

# **Energy policy at a time of multiple crises: is the UK government getting it right?**

**Jim Watson**

**Director, UCL Institute for Sustainable Resources**

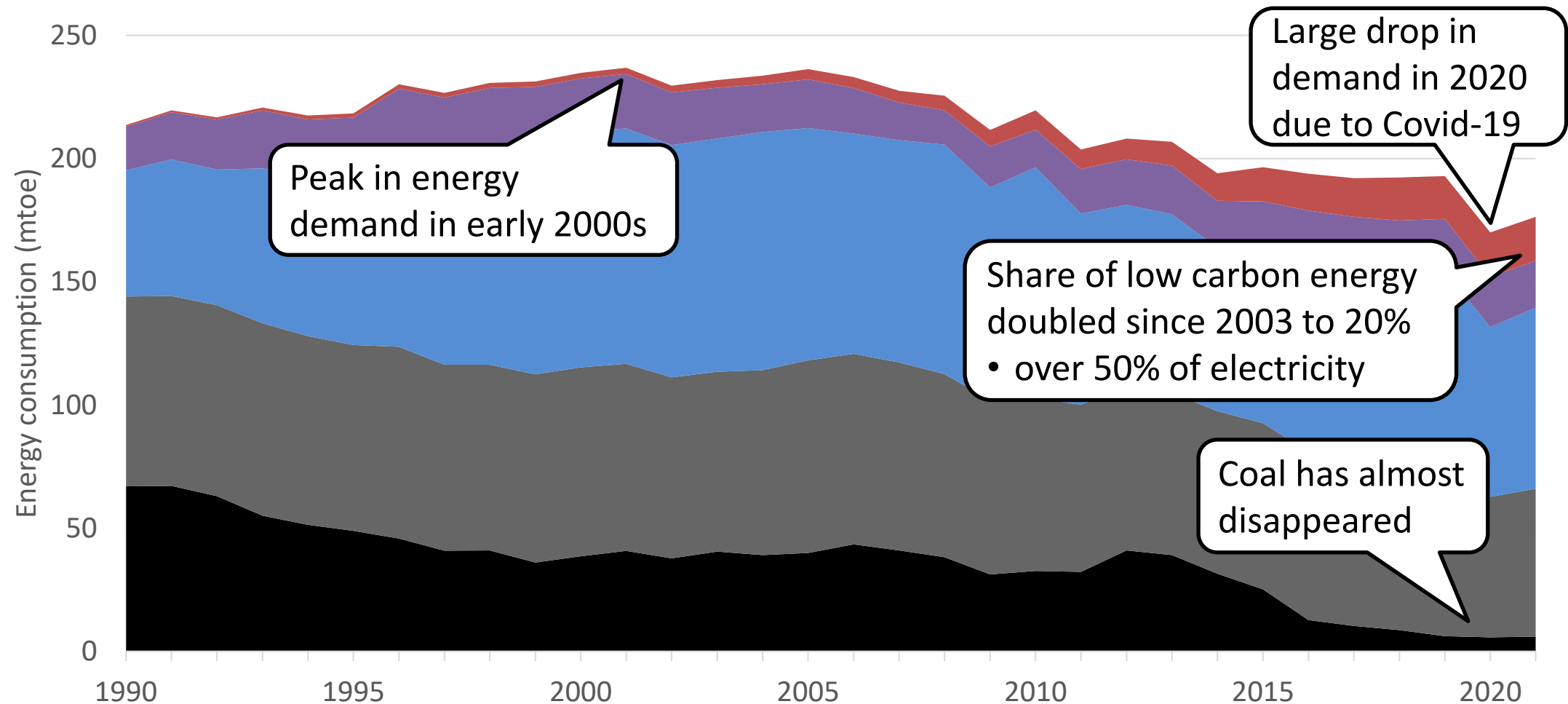
**Oxford Energy Lecture, University of Oxford, 17<sup>th</sup> January 2022**



