

# CLIMATE CHANGE: CAUSES, CONSEQUENCES & SOLUTIONS



Professor Richard Allan

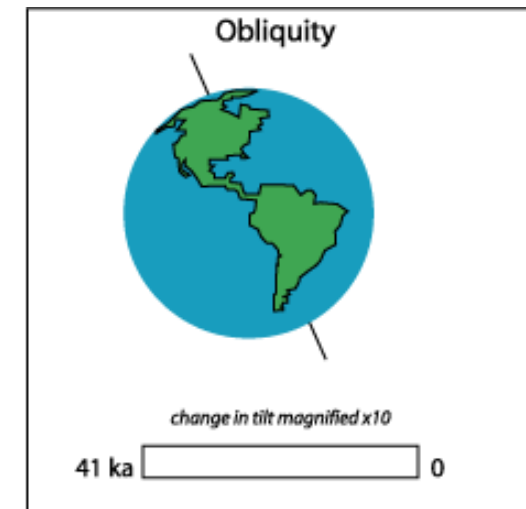
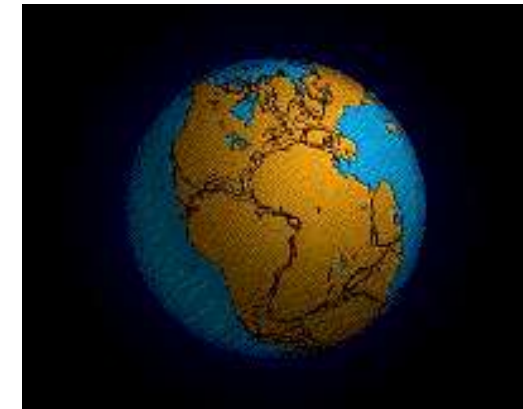
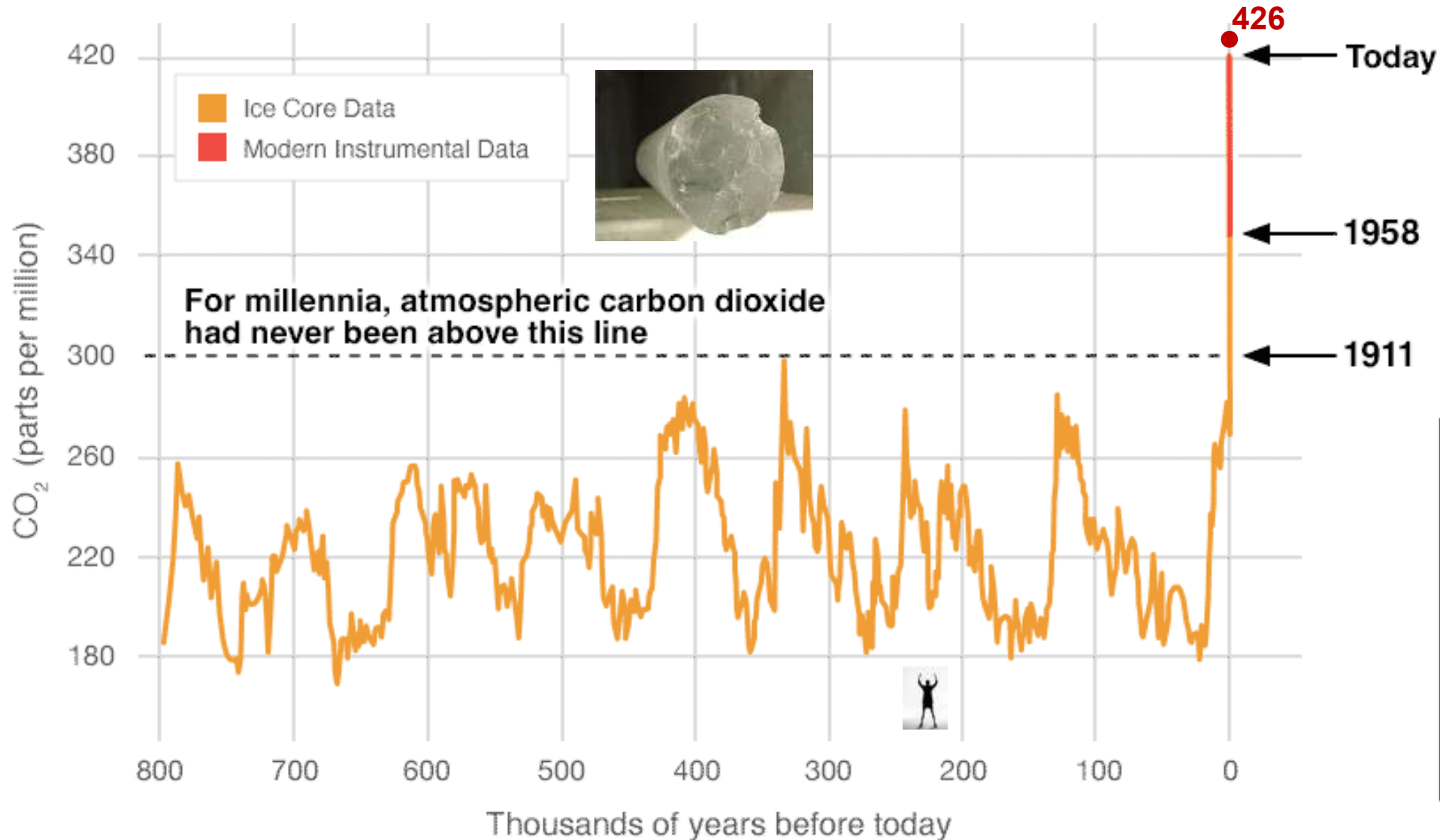
