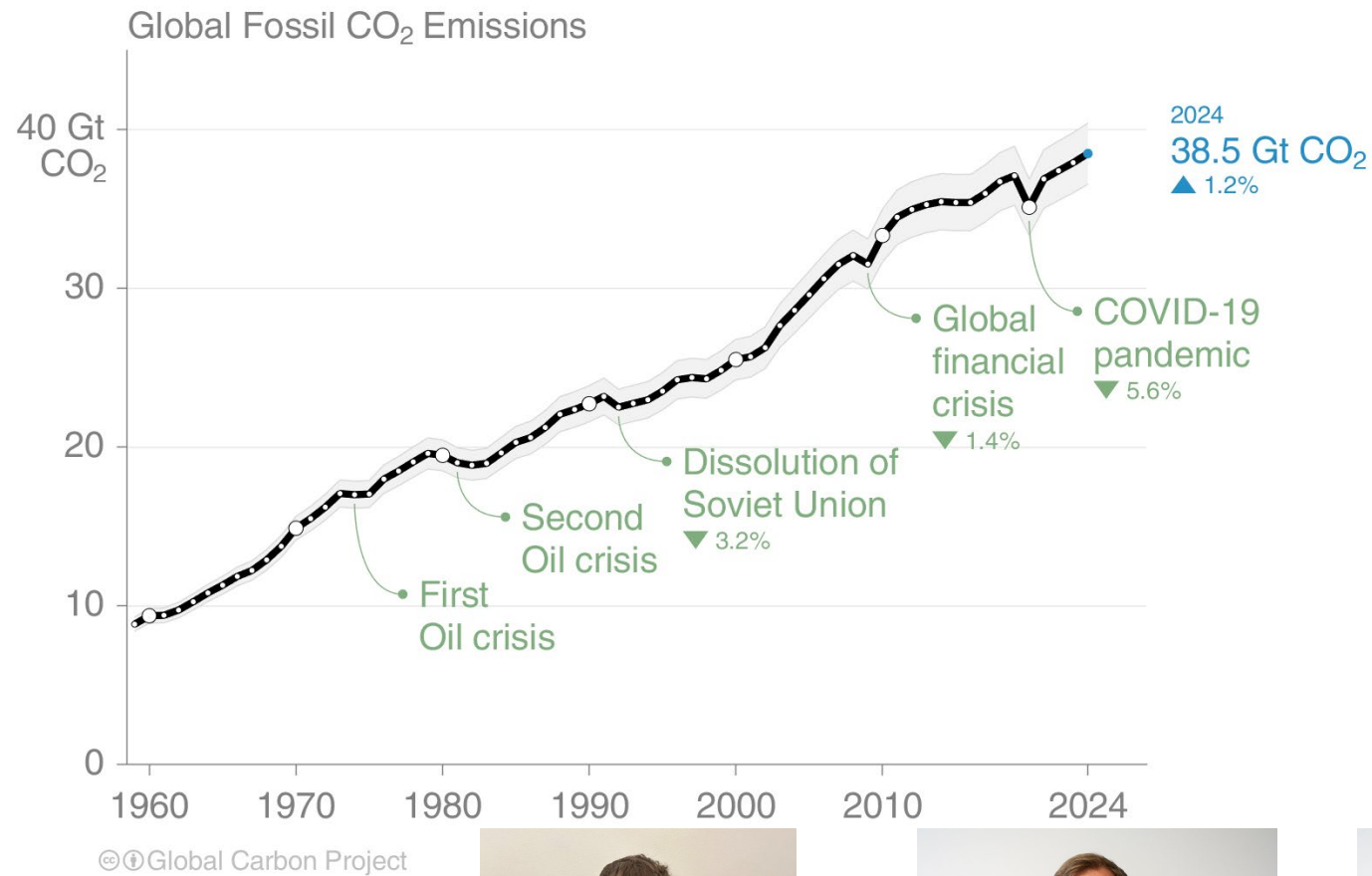


Framework Convention
on Climate Change

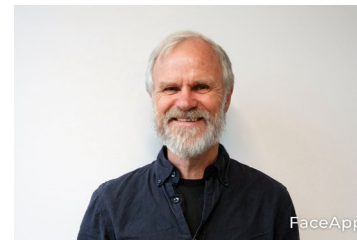
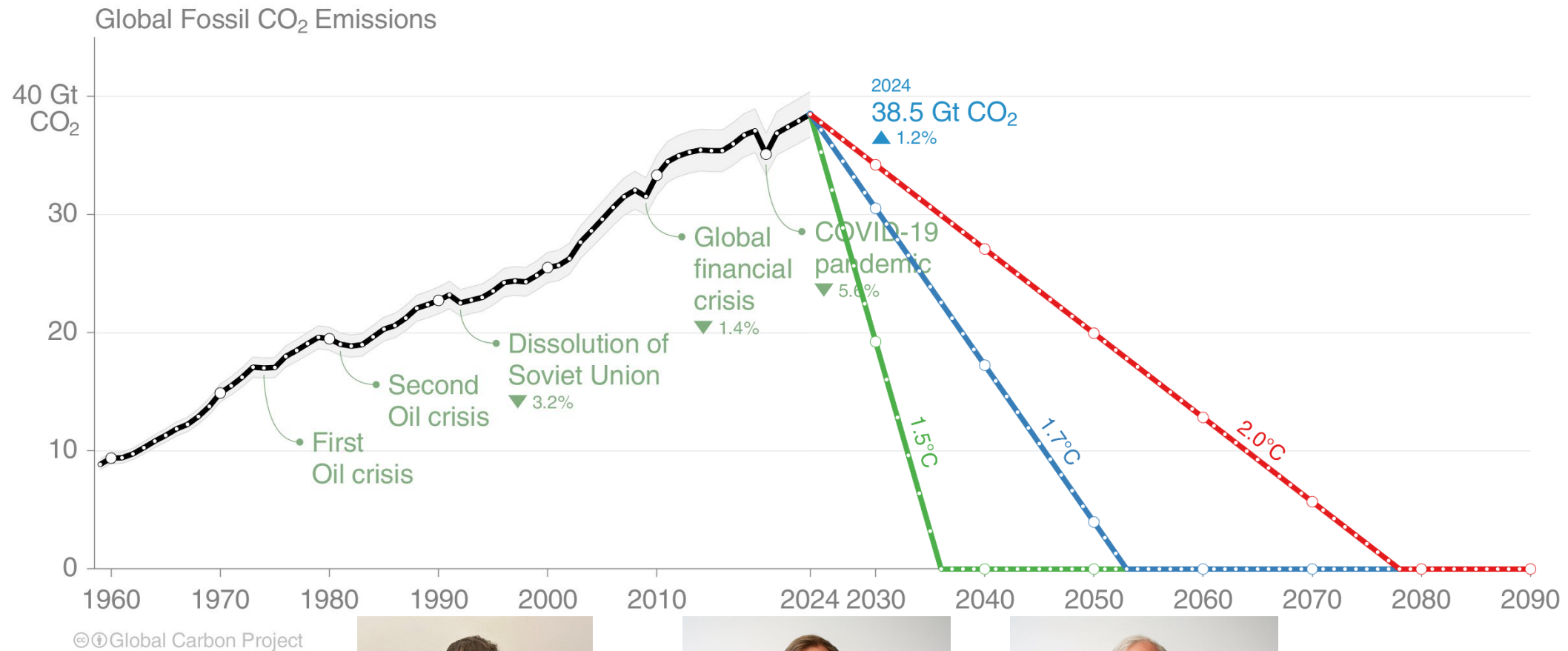
Article 2: “..... Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels”

