

# DECARBONISING THE UK REVISITED

20 YEARS OF UK ENERGY SYSTEM SCENARIOS AND THEIR  
POLICY IMPLICATIONS

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Tyndall Centre, School of Engineering, University of Manchester



# Today's talk

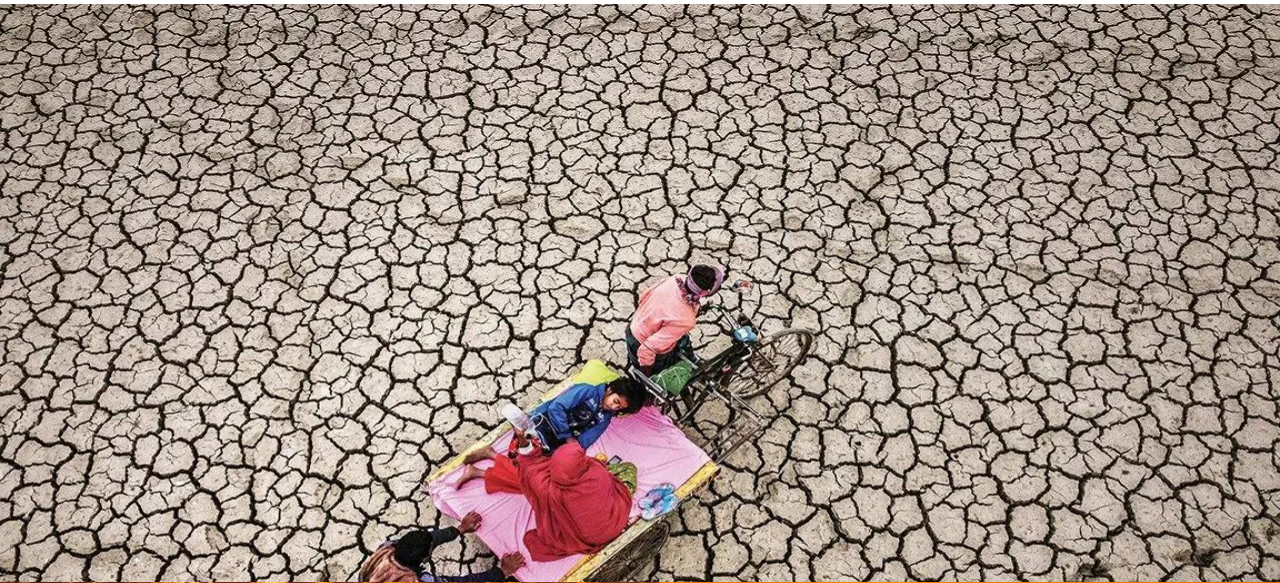
**GLOBAL CONTEXT** → Accelerating impacts, and commitments struggling to keep pace

**UK CONTEXT** → Comparing 2000-2009 scenarios with actual developments

**WORKSHOP FINDINGS** → Five lessons from an expert stakeholder workshop



# Global context

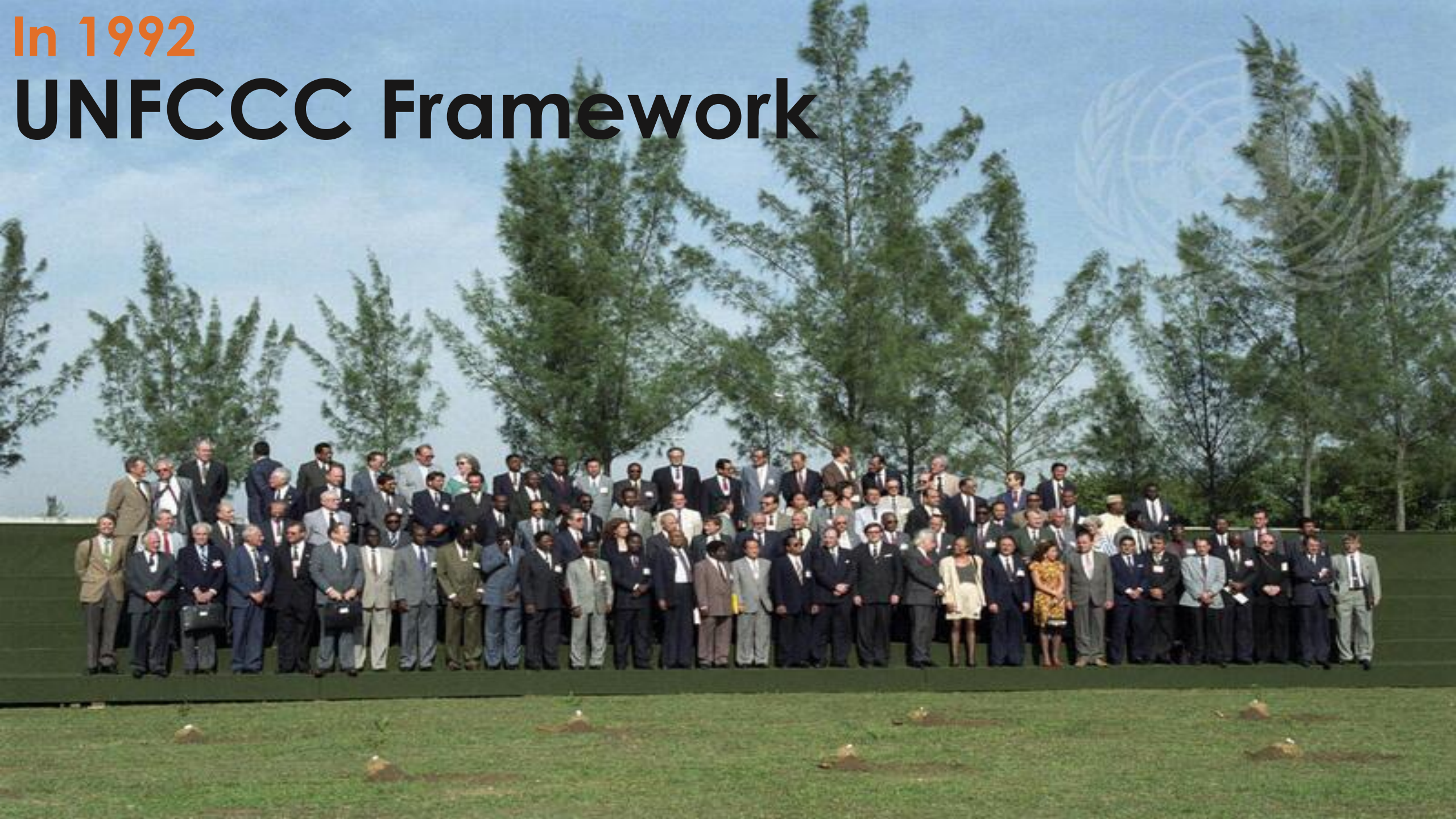


**Can We adapt to the current rate of change in impacts?**



In 1992

# UNFCCC Framework



## UNFCCC Article 2 – Ultimate Objective



cut emissions to avoid  
**dangerous** levels climate  
change.

“...in accordance with the objective of the Convention to prevent dangerous anthropogenic climate change, by cutting emissions to avoid dangerous levels climate change.”

## UNFCCC Article 3 – Core Principles



The Parties should protect the climate system for the benefit of present and future generations, on the basis of equity, in accordance with their common but **differentiated responsibilities and respective capabilities.** Developed countries should take the lead in curbing the global greenhouse gas emissions and should take the lead in addressing the adverse effects of climate change.



emissions reduction is a shared task, but developed countries should lead.

## 2015 Paris Agreement



the primary commitment is to keep warming well below 2°C, and the secondary commitment is to pursue 1.5°C.

