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# Accelerating CCS by mandate in a rewilding landscape

propping up the past, or developing a radical future ?

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# PROBLEM

Drivers of global heating – CO<sub>2</sub>, CH<sub>4</sub>, water vapour  
Are accelerating

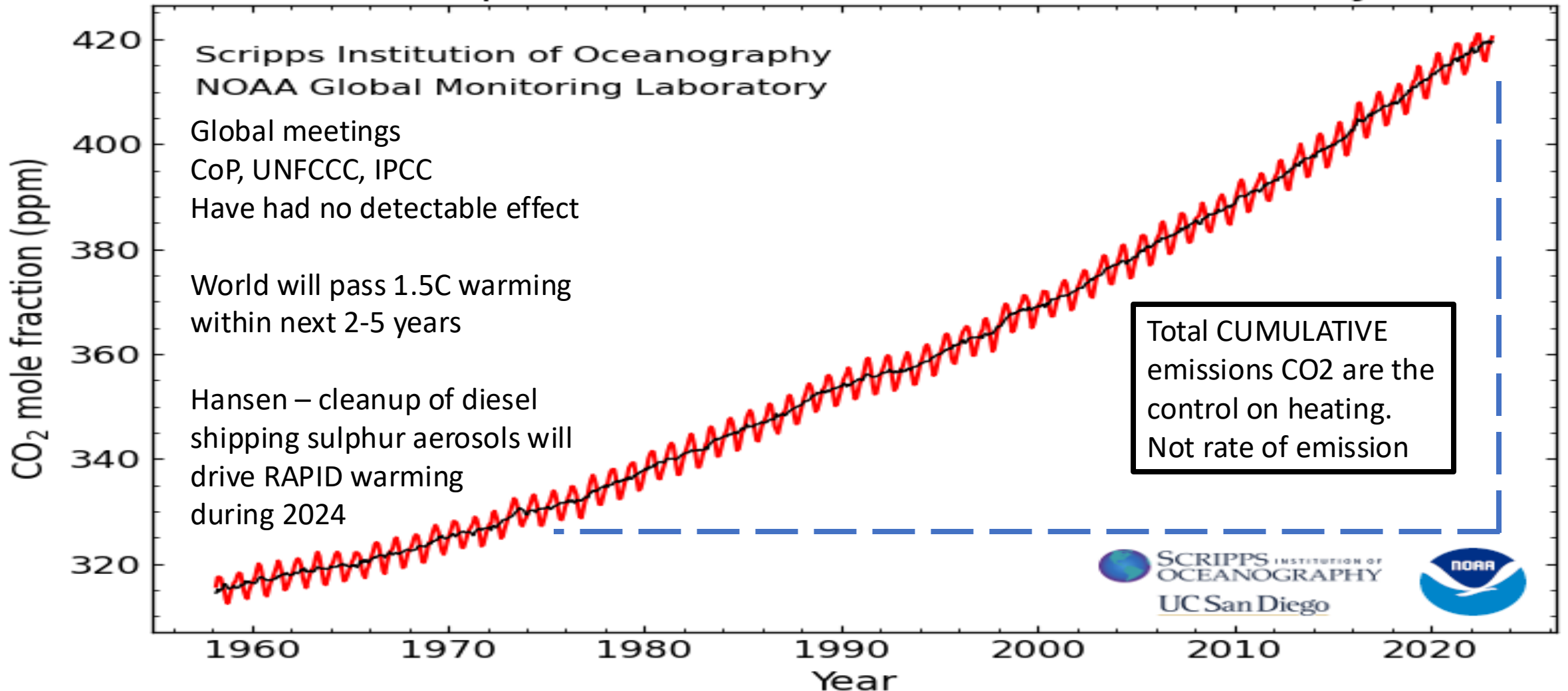


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# Keeling curve measured since 1956 no sign of decreased emissions