Article 4: “.... achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century,.....”

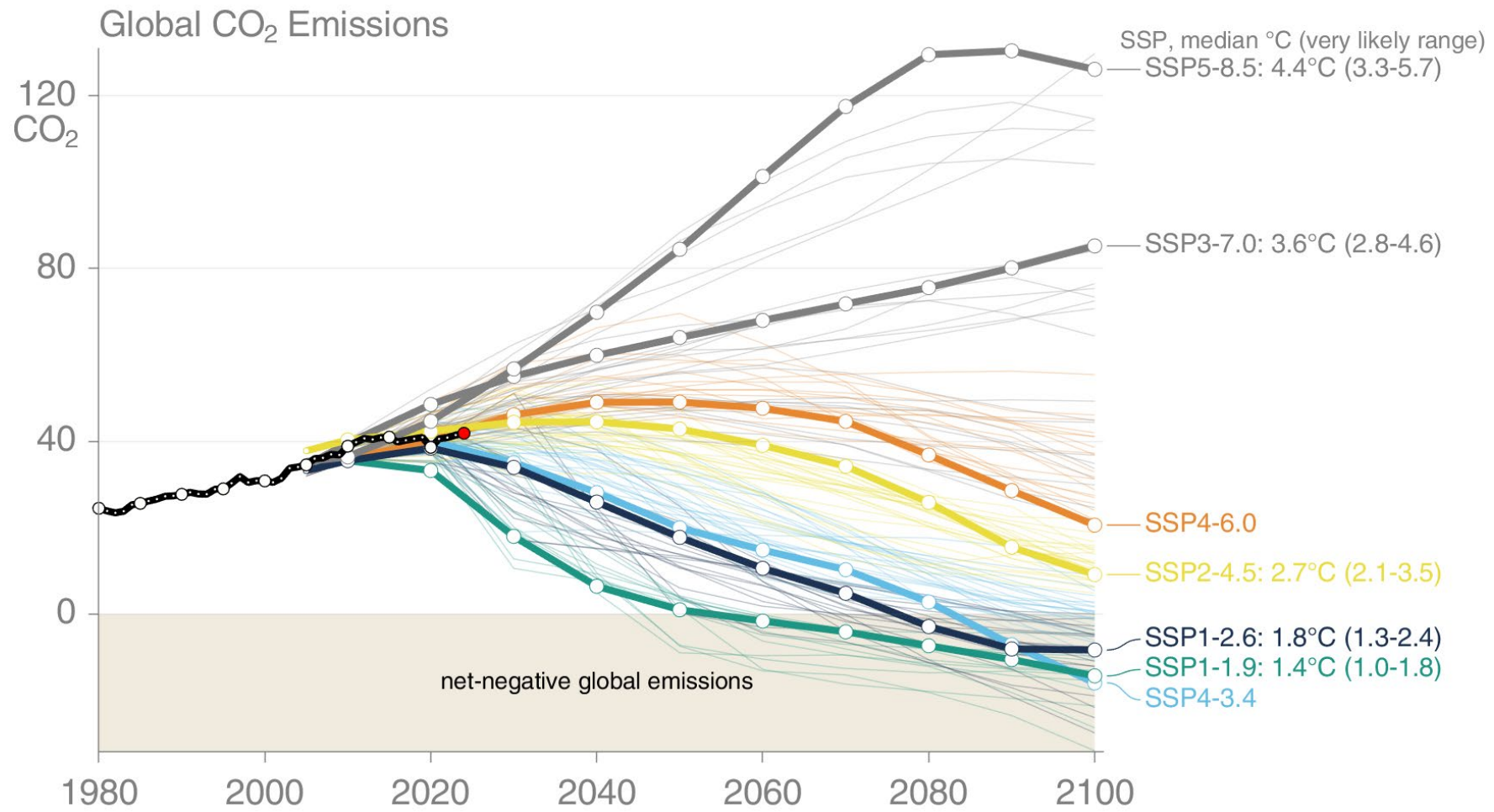
Globale fossile CO₂-utslipp



Globale fossile CO₂-utslipp, og hva som kreves