# The UK energy transition so far



## The UK's energy transition so far



Source: BEIS

■ Coal

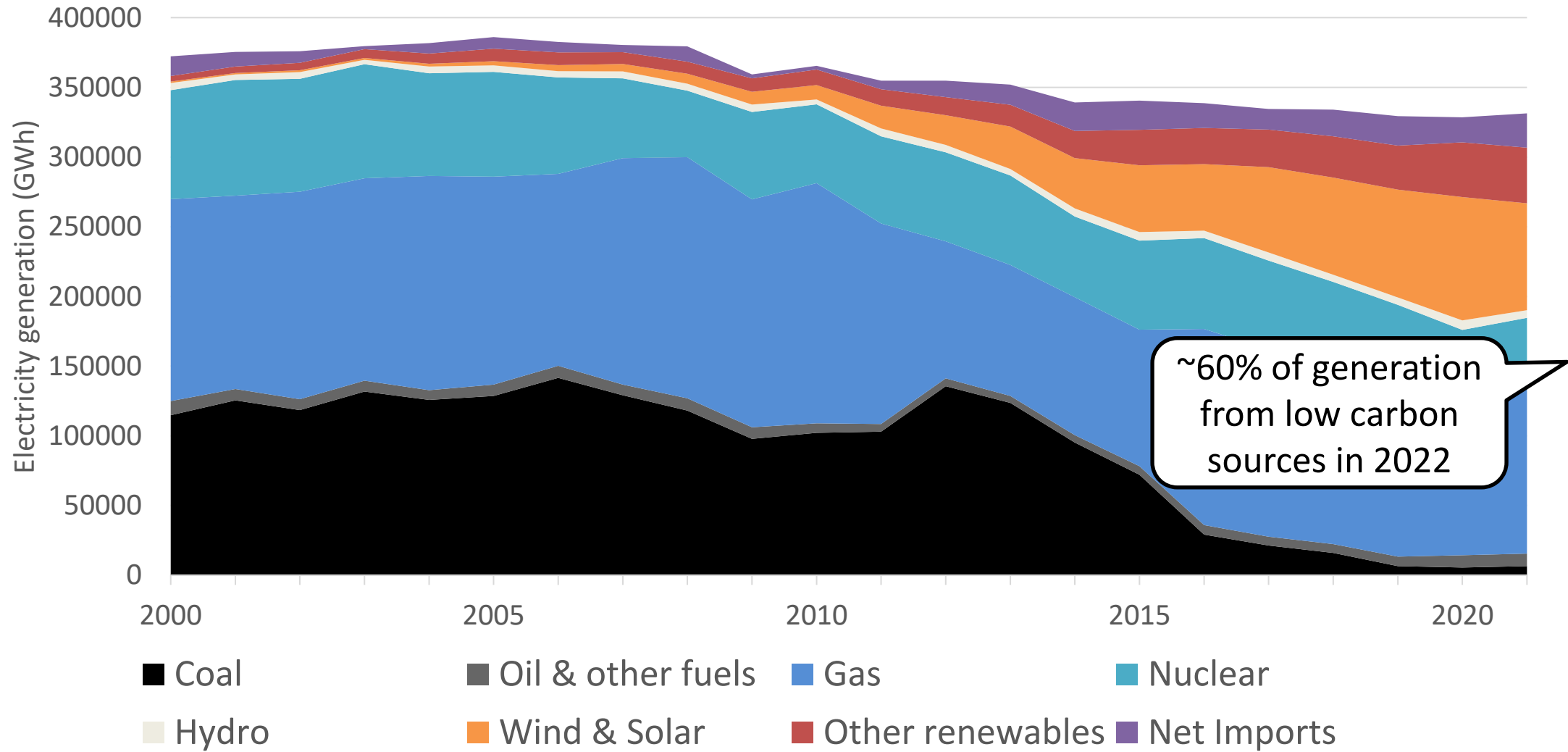
■ Oil

■ Gas

■ Primary electricity