## Atmospheric CO<sub>2</sub> at Mauna Loa Observatory





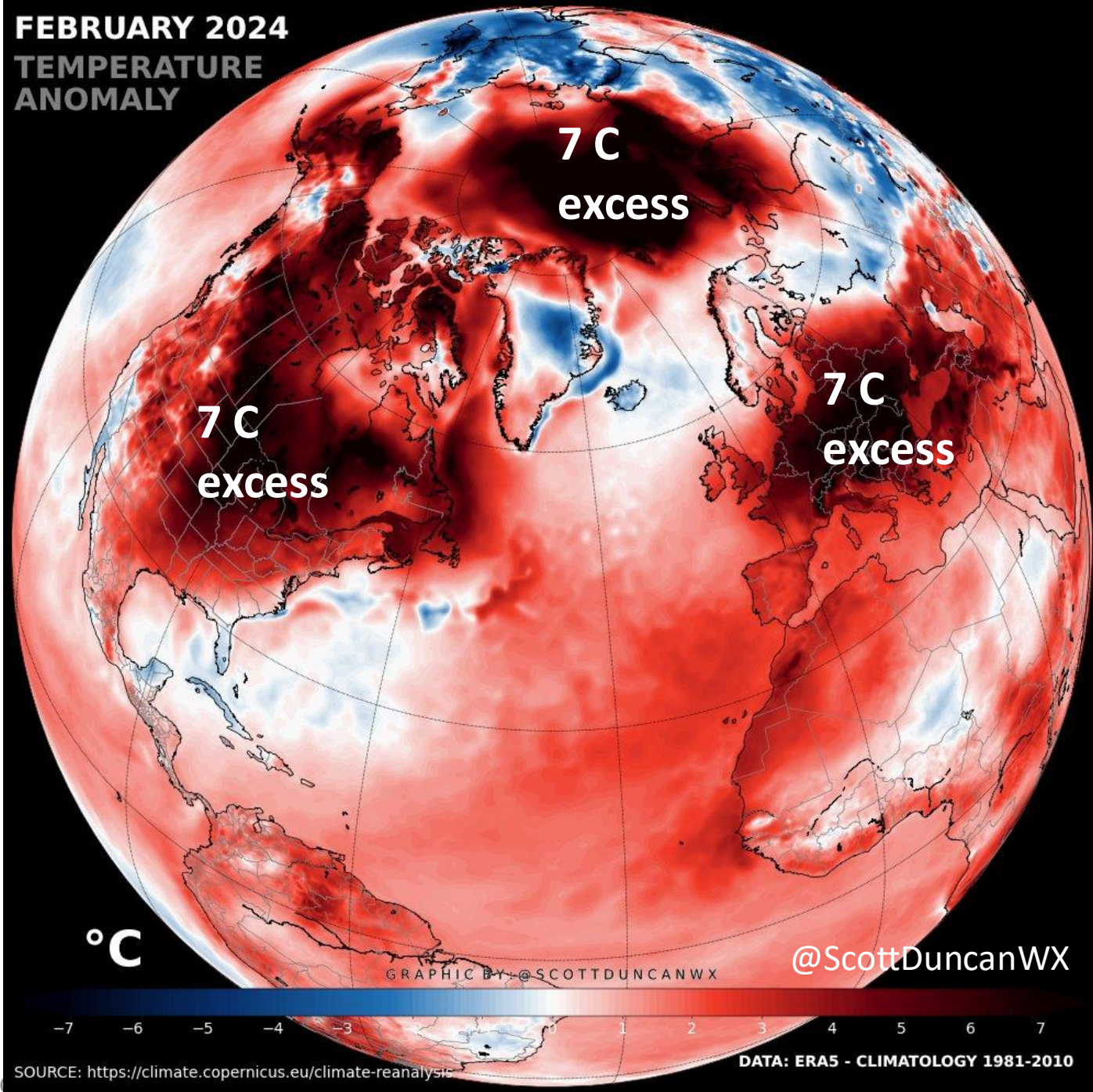
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# CO2 heating February 2024