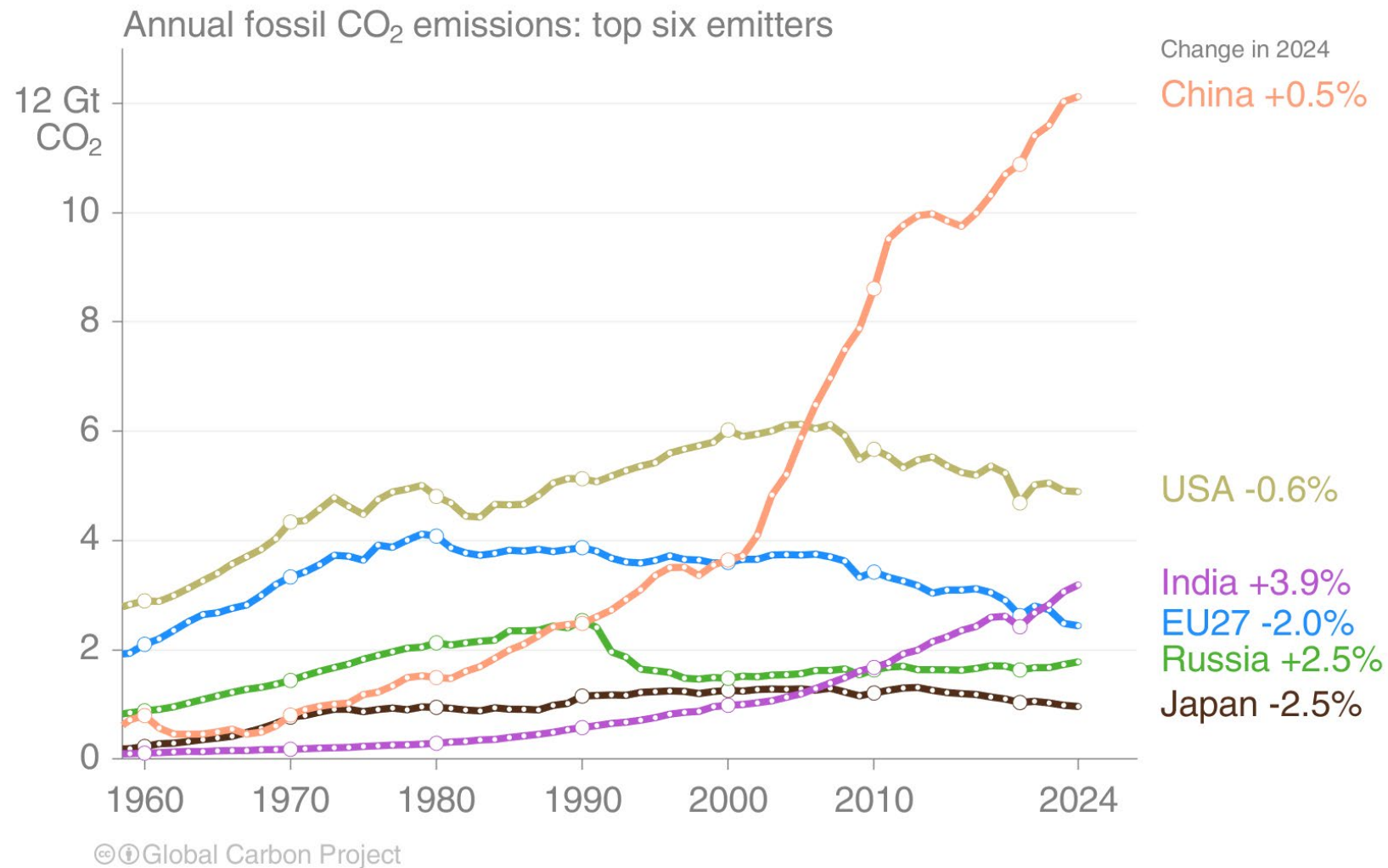


Dagens utslipp i lys av ulike scenarioer

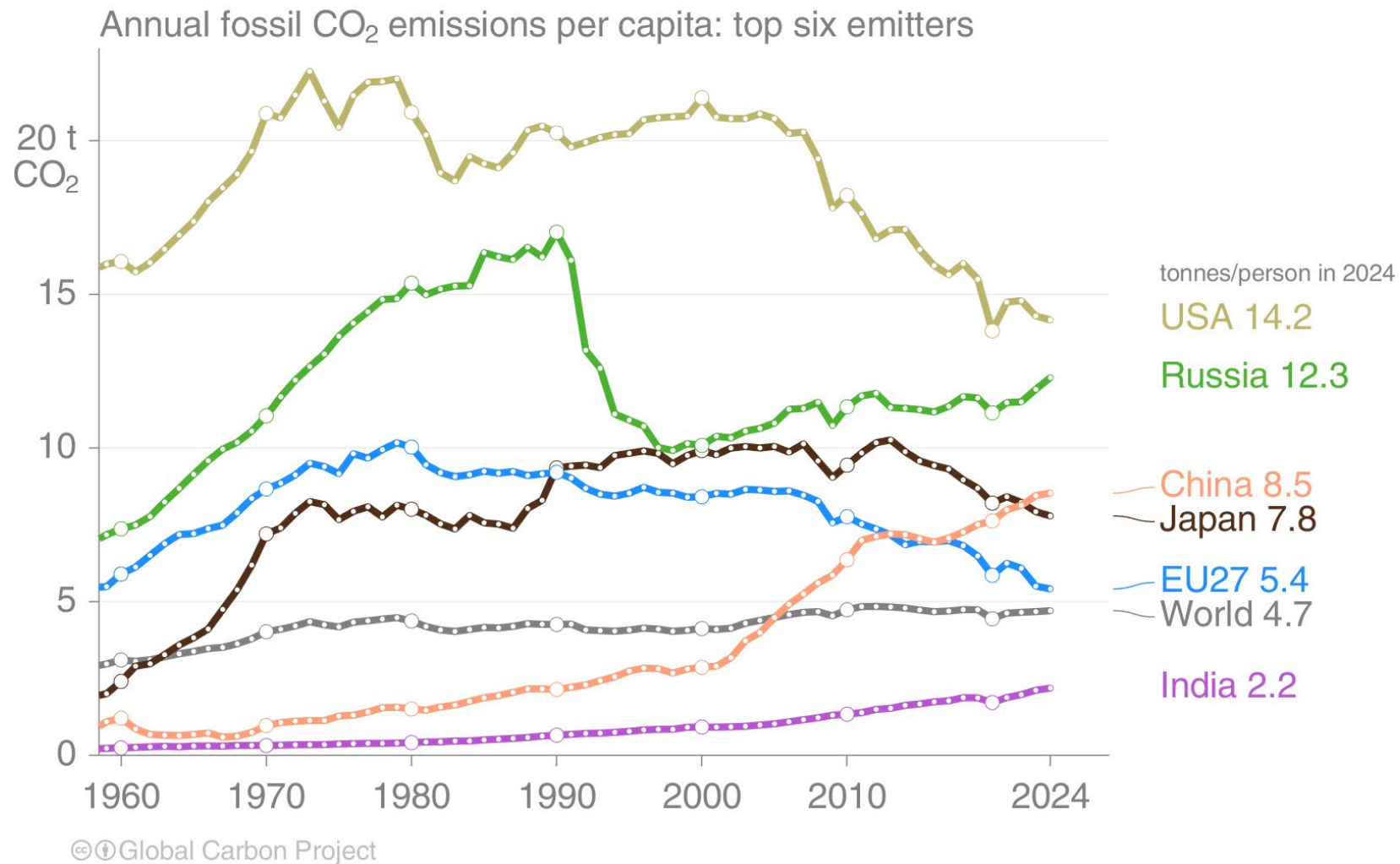


© Global Carbon Project • Data: Riahi et al (2017), Rogelj et al (2018), SSP Database (version 2)