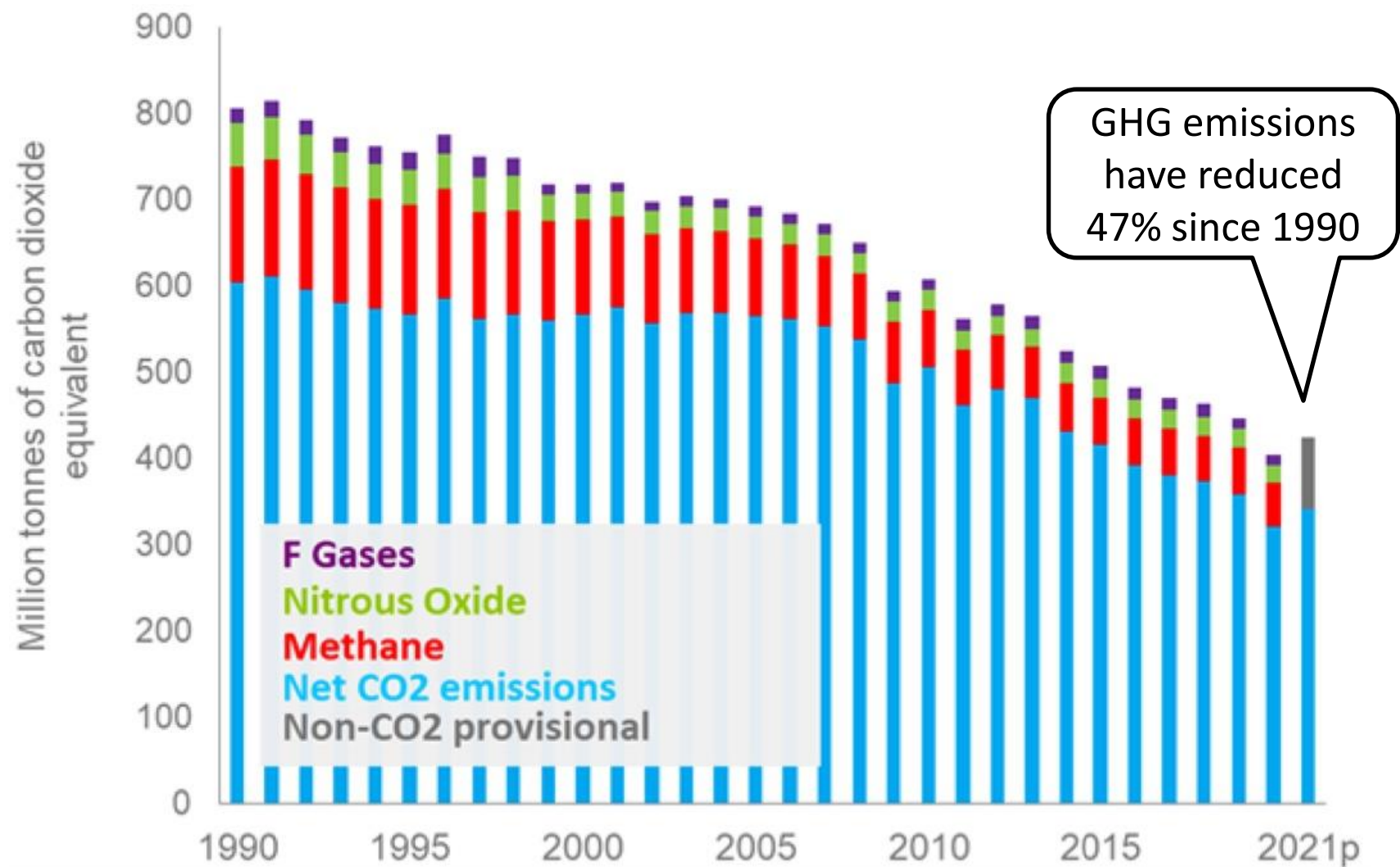
■ Bioenergy & waste

# The UK Energy Transition: Rapid change for electricity



Source: BEIS; National Grid ESO