2023 – record year – exceed 1.5C  
February 2024 record February

Projected 2024 record warming  
Due to lack of sulphur aerosols from shipping

**FEBRUARY 2024  
TEMPERATURE  
ANOMALY**



°C

GRAPHIC BY: @SCOTTDUNCANWX

@ScottDuncanWX

-7 -6 -5 -4 -3 -2 -1 1 2 3 4 5 6 7

SOURCE: <https://climate.copernicus.eu/climate-reanalysis>

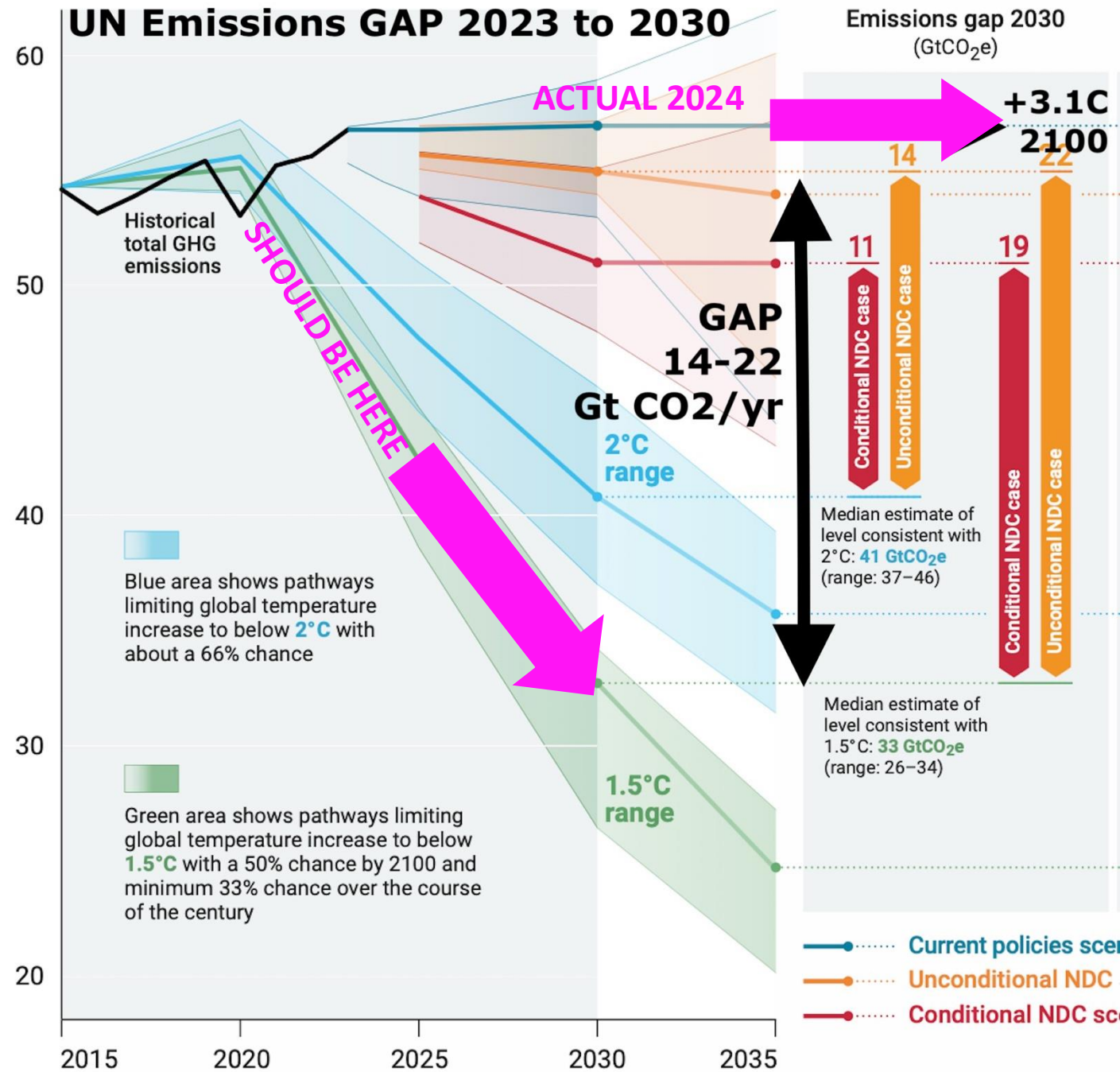
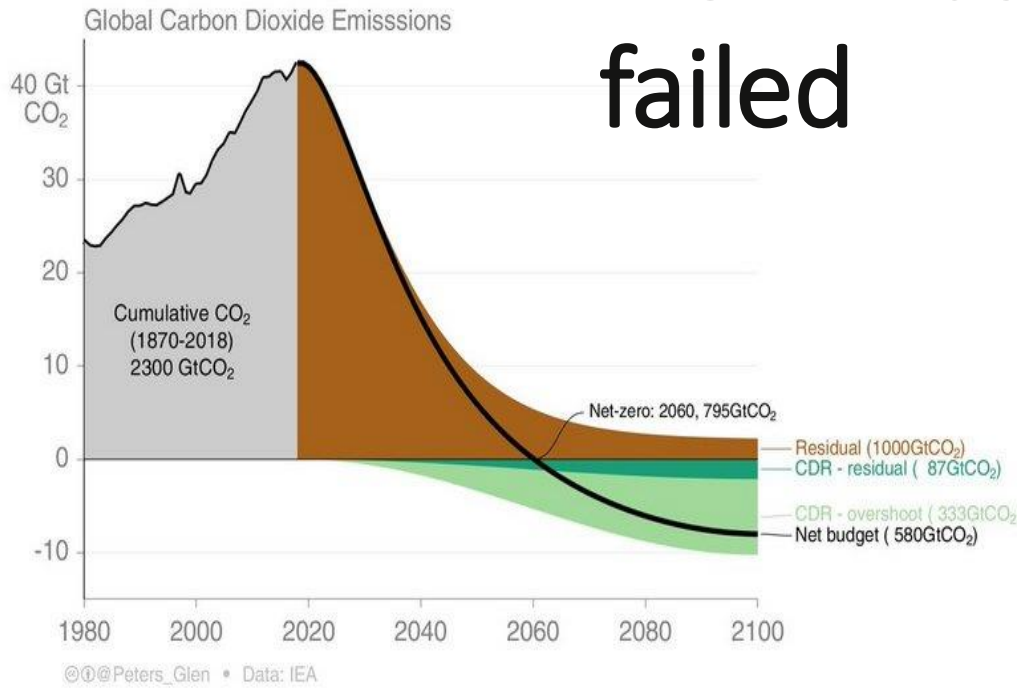
DATA: ERA5 - CLIMATOLOGY 1981-2010



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# UN Gap Report 2024, holding 1.5°C has failed

UN Gap Report 2024 mitigation effort implied by **current policies** is estimated to limit global warming to a 50% **probability of 3.1°C**





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# PROBLEM

In a climate emergency, the political and economic system is travelling at normal slow cautious speed

## UK allocates GBP 21.7bn for carbon capture and storage 25 yr lifespan

The UK government announces investment in two carbon capture plants to create 4,000 new jobs and attract billions in investment from industry.