# Updated Carbon budgets

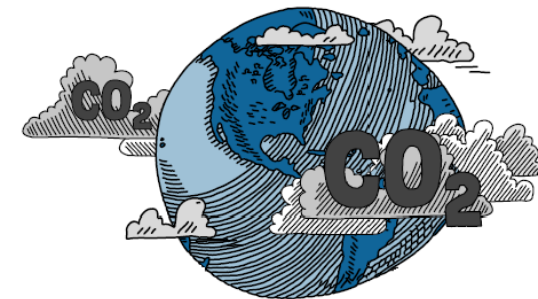
Starting Jan 2026 <i>Forster et al (2025)</i>	Pursuing 1.5 °C (50% ≤ 1.5 °C )	"Well below 2°C" (83% ≤ 2°C )
Remaining Global Budget 	86 GtCO <sub>2</sub>	536 GtCO <sub>2</sub>
Equivalent year current CO2 emissions 	2	12

A satellite image of the United Kingdom and surrounding regions, including Ireland, the North Atlantic, and parts of Europe. The image shows the coastline, landmasses, and the surrounding ocean with various cloud patterns. A white rectangular box is overlaid on the center of the image.

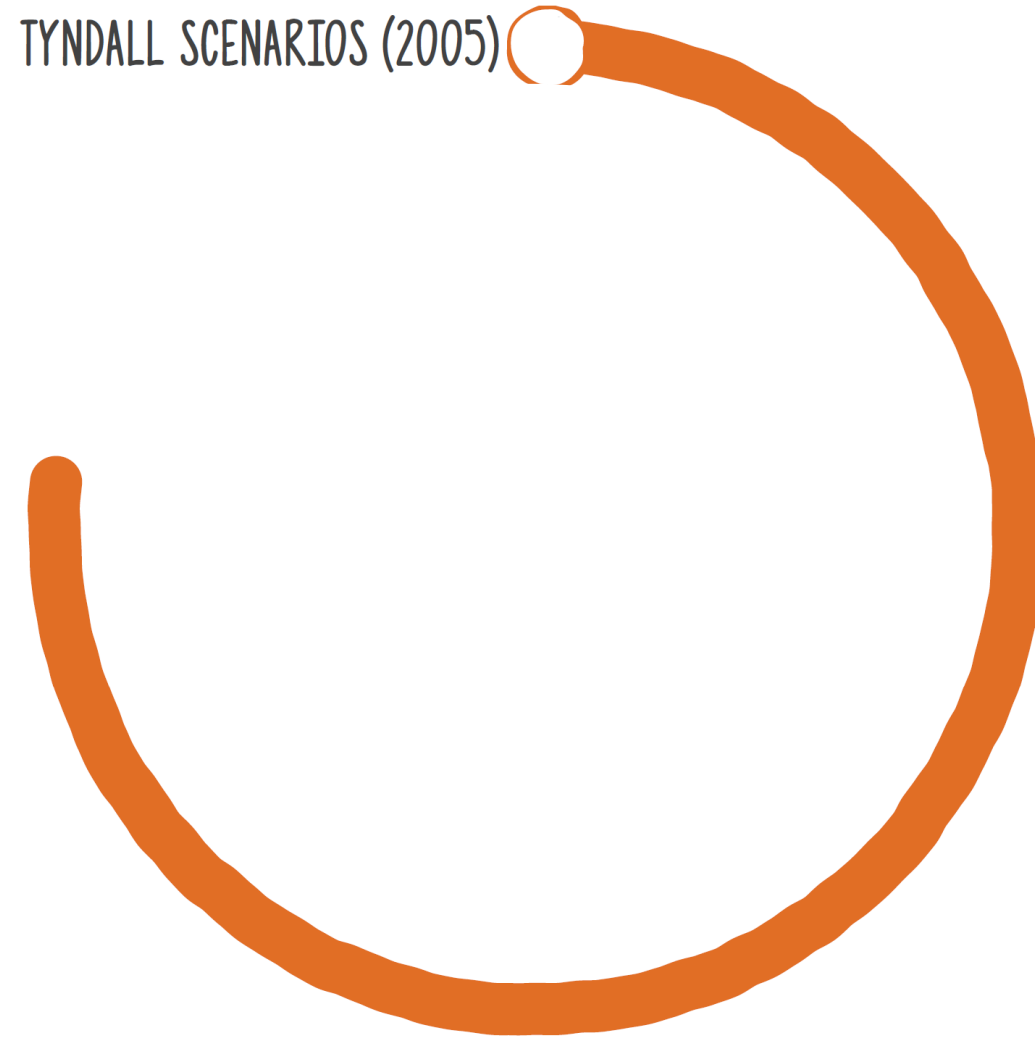