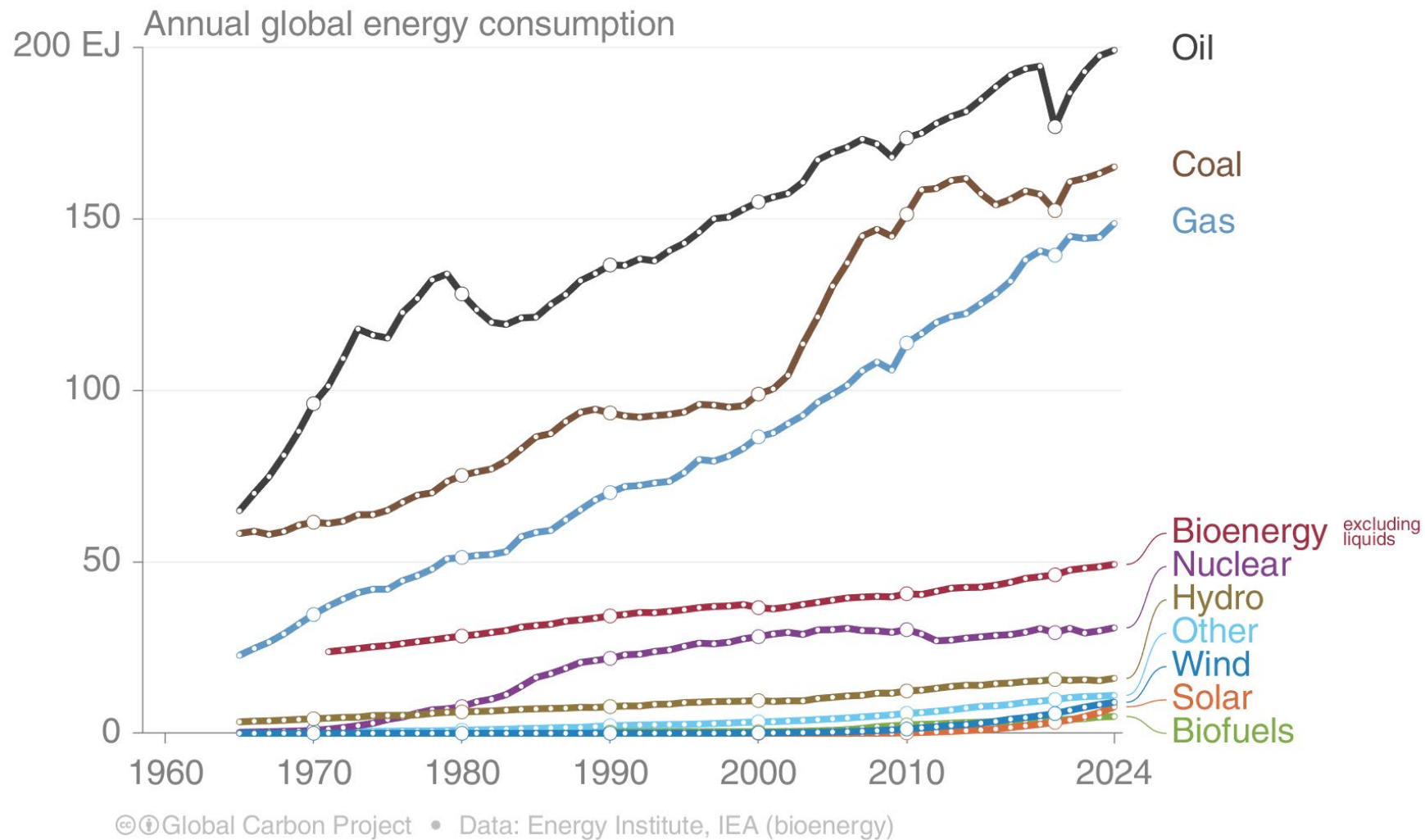
Hva skjer i de største utslippslandene?



Hva skjer i de største utslippslandene, pr inbygger?