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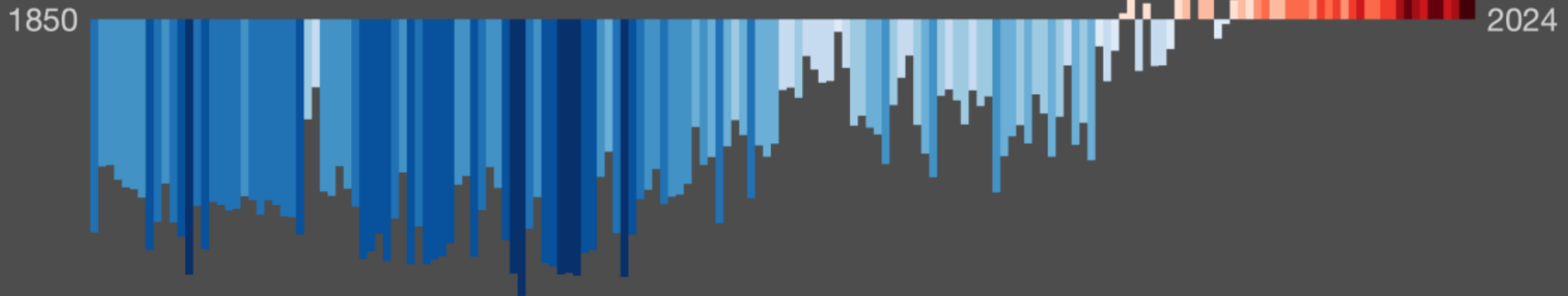
Berkshire Electric Vehicle Awareness Event, Winnersh Triangle Business Park, 11th July 2025