### East Coast Cluster projects:

- Net Zero Teesside Power
- bpH2 Teesside
- Teesside Hydrogen CO<sub>2</sub> Capture

### HyNet Cluster projects:

- Hanson Padeswood Cement Works CCS Project
- Viridor Runcorn Industrial CCS
- Protos Energy Recovery Facility
- Buxton Lime Net Zero
- HyNet Hydrogen Production Plant 1 (HPP1)



- World's largest co-ordinated CCS offer
  - Injecting 2 Mt/yr CO<sub>2</sub> from 2028, and 30Mt/yr by 2030
- Expensive ? £15 per year per person, or £0.28p per week



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# 21 UK CO2 offshore storage licenses awarded

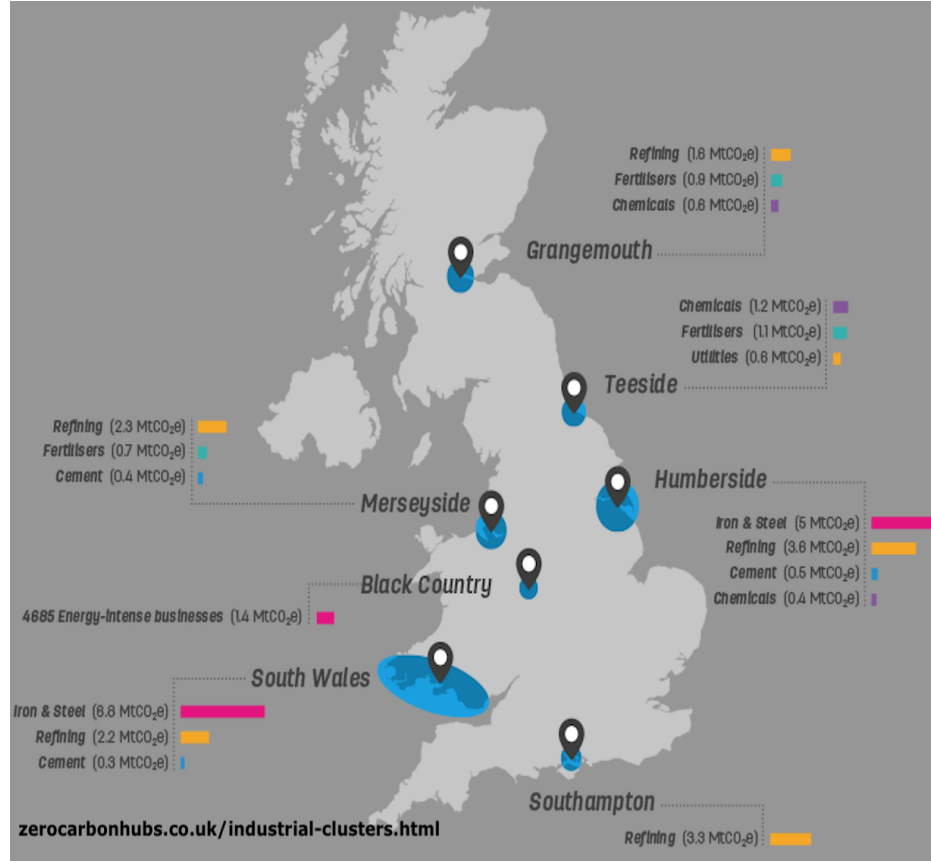
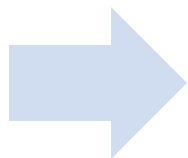
May 2023 UK issues 20 CO2 storage licenses to 12 companies

(Compare 2023 33<sup>rd</sup> hydrocarbon licensing 115 bids for 258 blocks)

Hydrocarbons licensed (yellow)  
CO2 licensed (purple)