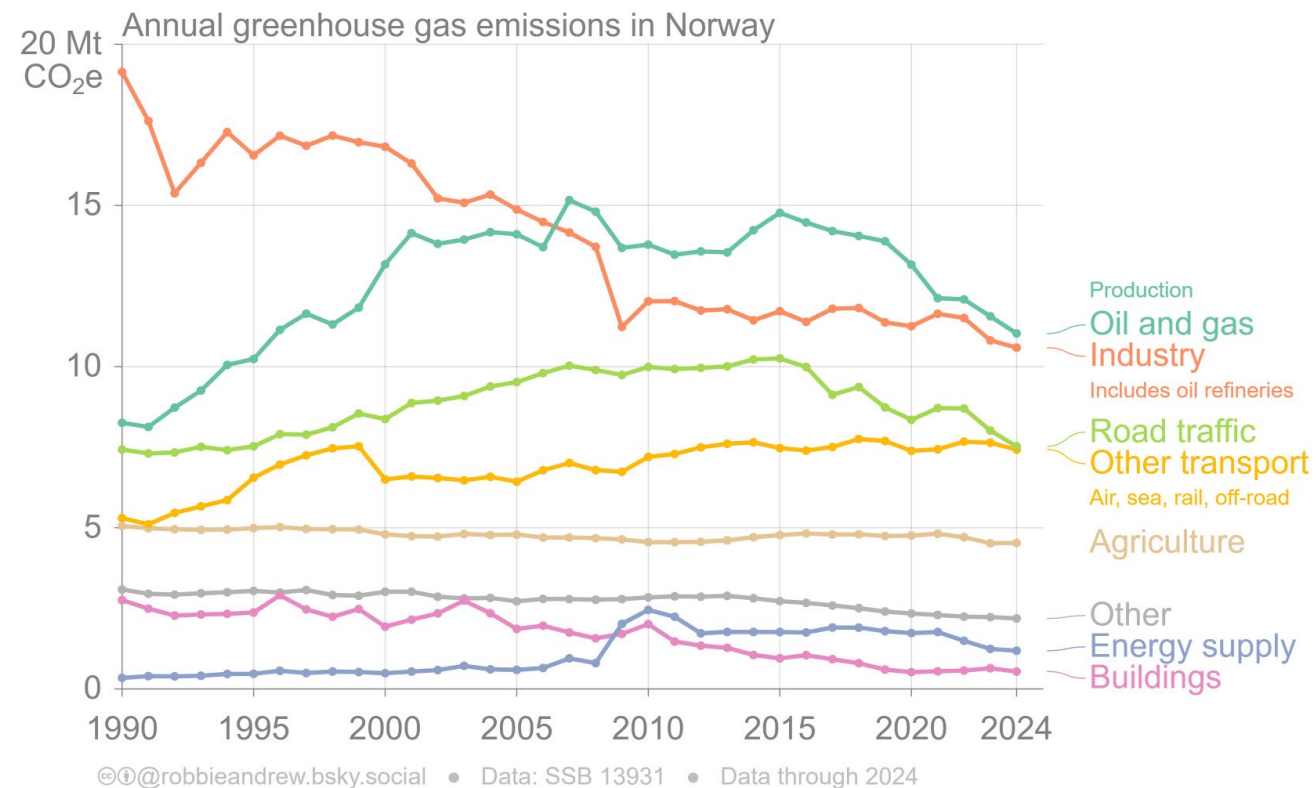
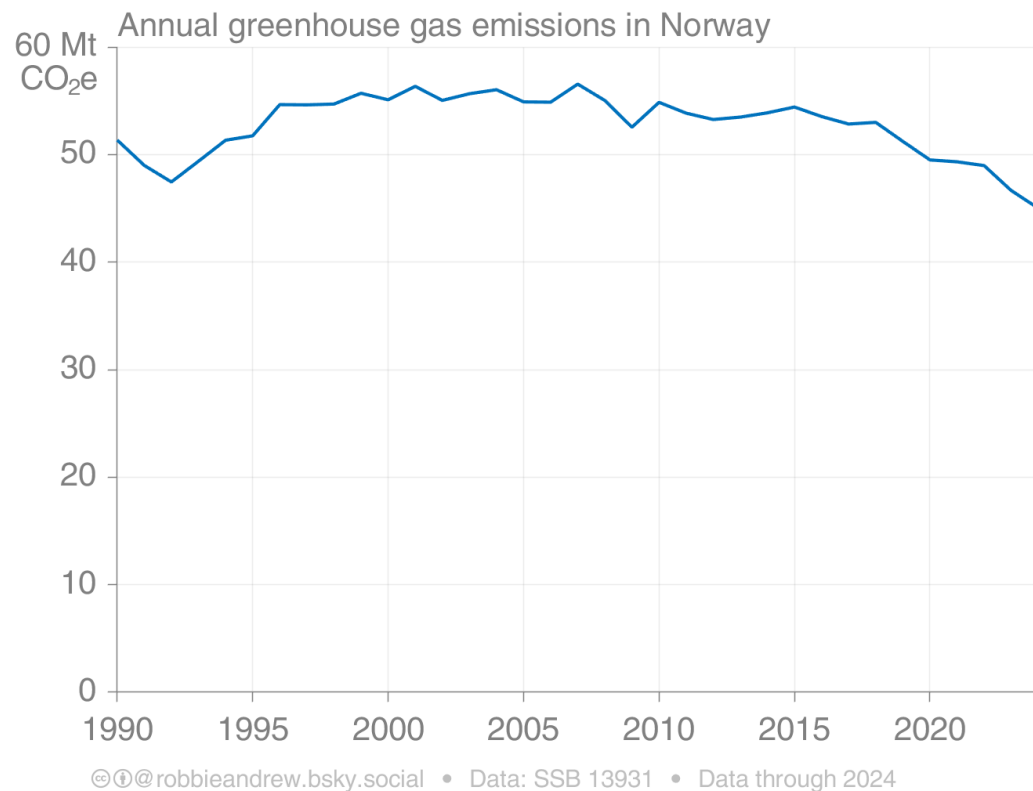