# The climate has always changed. But...



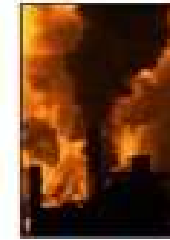
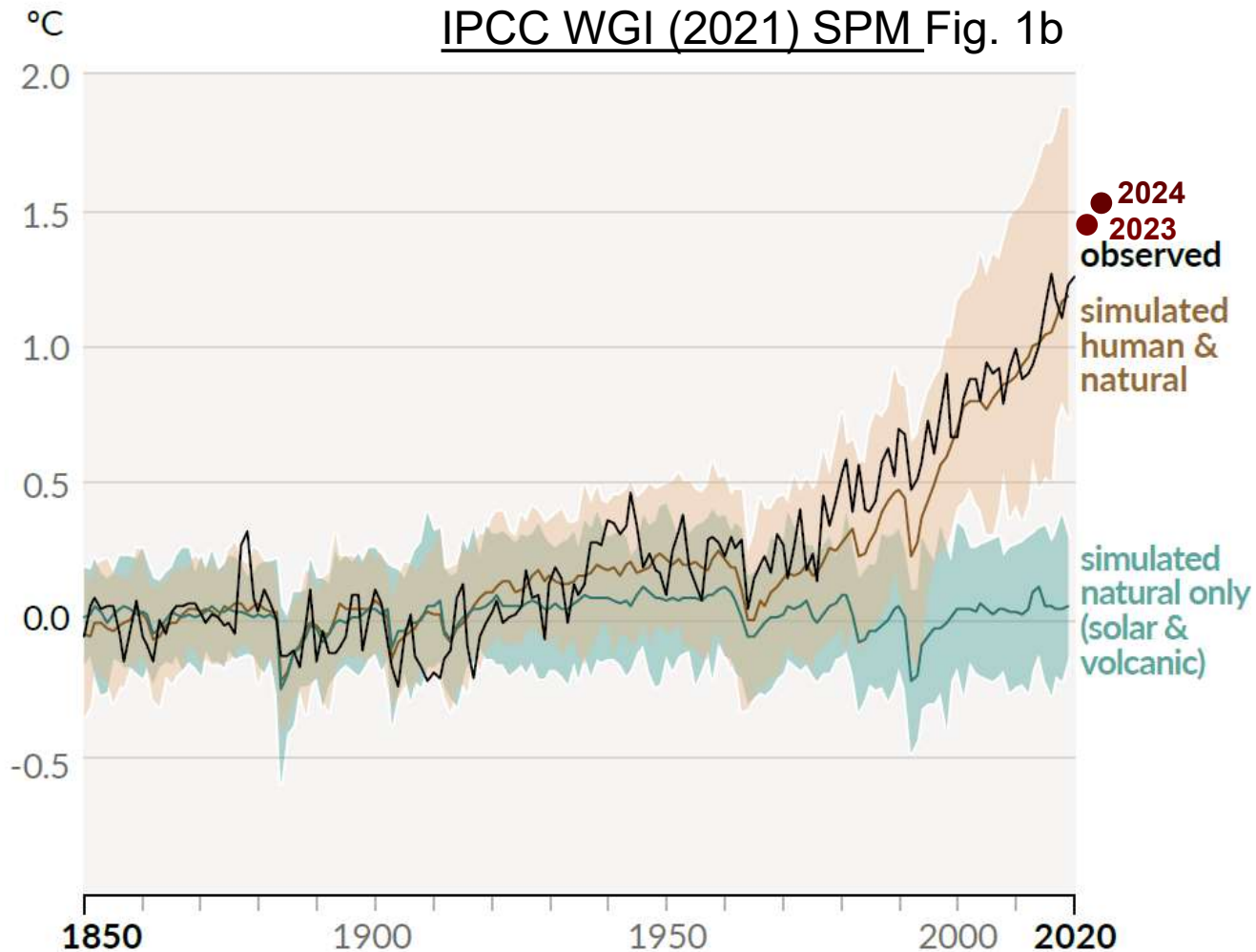
Global temperatures have increased by 1.3°C