# The UK Energy Transition

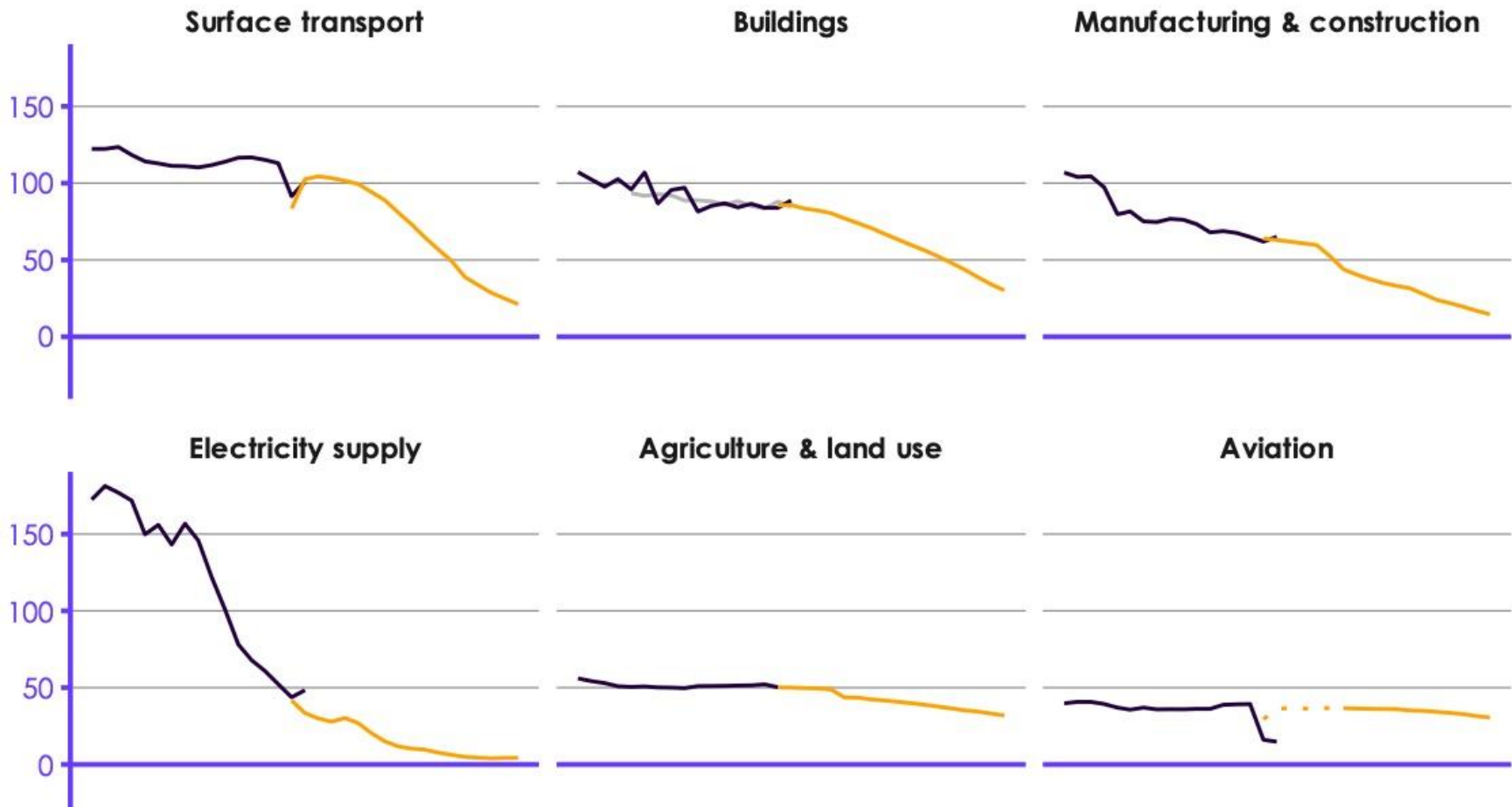


Source: BEIS (2022)  
UK Energy in Brief



# The UK Energy Transition

Emissions for selected sectors (mt CO<sub>2</sub>e)