Utvikling i energikilder

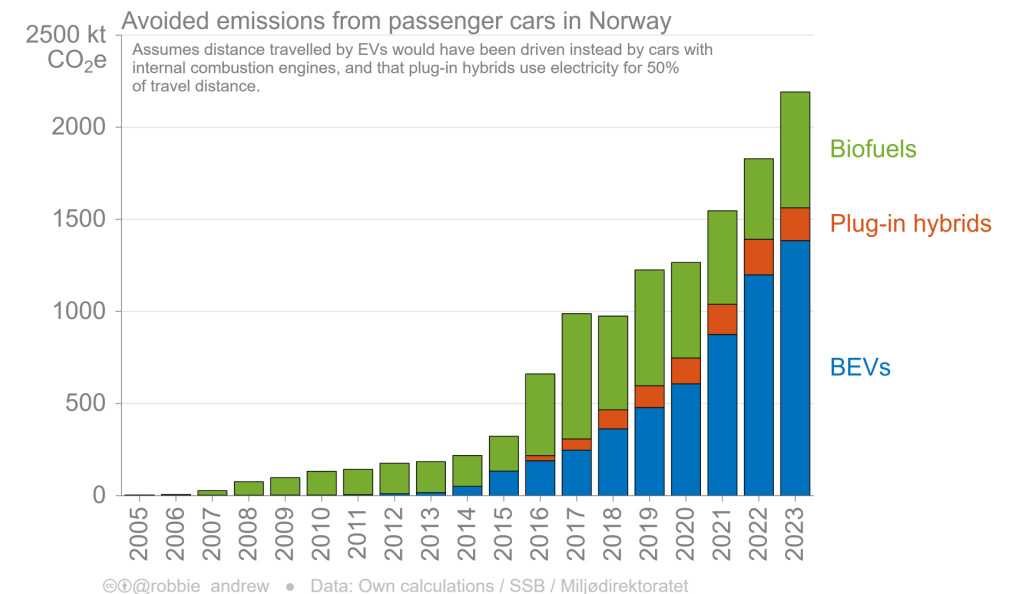
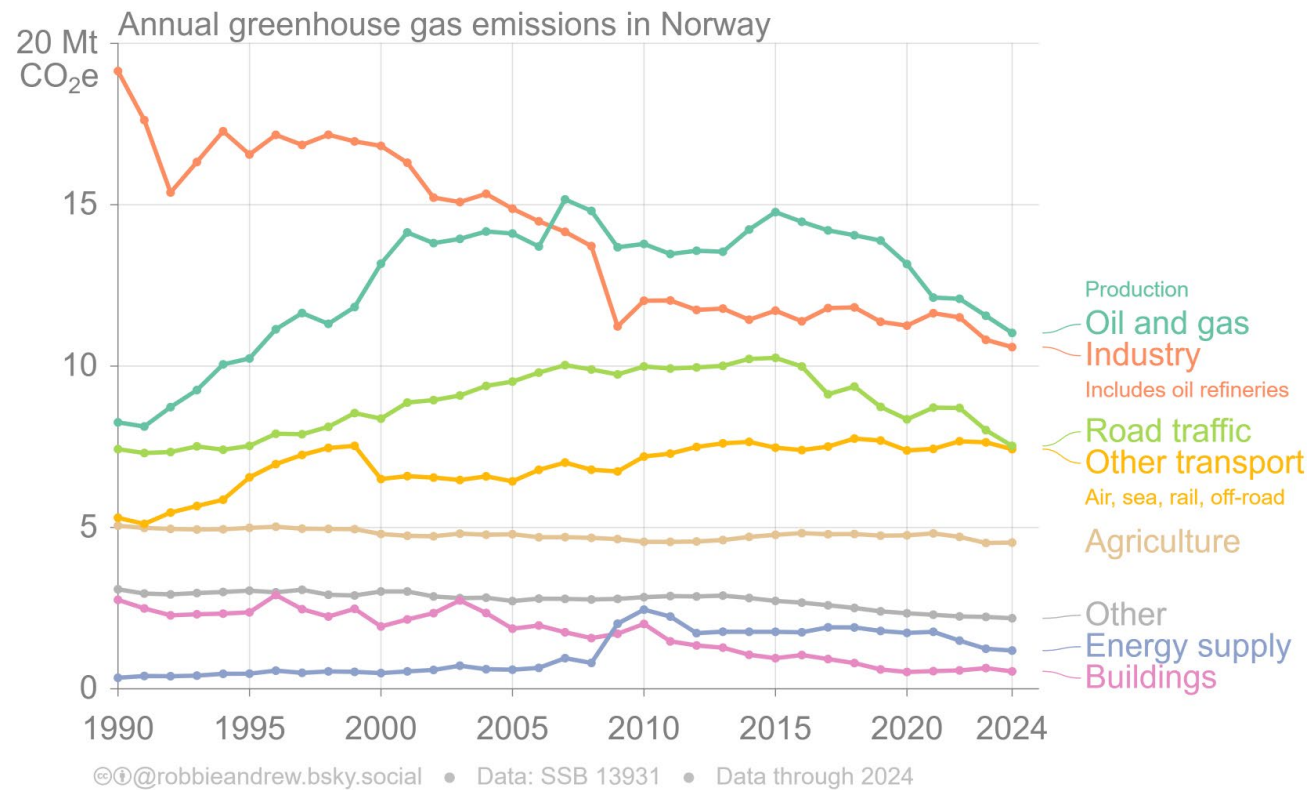


Hva med Norge?

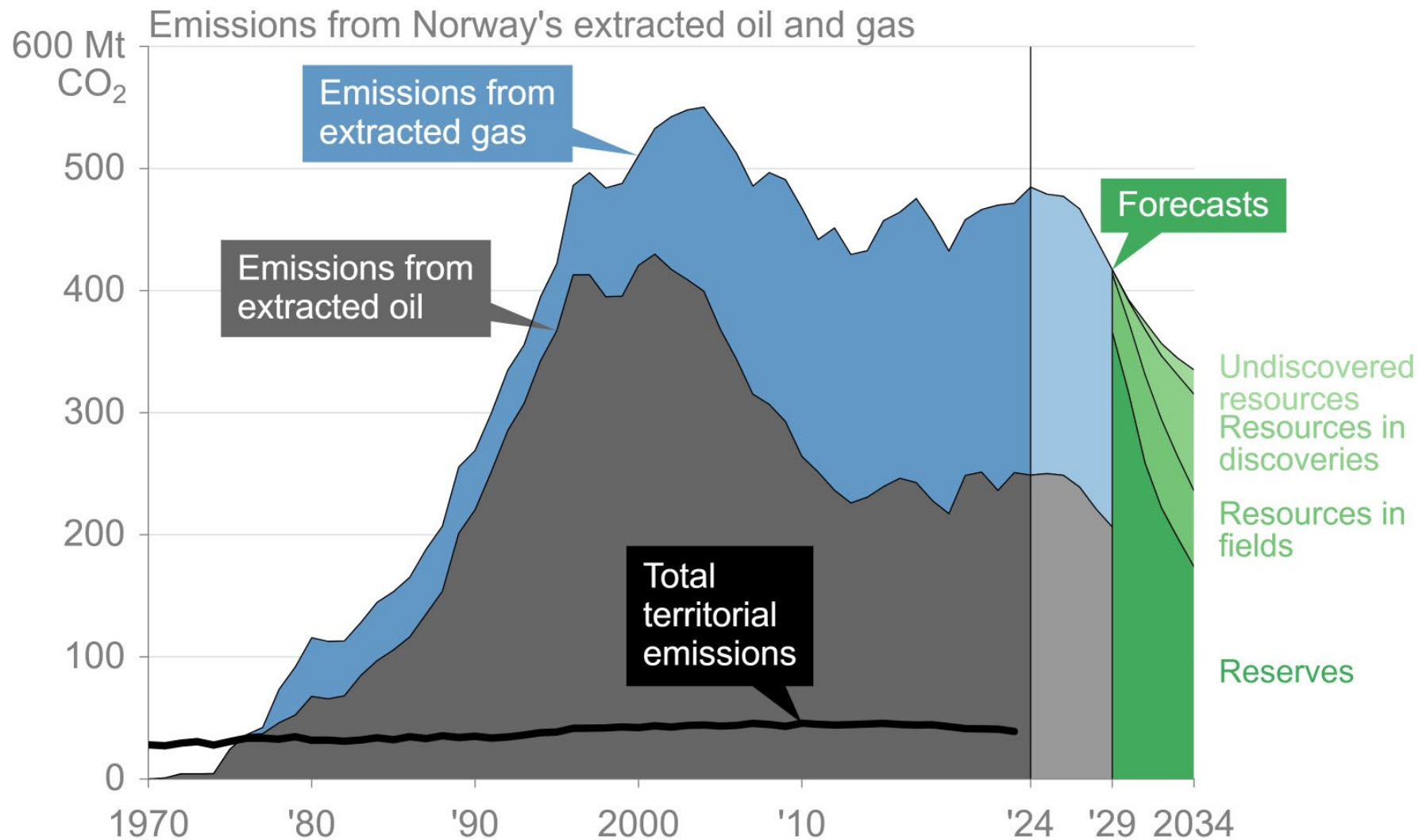
Norge i 2024: ned 3,5% (etter ned 4,7% i 2023)