<https://showyourstripes.info>

# It is indisputable that human activities are causing climate change

IPCC WGI (2021) SPM Fig. 1b



► Observed warming is driven by emissions from human activities



► Natural factors do not contribute to rapid warming over past 5 decades

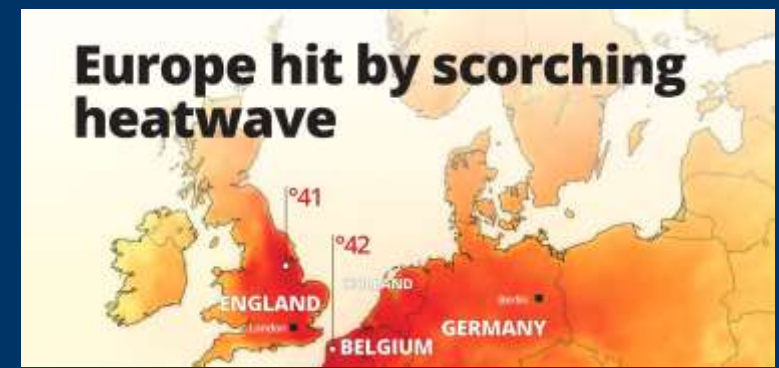


► Greenhouse gas warming has been partly masked by aerosol cooling



► Warming is amplified by feedback loops involving water vapour, ice & clouds



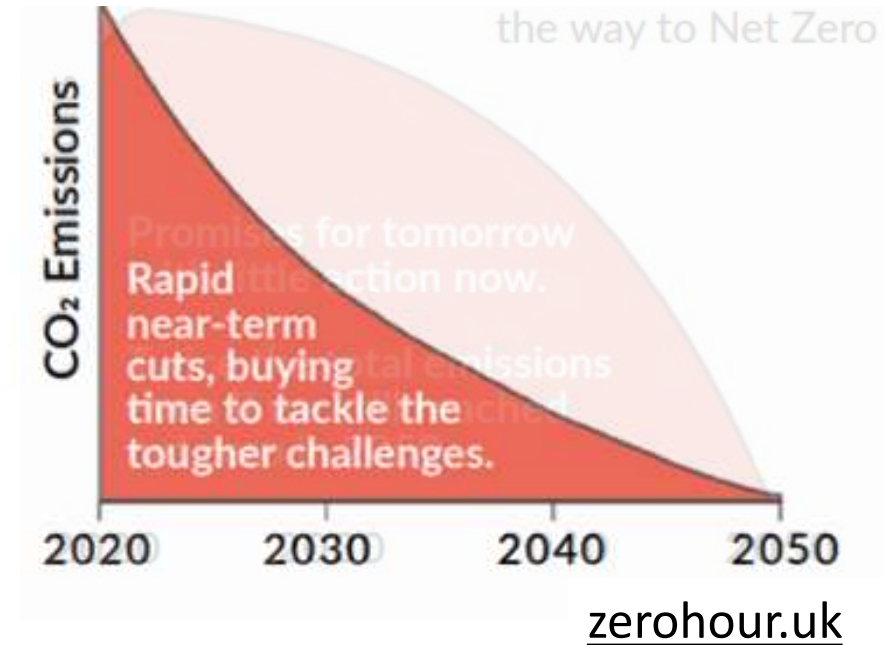
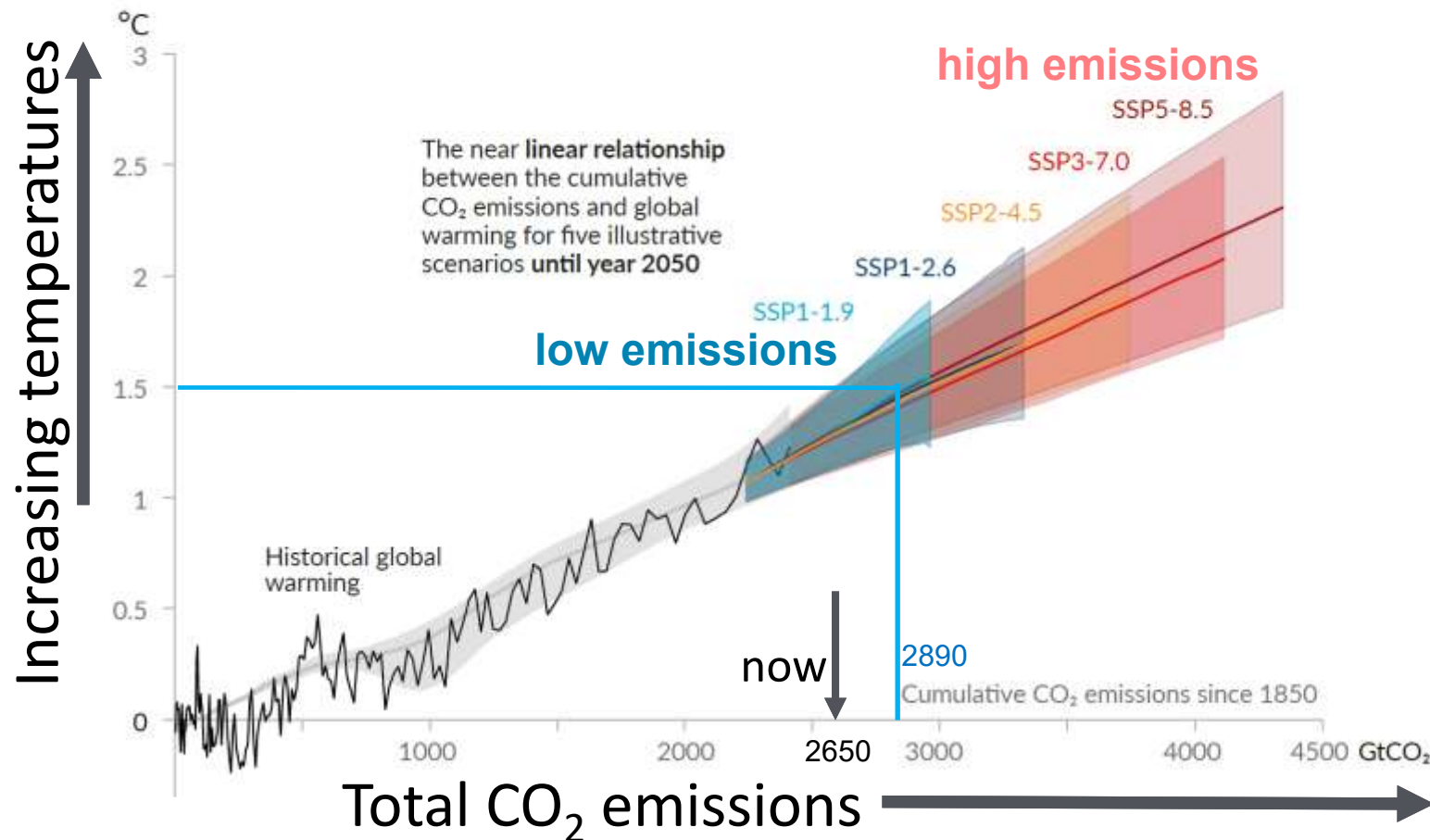