# UK Context

# The UK's shrinking possibility space

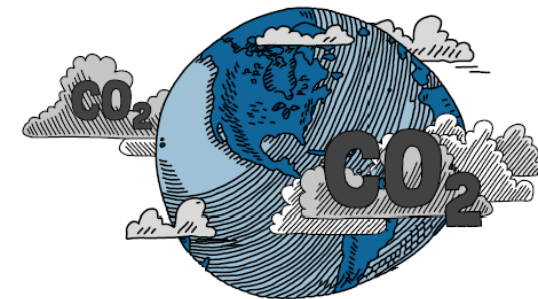
- Compare budgets backdated to **2002**



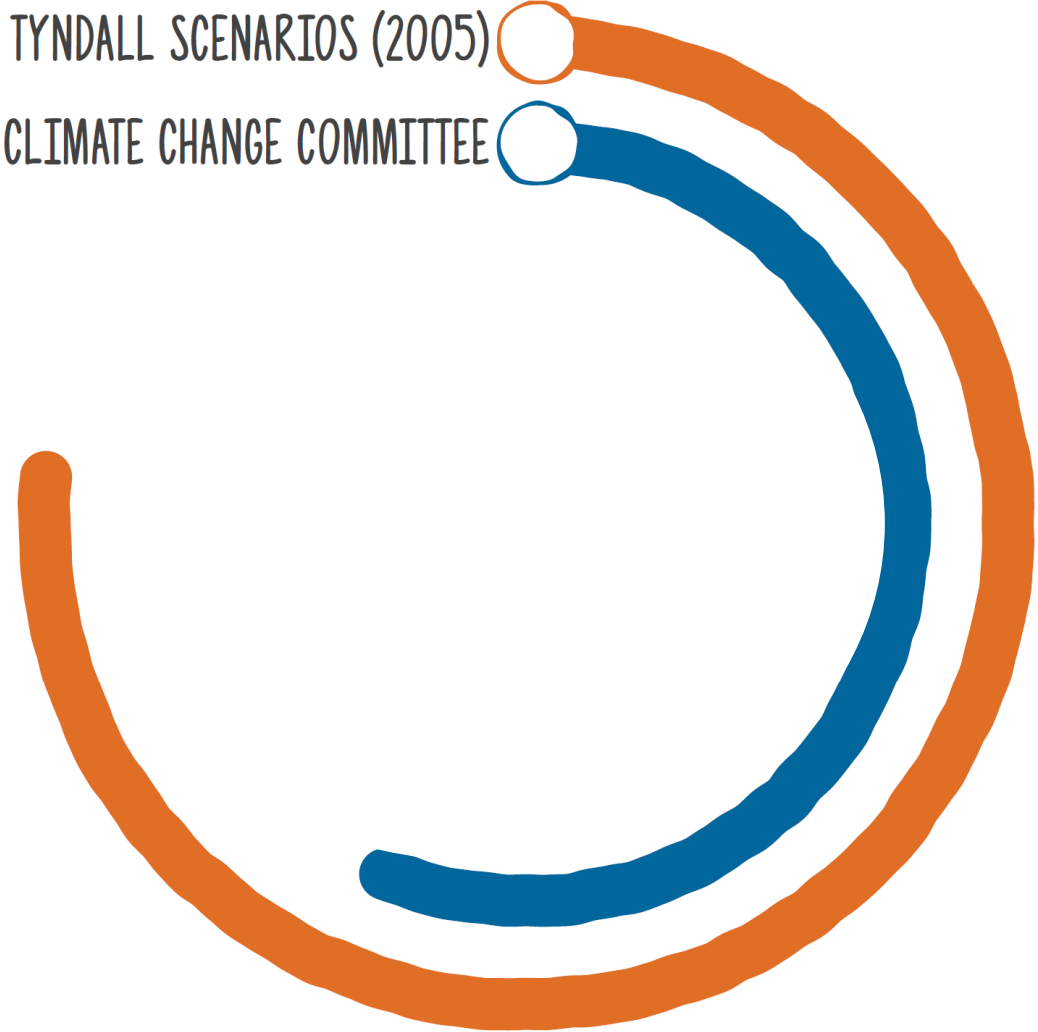
# The UK's shrinking possibility space



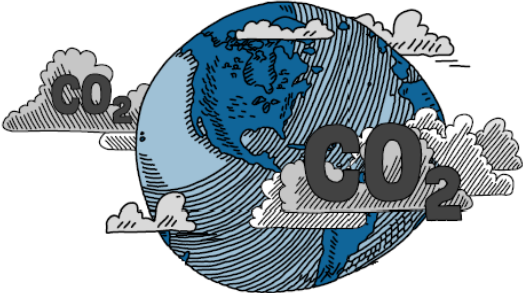
The UK's shrinking possibility space (GtCO<sub>2</sub>)



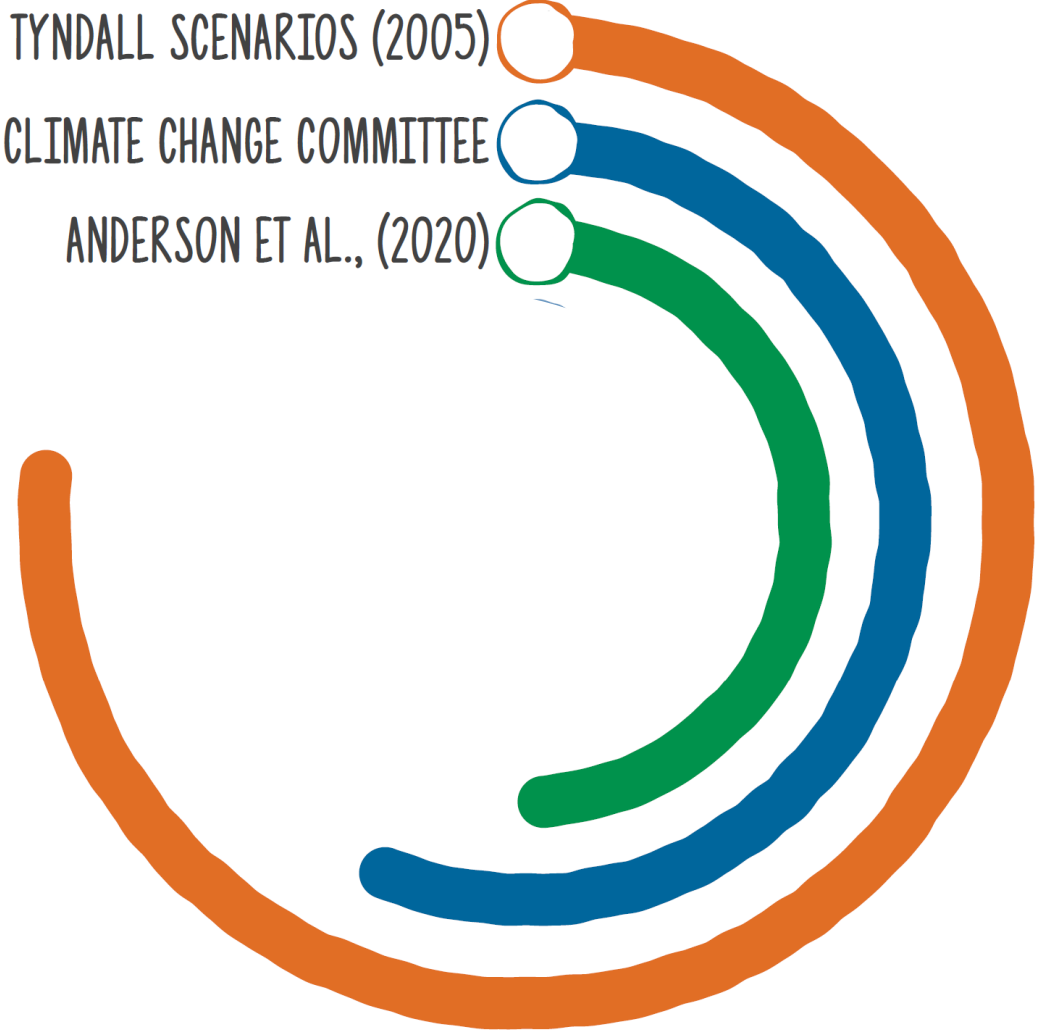
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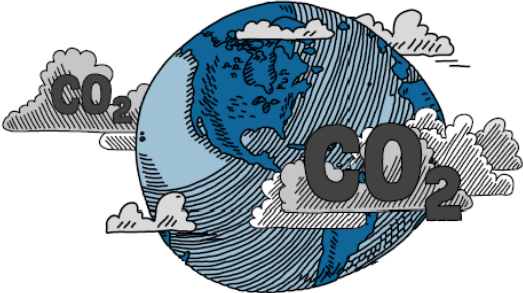
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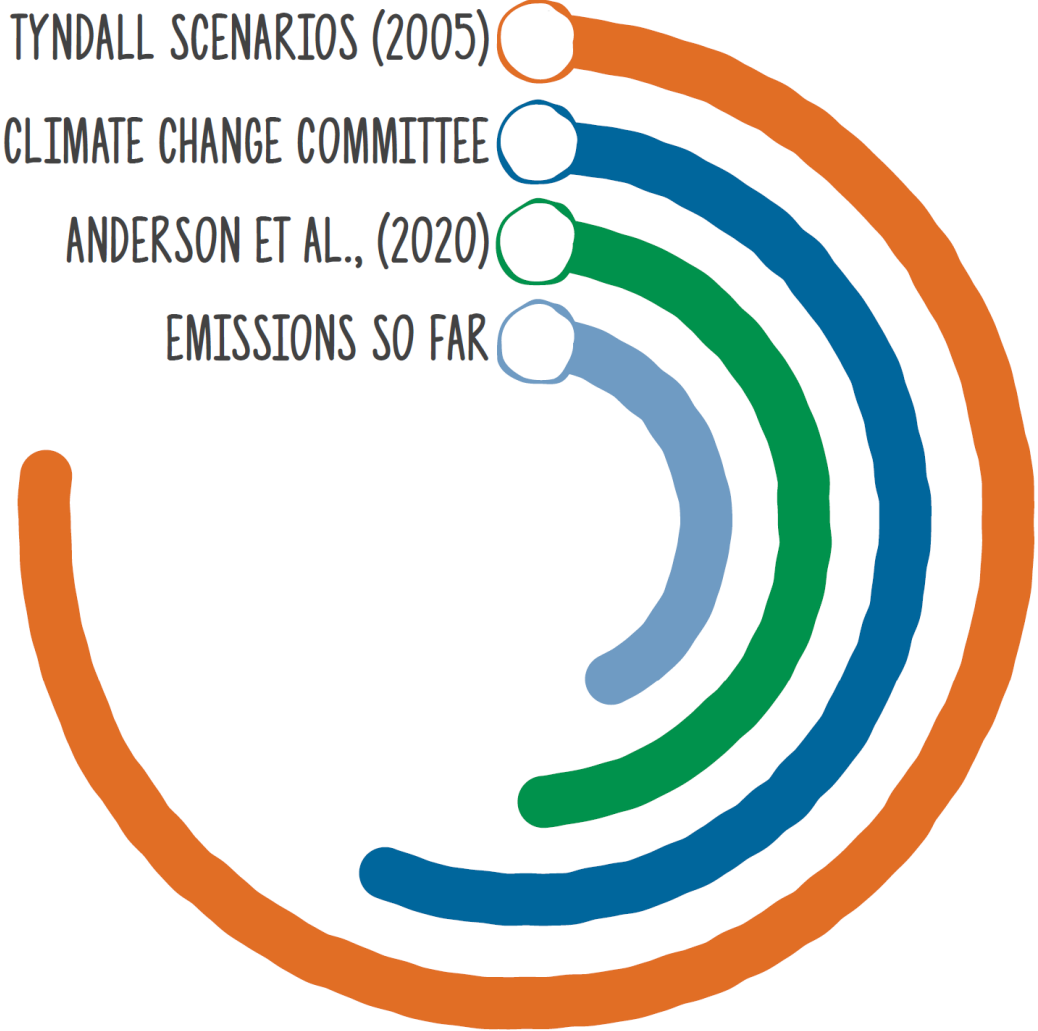
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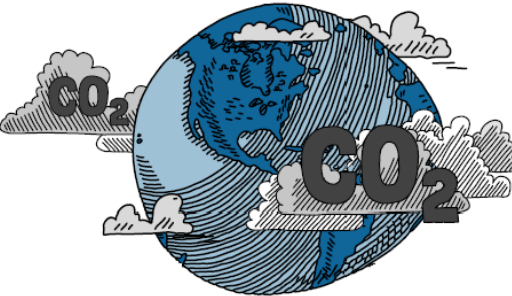
The UK's shrinking possibility space (GtCO<sub>2</sub>)