Utslipp i Norge pr sektor



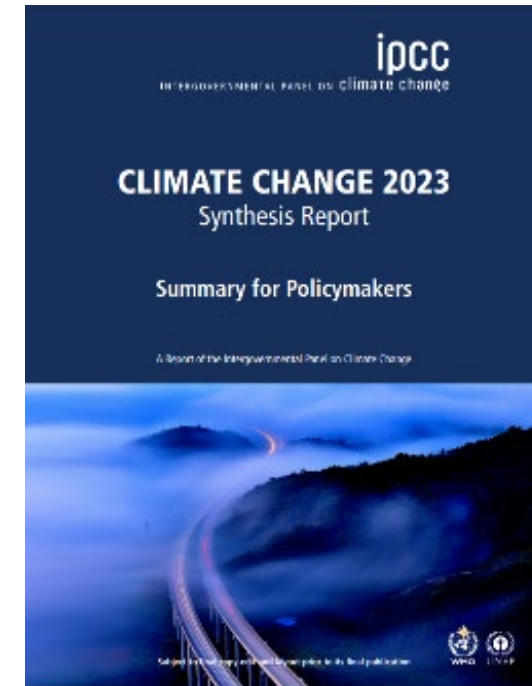
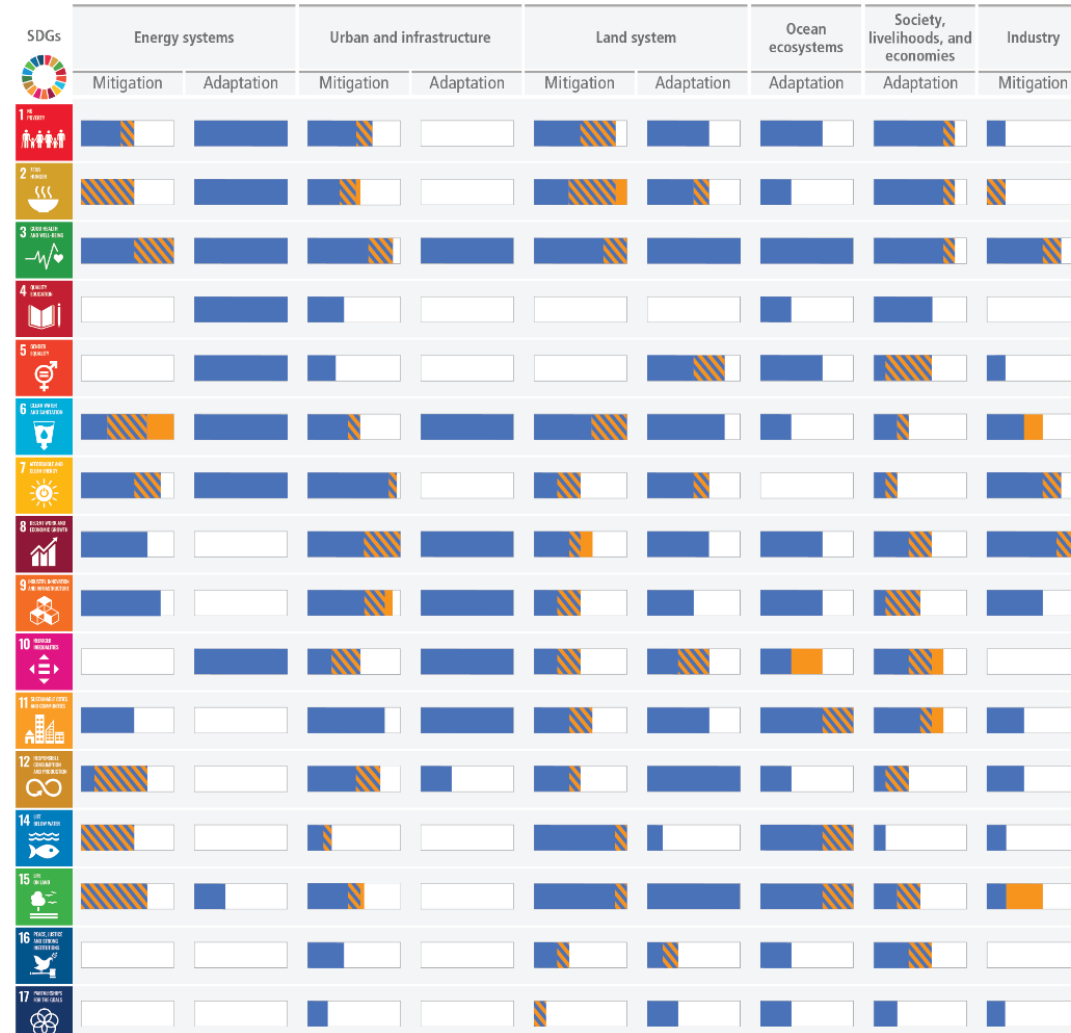
Utslipp i Norge vs utslipp fra norsk olje og gass