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Continued warming will further intensify extremes of heat, drought and deluge, while sea levels will rise for centuries as ice melts and oceans expand leading to progressive worsening of impacts on our societies and the ecosystems we depend upon



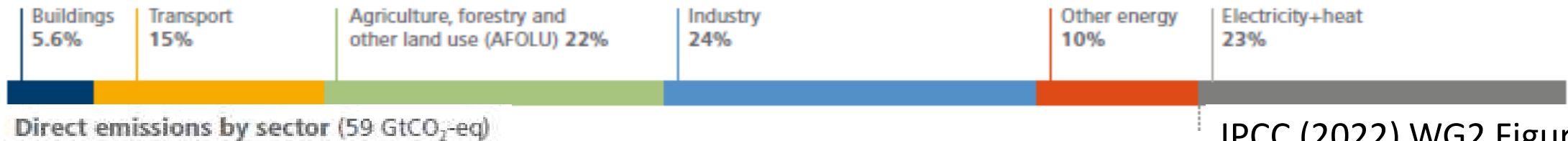
# Halt Carbon Emissions to Limit Worsening Climate Change



It's not when we reach net zero balance that matters, it's the path we take...

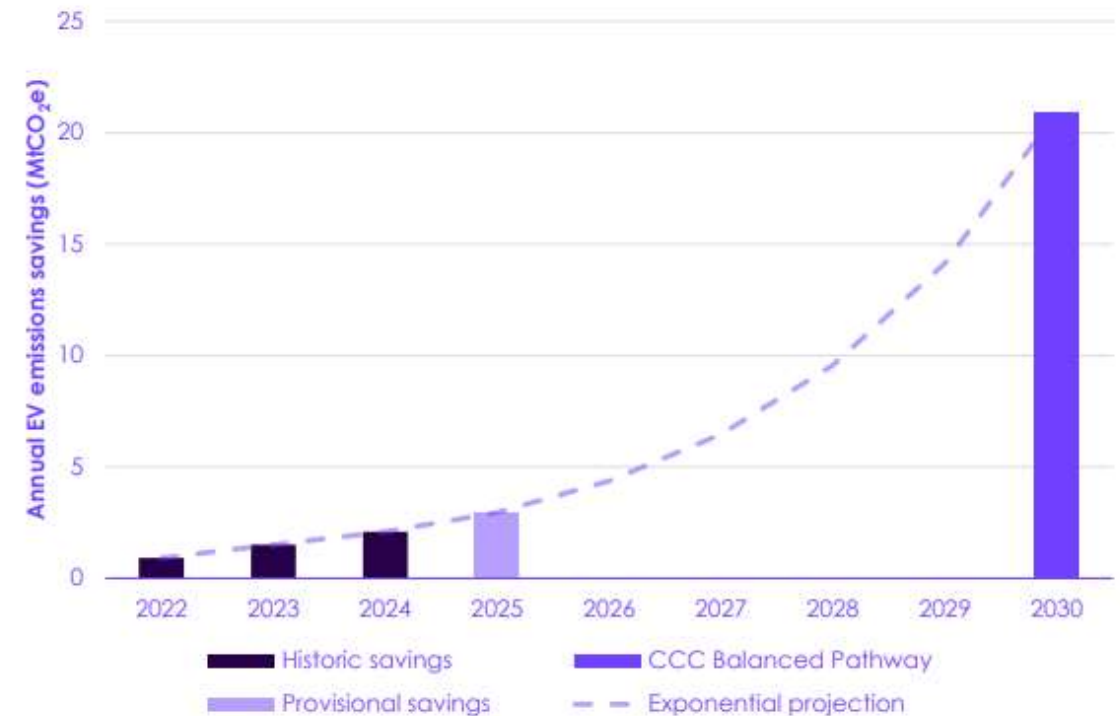
[IPCC WGI 2021 SPM; Latest update:  
[globalcarbonbudget.org](https://globalcarbonbudget.org) <250 Gt CO<sub>2</sub> budget for 1.5°C]

# Transport emissions



IPCC (2022) WG2 [Figure TS.6](#)