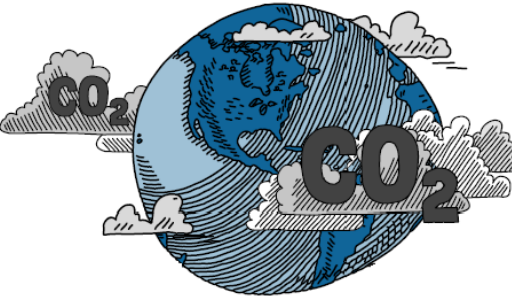
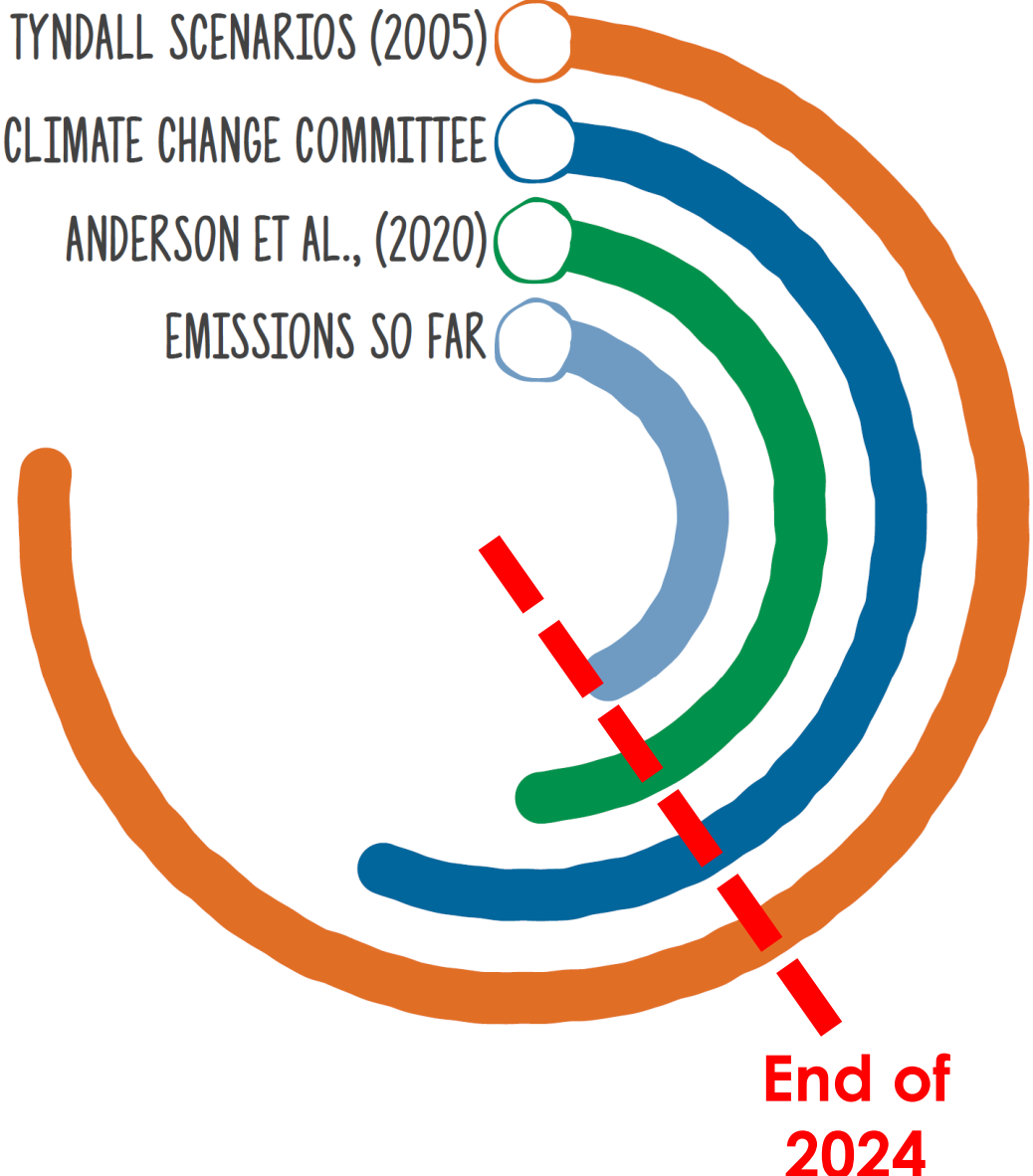
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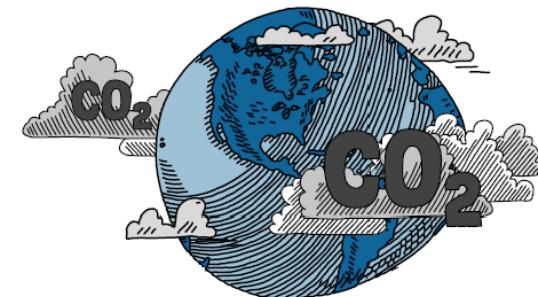
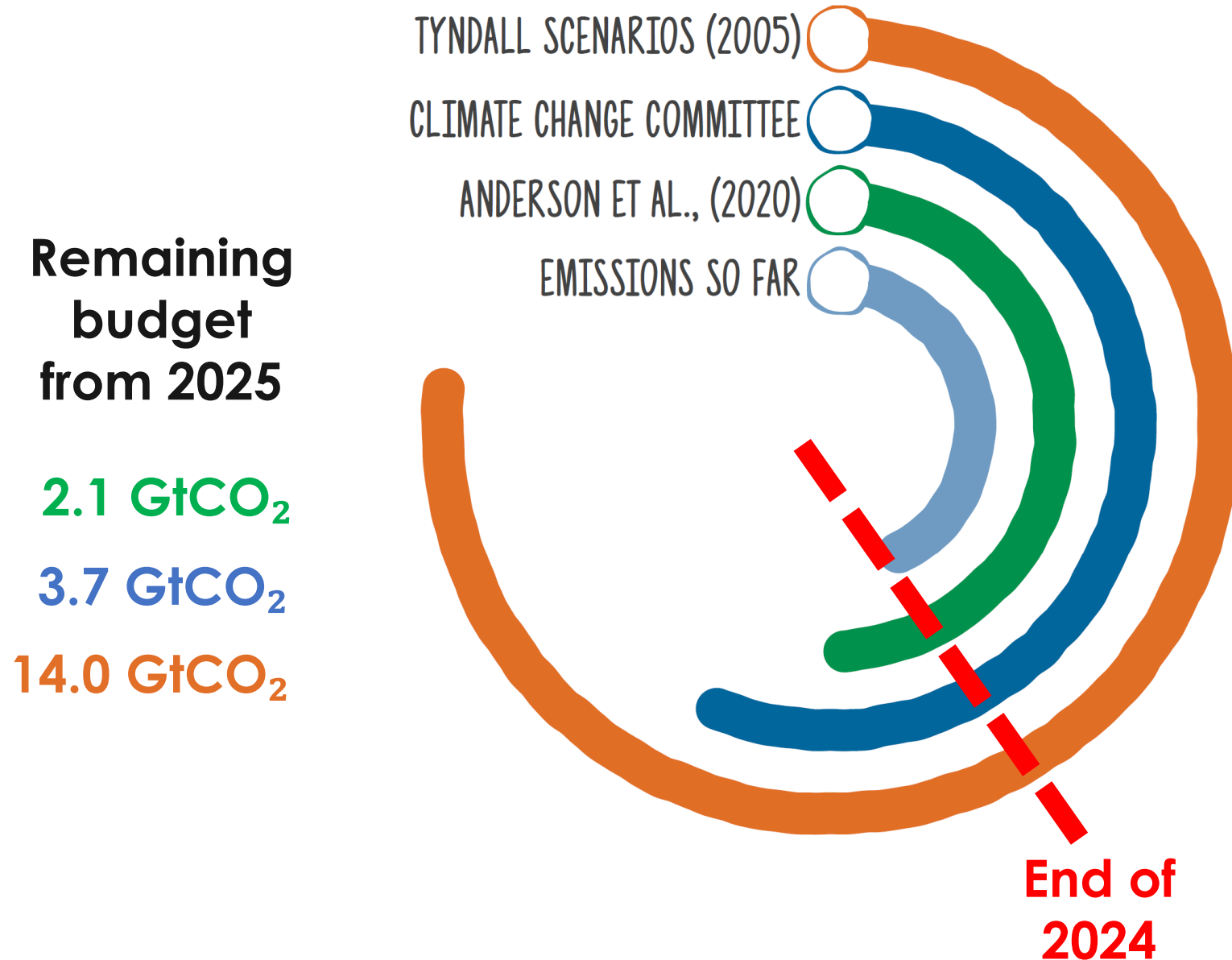
The UK's shrinking possibility space (GtCO<sub>2</sub>)