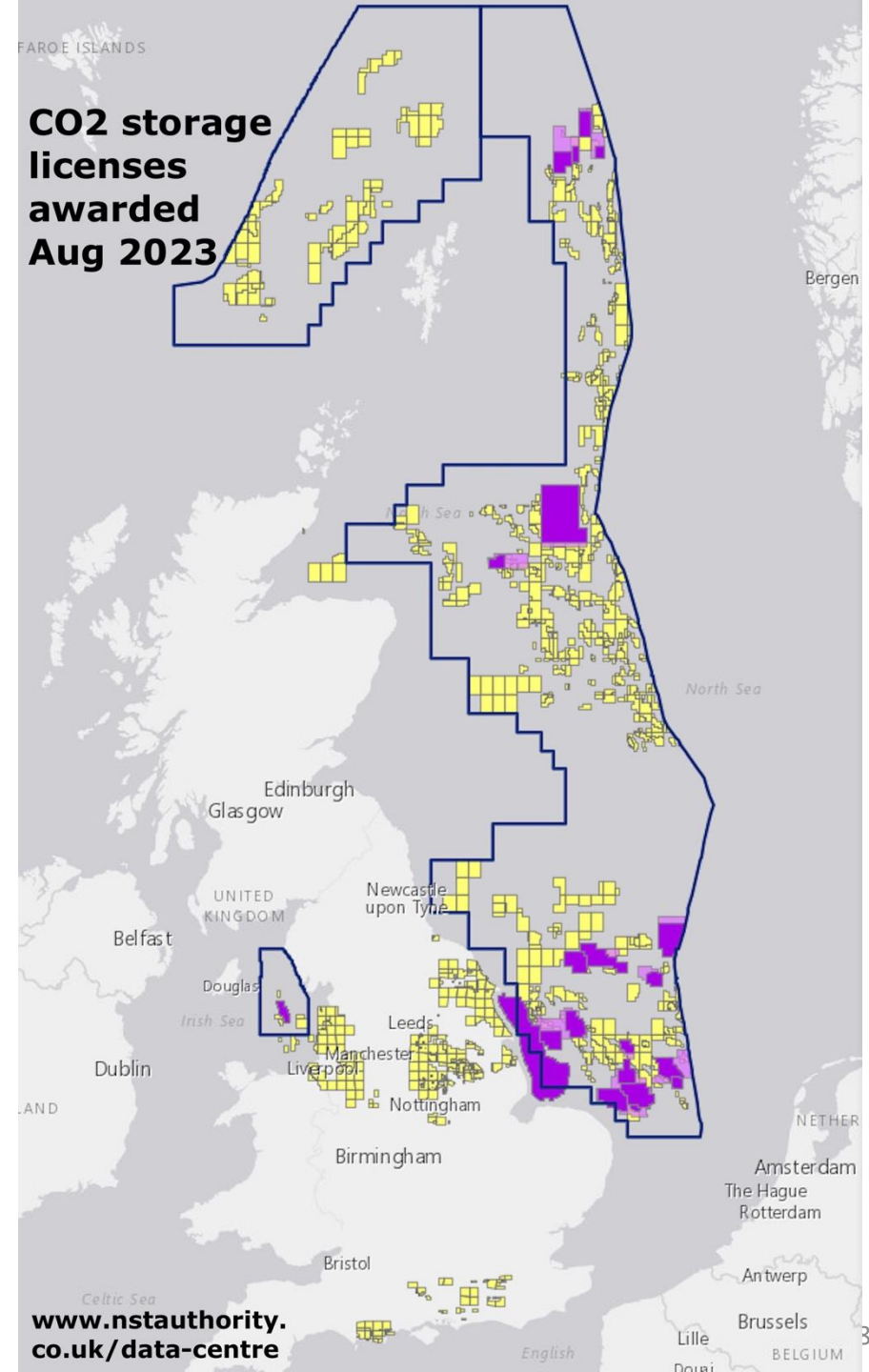


Only 4 of these awarded areas for storage are planned to link with CO2 supply from industrial clusters



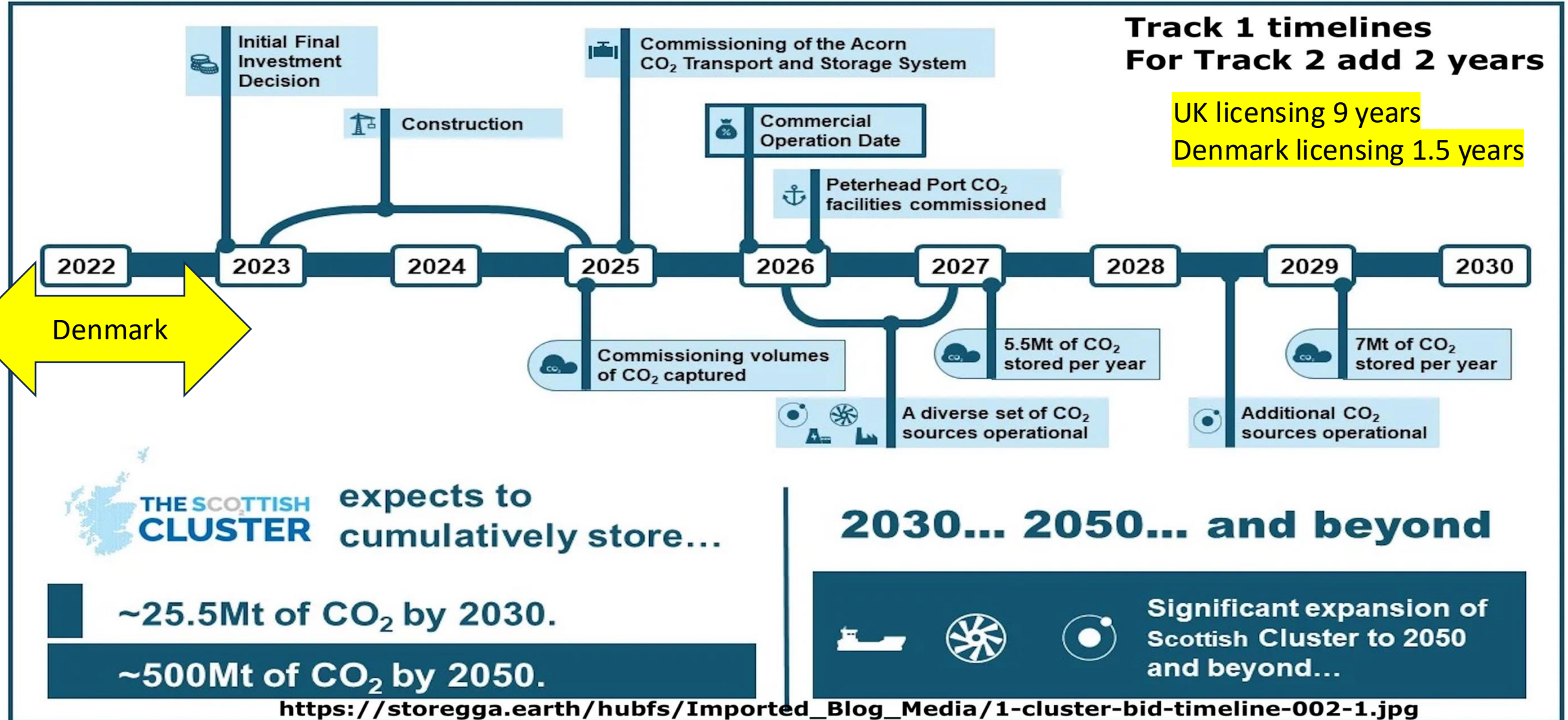
Plenty of scope to extend CO2 storage. From UK sources, or from EU imports