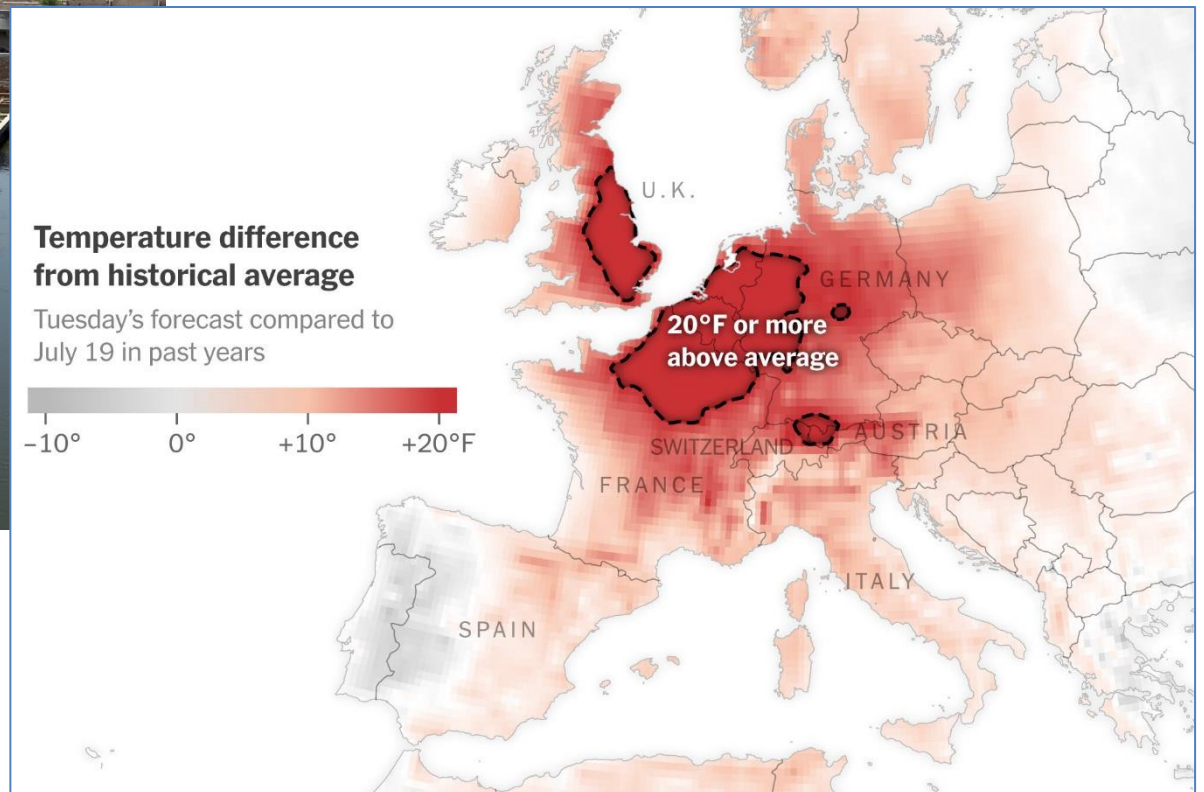


Historical emissions (black); government net-zero pathway (orange). Climate Change Committee Progress Report to Parliament (2022)