# The UK's shrinking possibility space



# The UK's shrinking possibility space



# Narrowing window for action

## What does this mean?

... along with large-scale transformation of the energy system, we need to also think of radical & fundamental shifts in **behaviours**, technology adoption and everyday **social practices**.

TYNDALL SCENARIOS (2005)

ANDERSON ET AL., (2020)

Remaining budget from 2025

2.1 GtCO<sub>2</sub>

3.0 GtCO<sub>2</sub>

8.0 GtCO<sub>2</sub>

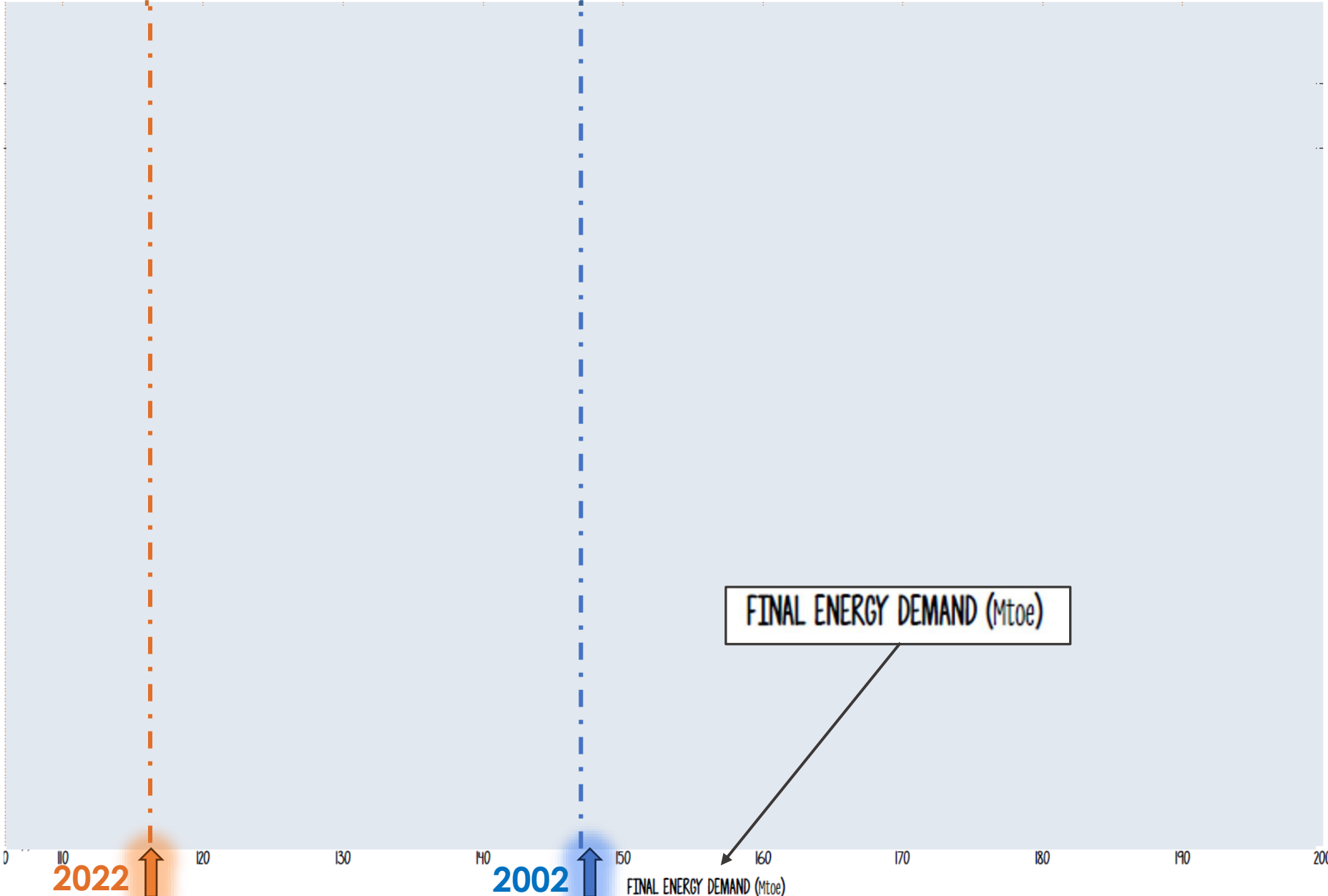
14.0 GtCO<sub>2</sub>

End of 2024

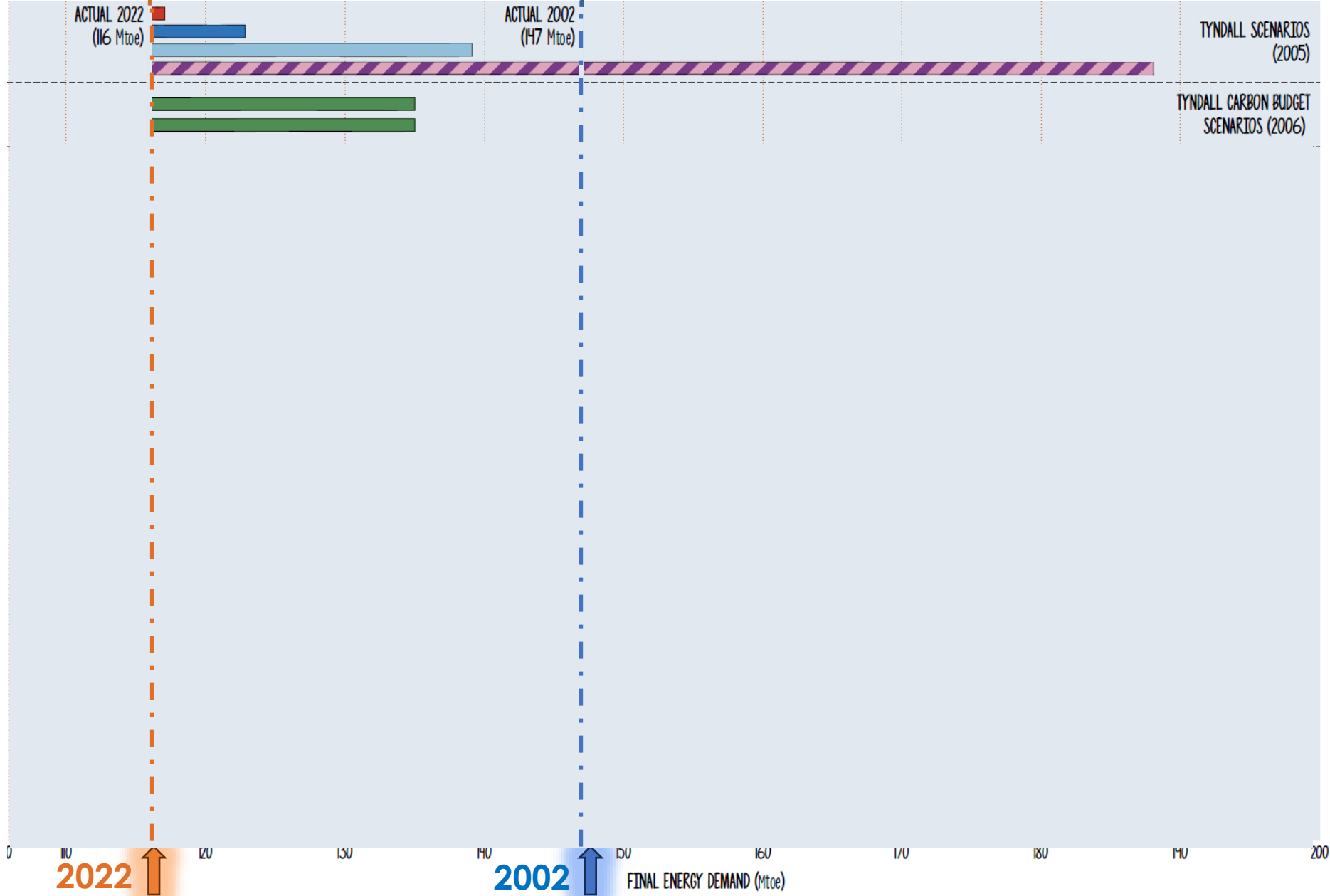


Focus in on **Energy Demand**

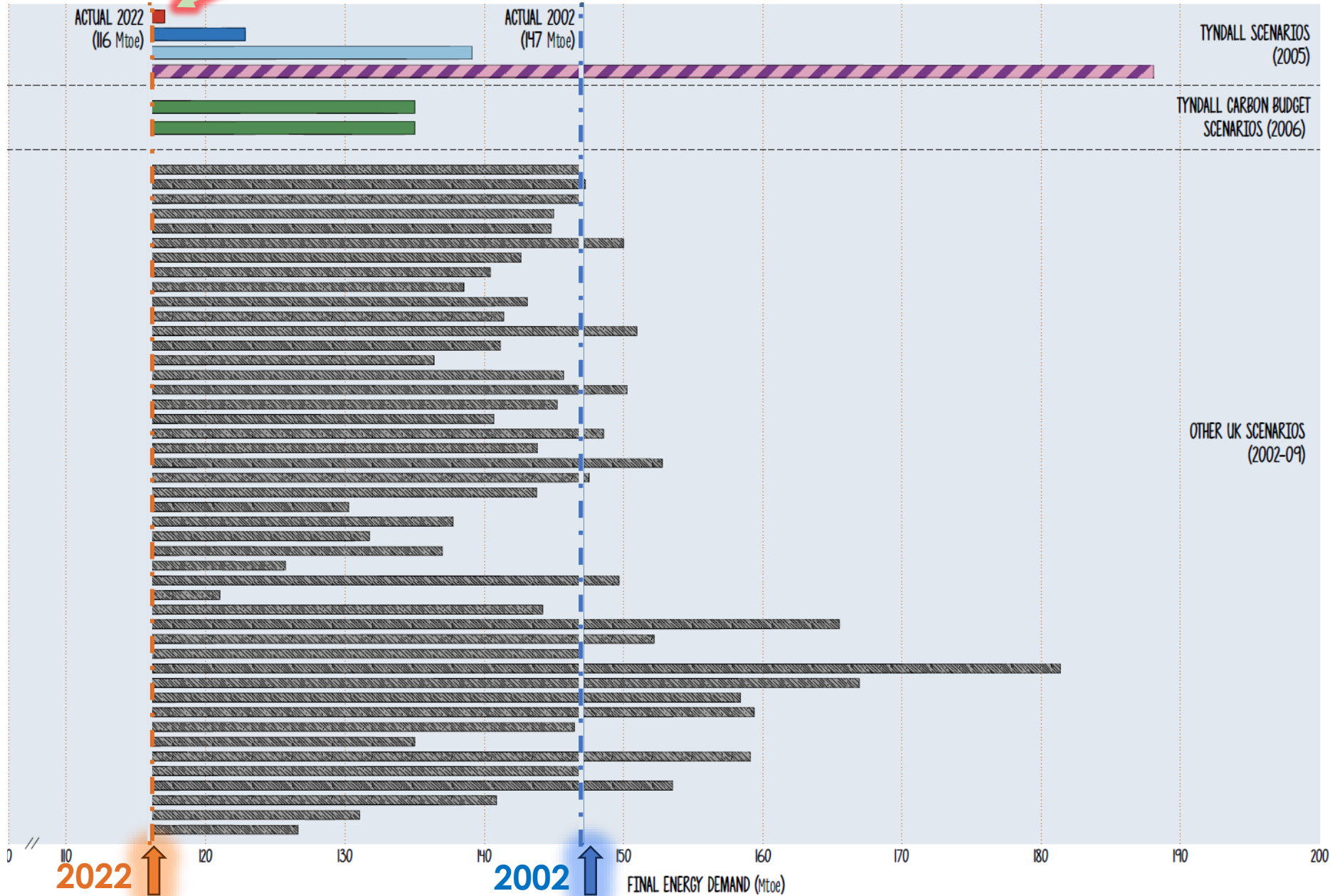
# Energy demand Findings



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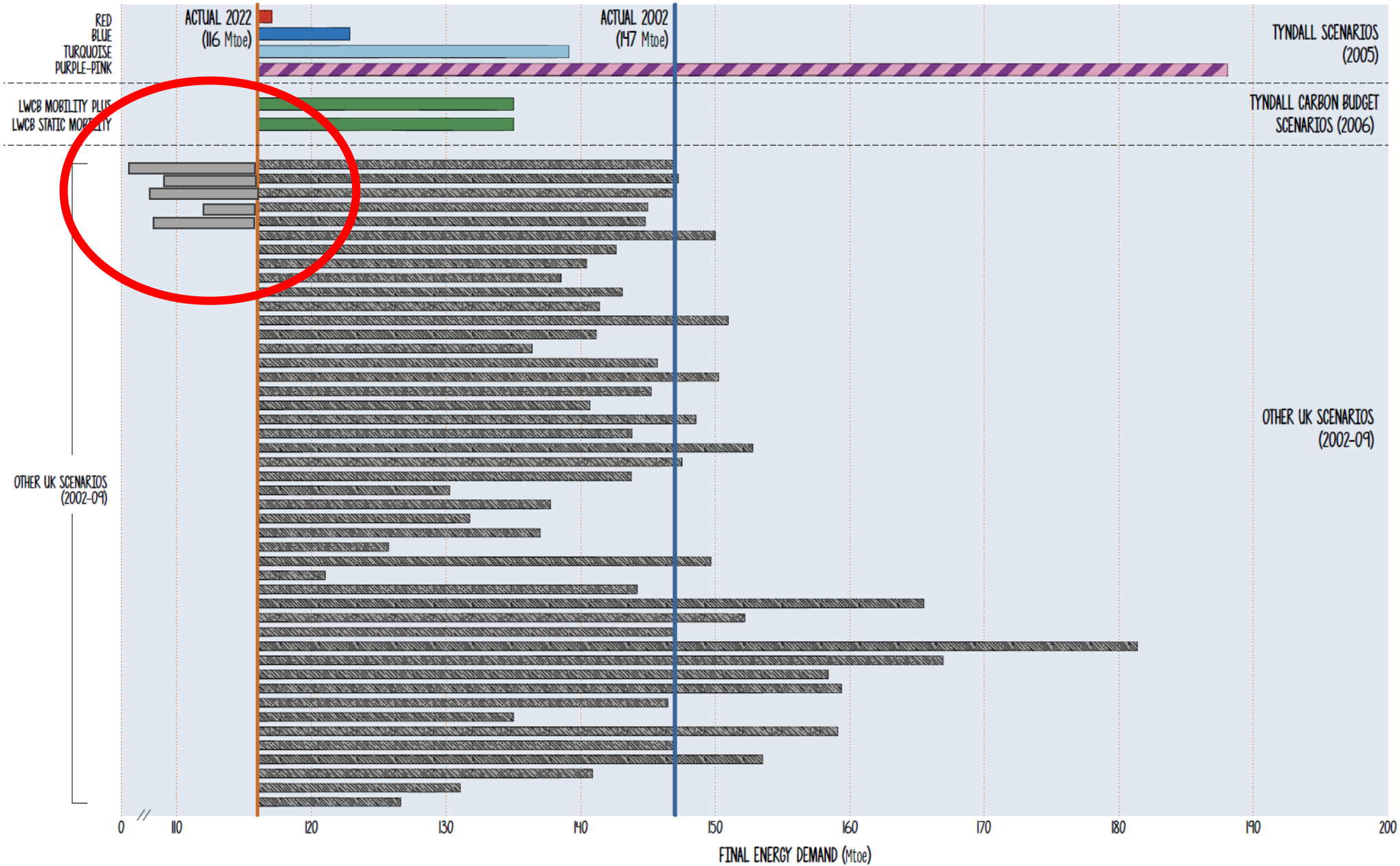