PRESSURE interference in adjacent sites





## 10 year UK pathway – careful but too slow

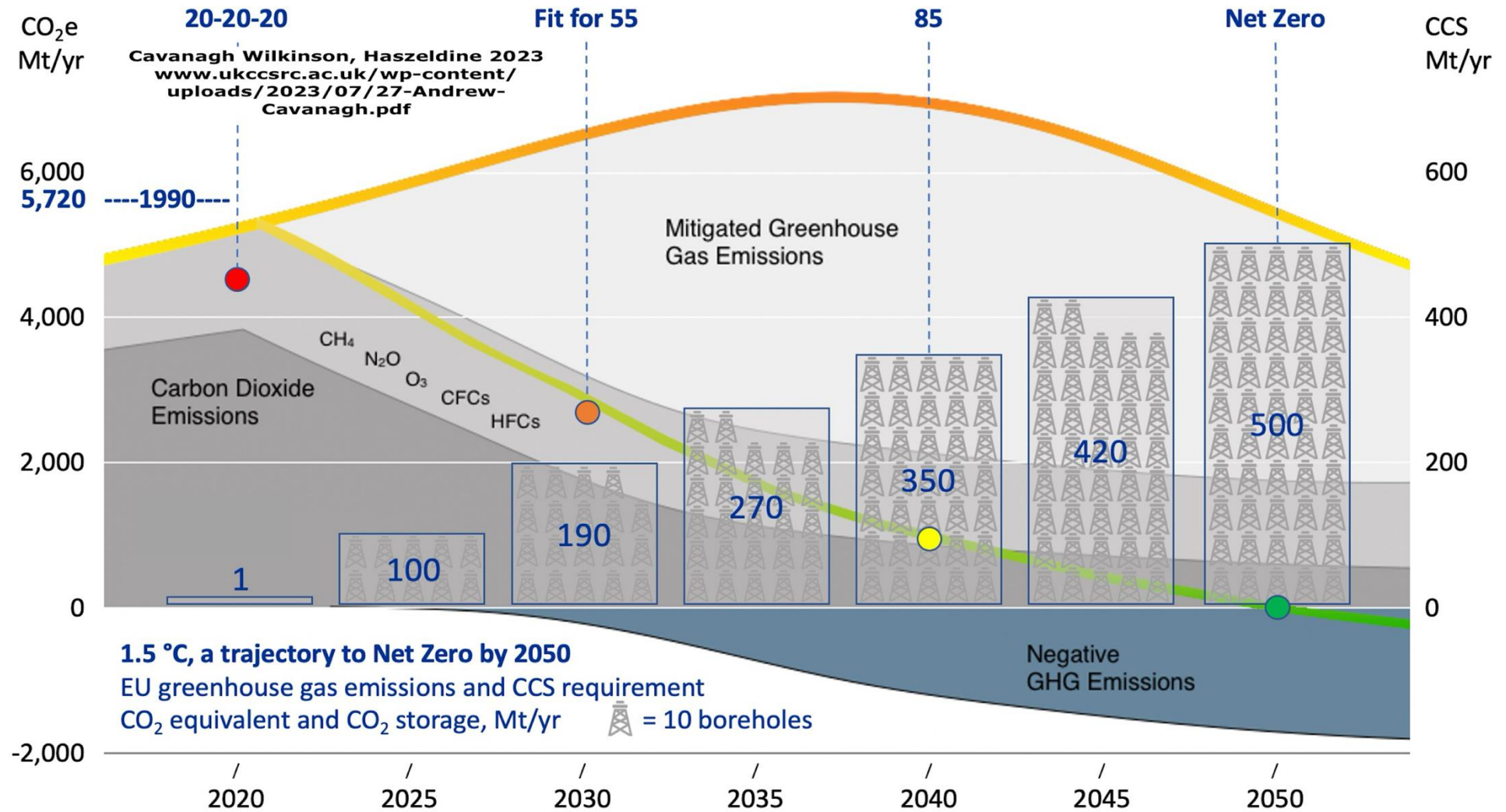




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# Storage gap – drill boreholes before SCCS

- Calculations on storage capacity usually 50% probability.
- Use an established oil industry method of commercial reserves calculation PRMS
- Gaining enough information from zero can take 3-10 years
- Evaluation of aquifers needs to have already drilled 100 wells for CO2 in Europe, to meet Net Zero 2050 – will be late !