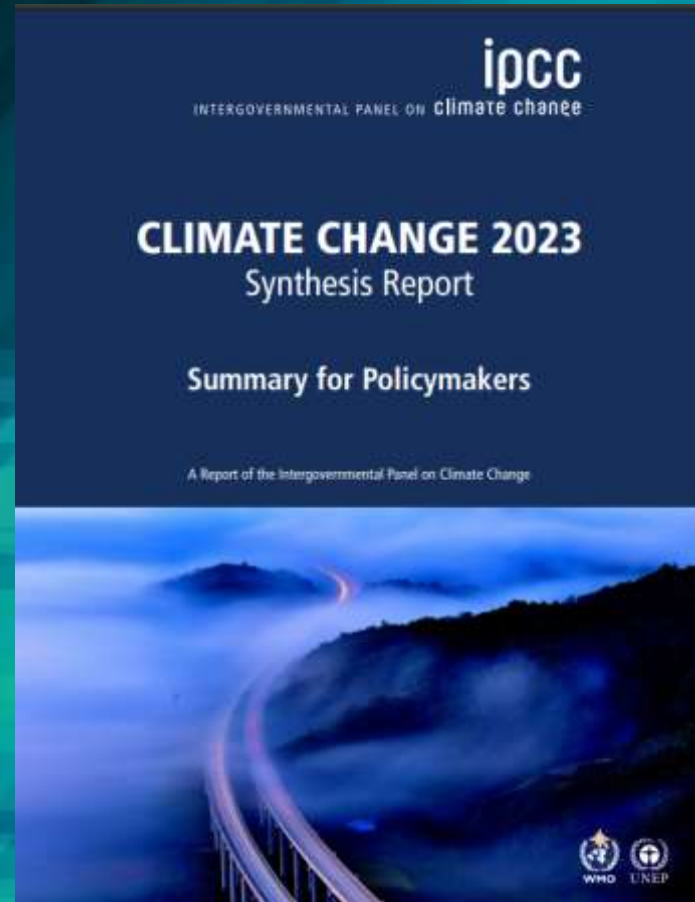
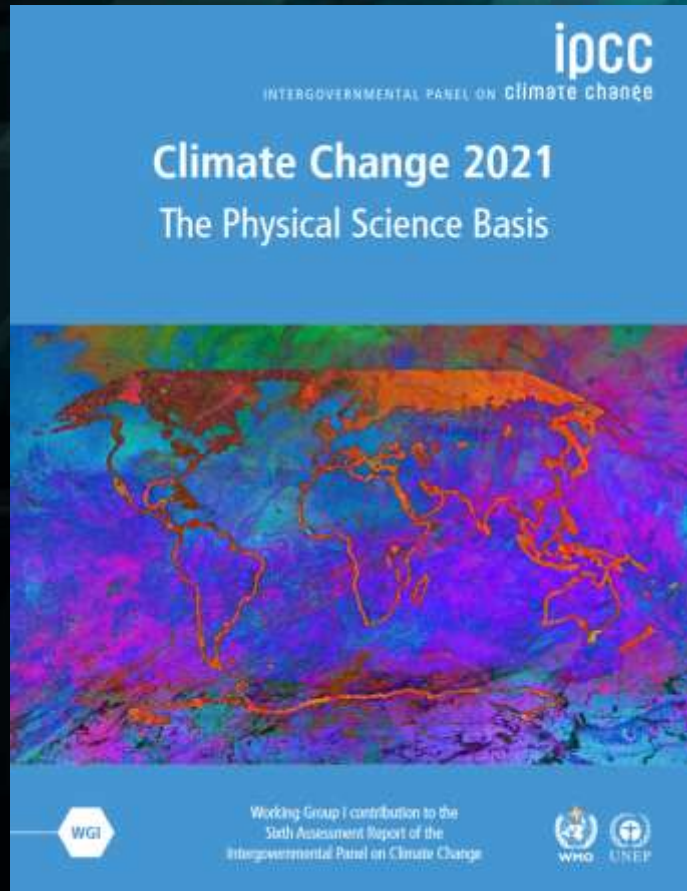
- 15% of total total emissions; 23% of global energy-related CO<sub>2</sub> emissions.
- 70% of direct transport greenhouse gas emissions came from road vehicles
- EVs + low-carbon electricity ~ 40% life-cycle emissions of petrol vehicles [\[IPCC 2023\]](#)
- UK: transport emissions 24% of total in 2024 and falling (unlike aviation)!
  - ...ambition needs to ramp up for UK to meet its targets →



[CCC progress report 2025](#)



# IPCC (2023) Synthesis Report



Limiting warming well below 2°C requires immediate, rapid, and large-scale reductions in greenhouse gas emissions

[www.ipcc.ch/report/ar6/wg1](https://www.ipcc.ch/report/ar6/wg1)

COP30  
**BRASIL**  
AMAZÔNIA  
BELÉM 2025