# Energy demand Findings

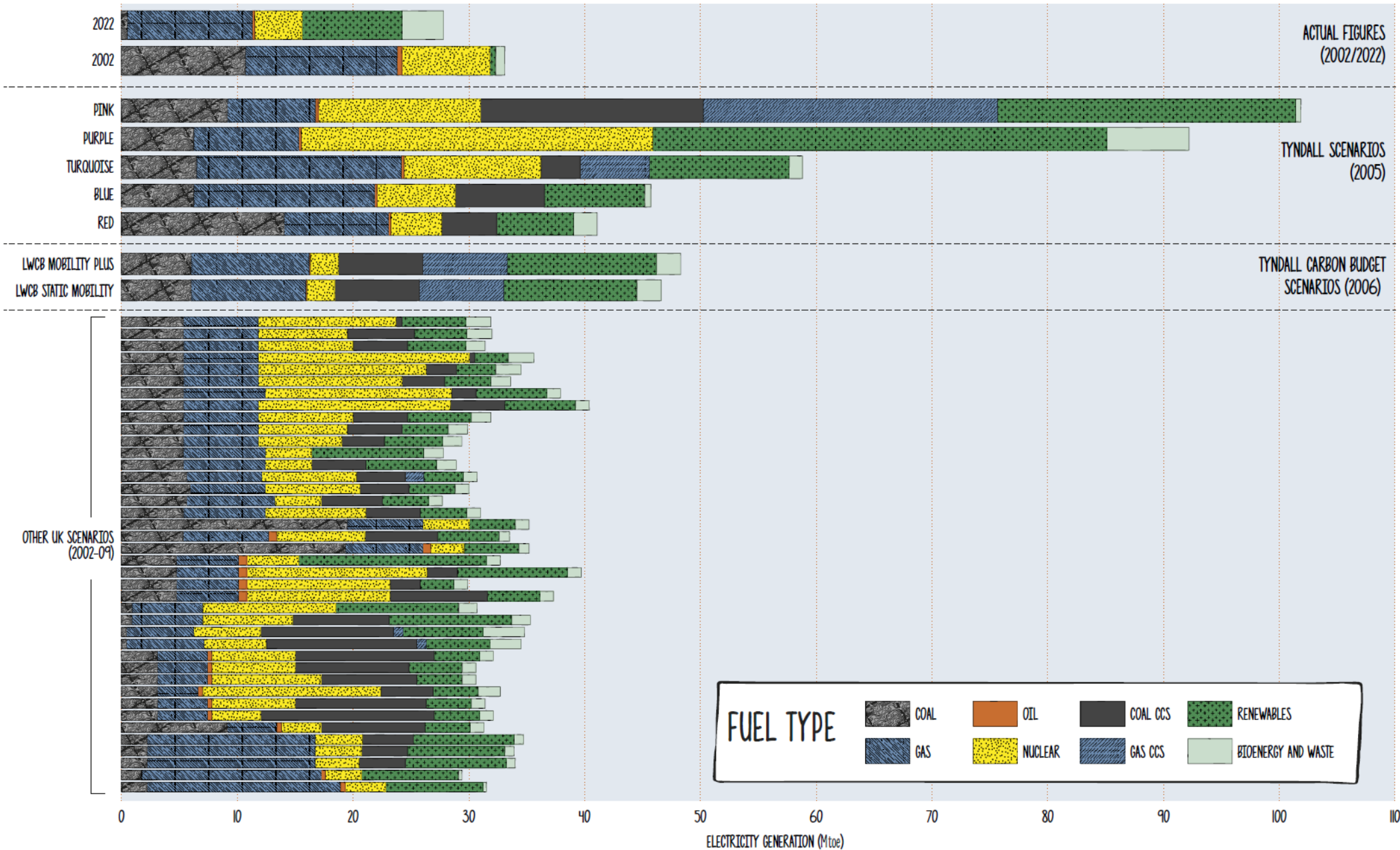


1. Was there a **missed opportunity** to model more **transformative change in energy demand**?
2. If the **highest possible ambition** had been modelled at that time — could the energy transition be more advanced than it is today?
3. Are there **biases in the dominant models** and methods, both then and now, that marginalise a focus on reducing energy demand?