# SOLUTION

1) Be clear on duration of storage investments



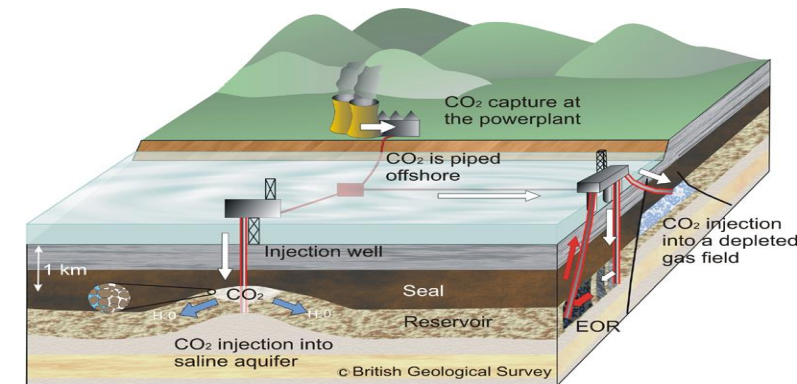
2) Polluter pays - legal

3) Not PENALTIES to emit (buy ETS)

4) But REWARDS (payment for CO2 storage )



Rewilding 22yr Carrifran, Scotland  
Each tree **50-100yr**



Geological storage – liquid or mineral  
Each site >> **5,000 – 100,000 yr**

# Legal actions – Environmental impact Assessments – include Scope 3

20 June 2024 the UK Supreme Court issued its long awaited decision in *R (on the application of Finch on behalf of the Weald Action Group) (Appellant) v Surrey County Council and others (Respondents)* [\[2024\] UKSC 20](#) (“Finch”).

13 September 2024 by the UK High Court decision in *Friends of the Earth and others v South Lakeland Action on Climate Change – Towards Transition and others* [\[2024\] EWHC 2349](#) (“Whitehaven”).

November 12, 2024, The Hague Court of Appeals overturned the May 26, 2021 landmark climate change litigation case that imposed a 45% CO2 reduction obligation on Shell. Ruling confirmed a duty of care for companies to reduce CO2 emissions

12-15 Nov 2024 Court of Session, **Edinburgh** (in review)

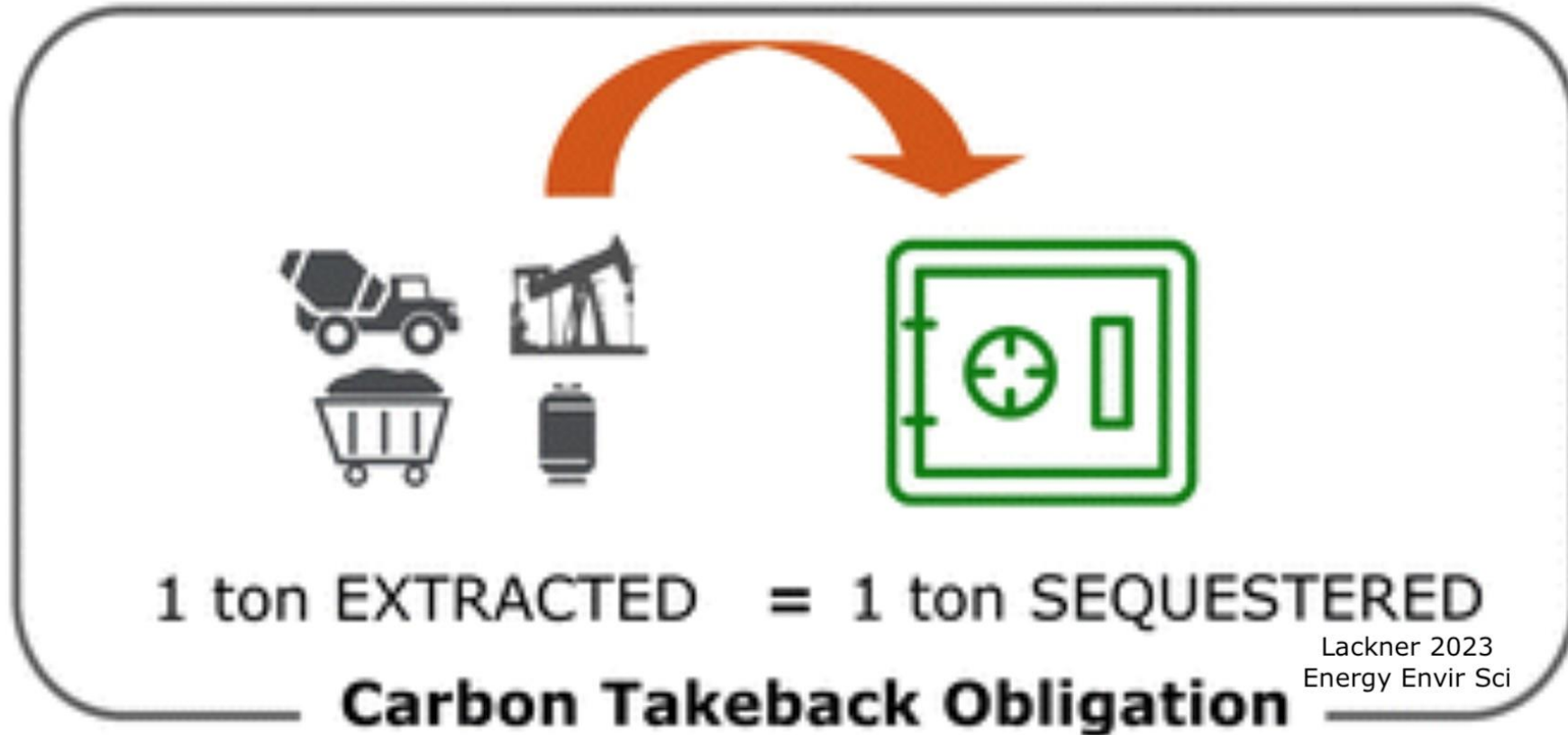
Court decisions do not prevent approval for further oil and gas projects in the UK being granted. However, they will likely embolden those who wish to oppose such projects