Synergier og avveininger med andre bærekraftsmål

Near-term adaptation and mitigation actions have more synergies than trade-offs with Sustainable Development Goals (SDGs)

Synergies and trade-offs depend on context and scale

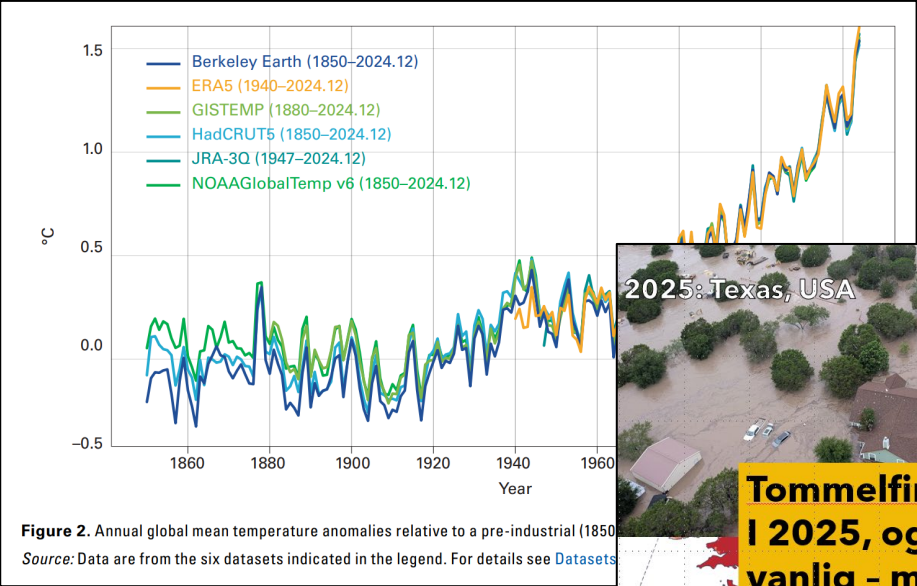


 Synergies  Trade-offs

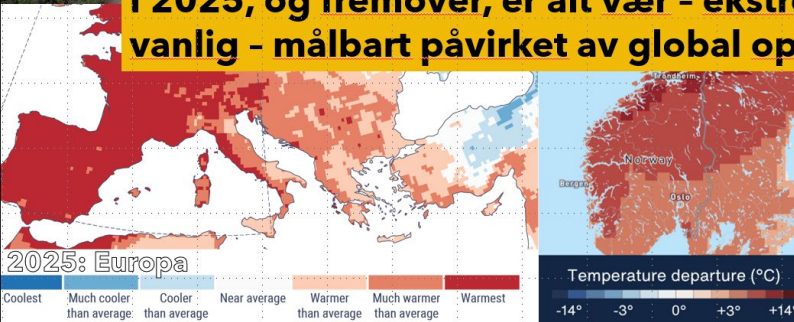
 Both synergies and trade-offs/mixed

 Limited evidence/no evidence/no assessment

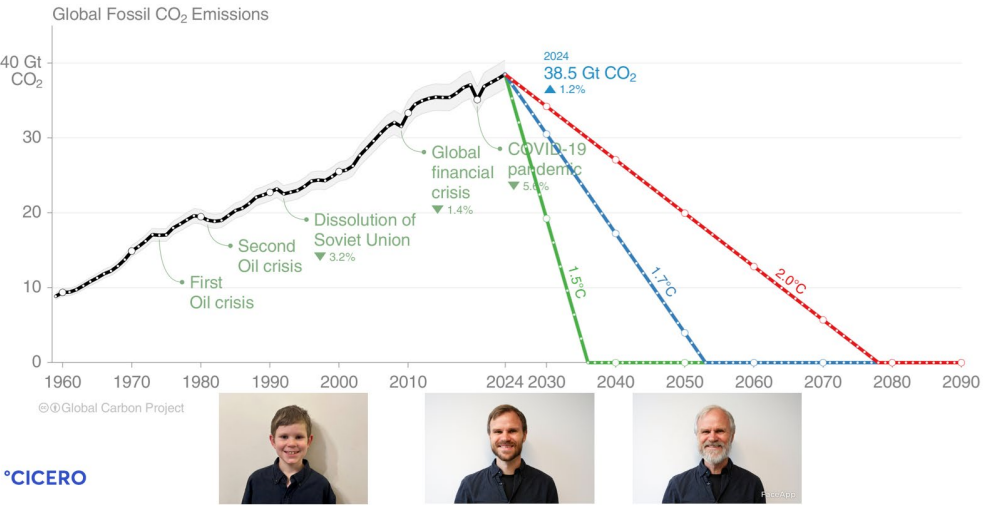
Oppsummering



Tommelfingerregel:
I 2025, og fremover, er alt vær - ekstremt vanlig - målbart påvirket av global oppvarming.



Globale fossile CO₂-utslipp, og hva som kreves



Takk for meg!

Kjetil Aas

www.cicero.oslo.no

@CICERO_klima

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www.cicero.oslo.no/klima

°CICERO
Senter for klimaforskning

Vår ekspertiseTjenesterProsjekterPublikasjonerMagasinet KLIMAArrangementerAnsatteOm oss



Magasinet KLIMA

Magasinet Klima er CICEROs månedlige nyhetsbrev. I hver utgave løfter vi frem et nytt tema, som CICEROs egne forskere er med å belyse fra ulike ståsted.

Redaksjonen

 Hege Fantoft Andreassen

 Ellif Ursin Reed

 Anders Tennesen

 Solveig Aamodt

 Kjetil Schanke Aas

Nyhetsbrev

Påmelding nyhetsbrev



August 2025 | Stortingsvalget

Hva er velgerne opptatt av før årets valg, hvor sterkt står klimasaken egentlig, og hvilke klimatiltak får bredest støtte? Vi ser nærmere på hva som er endret siden forrige Stortingsvalg.



Juni 2025 | Naturkrise og klimakrise

Det er ikke mulig å løse klimakrisen uten samtidig å ta hensyn til naturen. Vi ser nærmere på hvordan arealendringer og opptak av CO₂ spiller inn.