# Energy demand Findings



# The electrification story...



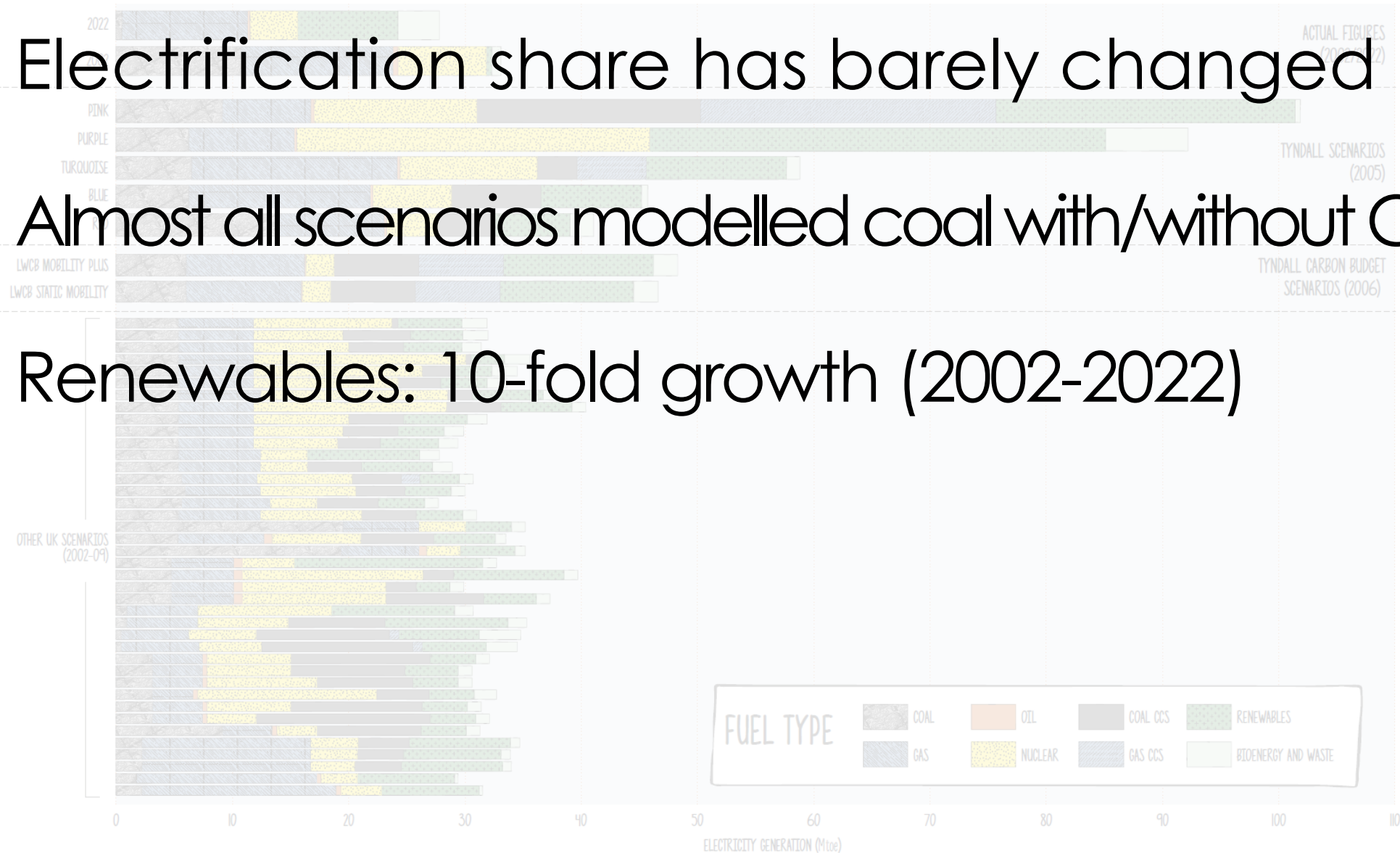
# The electrification story (Techno-optimism)...

ELECTRICITY FUEL MIX BY SCENARIO 2022 BREAKDOWN

1. Electrification share has barely changed

2. Almost all scenarios modelled coal with/without CCS

3. Renewables: 10-fold growth (2002-2022)





# Expert Workshop Findings

What shapes UK energy scenario Practices?

# 1 The Institutional Production of Scenario Boundaries

- ▶ Scenario boundaries were set before modelling began — by funders and framing
- ▶ The status quo was treated as neutral; departures were seen as ideological
- ▶ Diversifying who asks the questions matters as much as improving the methods

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*“[The expert community has been] systematically hollowed out, functioning less as a source of challenge than as a mechanism for stabilising the status quo.”*

— Researcher, climate policy

## 2 The Selective Optimism of Scenario Imagination

- ▶ Optimism was directed only at supply-side, technology-based solutions
- ▶ Scenarios over-explored CCS; renewables and demand reduction were under-explored
- ▶ The same pattern may be repeating with engineered carbon removal technologies

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*“CCS is a bunch of very, very different things all under one umbrella” and that people can hold quite different positions on the same statement depending on which part of the technology system they have in mind”*

— Researcher working on CCS

### 3 The Missing People in Energy Futures

- ▶ Energy scenarios were futures without people — assuming a generalised person
- ▶ A perception gap exists between policymakers and what people actually think
- ▶ People, equity, and lived experience must be core to how futures are built

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*“25% of households do not own a car, over half do not fly in any given year, and 25% have no savings whatsoever. But it really is a very elite group that dominates the thought process around climate policy.”*

— Researcher, consumption-based emissions

## 4 The Right Tool for the Right Time

- ▶ Supply-side engineering models could not represent rapid, non-marginal change
- ▶ Near-term, long-term, and retrospective analysis each need different tools
- ▶ We need methodological pluralism — not one dominant framework

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*“Complex Integrated Assessment Models embed subjective judgements within quantitative parameters, thereby obscuring deeply normative assumptions behind a veneer of technical objectivity.”*

— Researcher, climate policy

## 5 The Politics That Scenarios Cannot Escape

- ▶ Scenarios are inescapably political — shaped by and used as political instruments
- ▶ Growth politics drives supply-side focus; wellbeing focus shifts it to demand
- ▶ Scenario developers are inside the systems they analyse — positionality matters

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*“Think very carefully about the interests, worldviews, power dynamics of the people in the system, which includes us.”*

— Researcher, climate governance

# My Headline conclusions:

- Twenty years of UK energy scenarios were not wrong about the future but they did constrain the debate
- They were narrow about what futures we permitted ourselves to imagine
- That narrowness was not technical — it was institutional, methodological, and political
- **It was ours....** a narrow technocratic expertise
- If **WE** reproduce it, the next retrospective will be written against an increasing hotter and unstable climate, and against the societal and ecological colipase.



**Shirley Chisholm**

***If they don't give you a seat at the table, bring a folding chair.***

***Until you get that chair,*** it is the responsibility of the people at the table to speak for you.

# Thank You

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## Main Report



## Mini Booklet



## Workshop report