Norway – Oslo 2023 0 objectors halt 3 offshore licences. oct 2024 Appeal overturns blockage – oil important to Norwegian economy .

# Future: Carbon Take Back Obligation ? SCCS

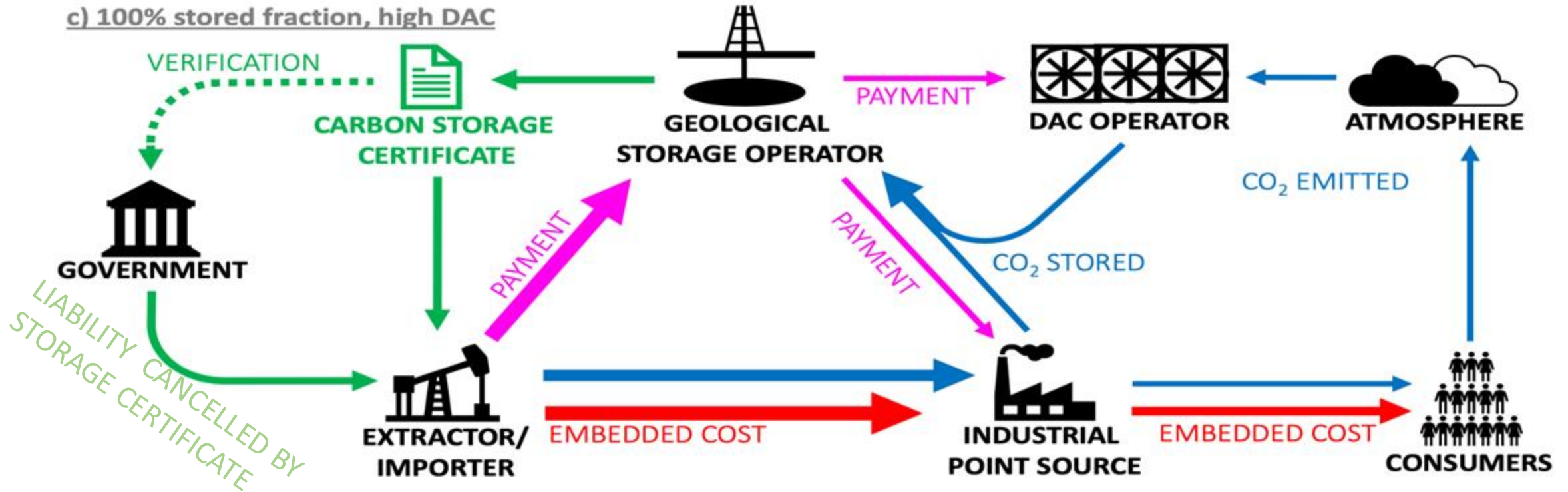
**Carbon accounting without Life Cycle Analysis**  
is possible through the Carbon Takeback Obligation



**CO2 capture & storage is operating, safe, resilient, permanent, and low cost**

# Money and CO2 flow to solve mandate

CCS Mandate decreases Scope 3 emission and solves EIA legal obligation  
 Are oil companies FOR CCS cleanup, or FOR continued 100% emissions ?



- Actual or embedded CO<sub>2</sub>
- Regulation and compliance
- CTBO compliance costs
- Payments for GCS

Weight of arrow reflects relative size of cost and CO<sub>2</sub> flow. The relative size of CO<sub>2</sub> flows depends on many factors, including the CTBO's stored fraction, availability of industrial point source CCS and availability of DAC technologies.  
 @Myles.Allen, Oxford