# Multiple crises



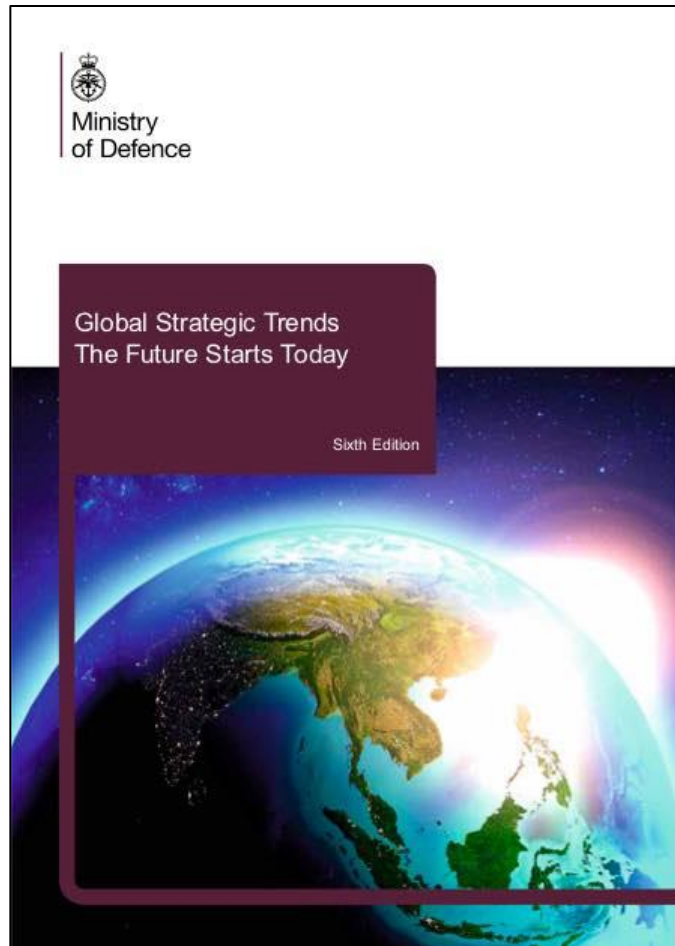
# Climate change



Source: New York Times



# Climate change



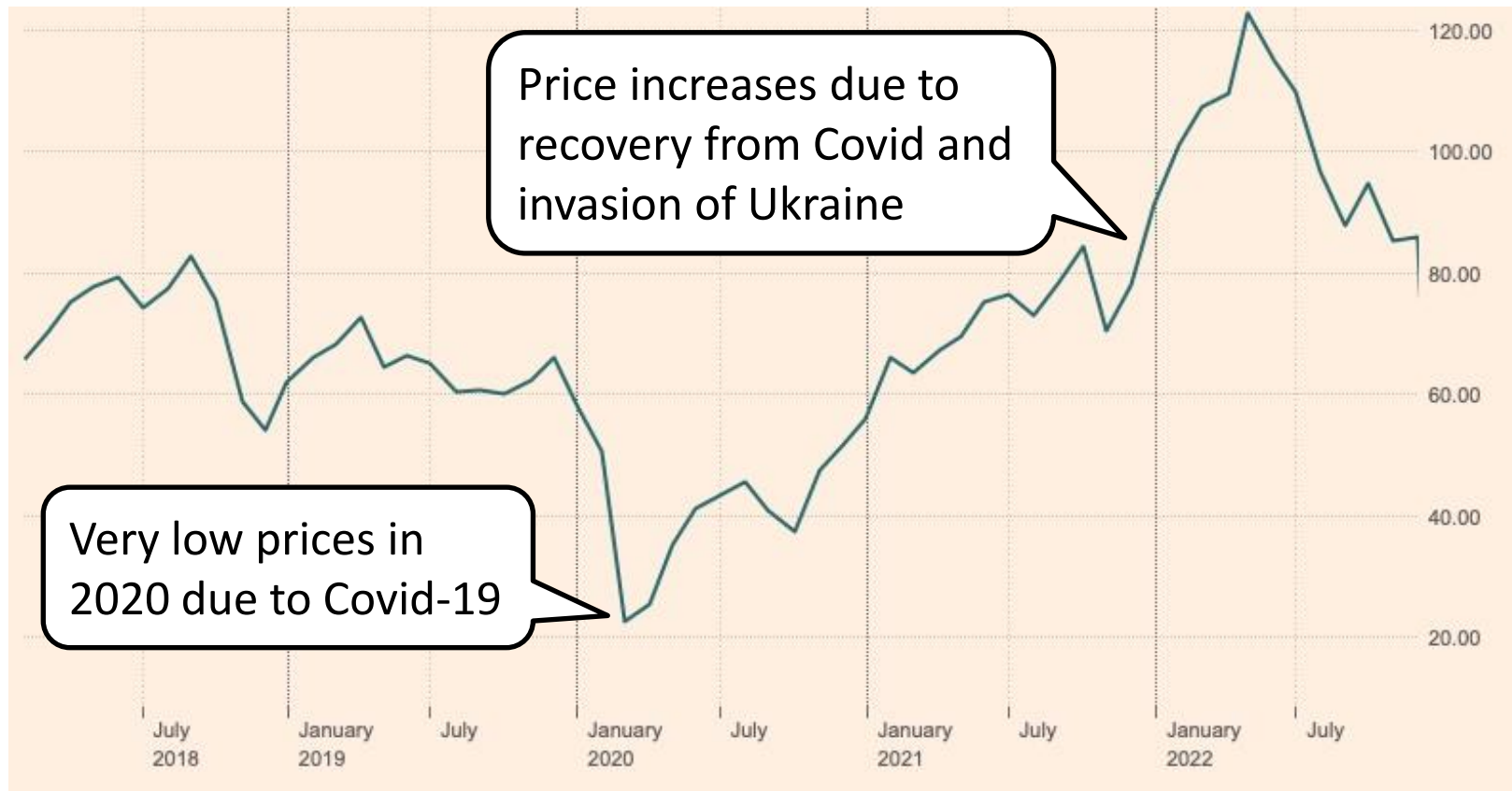
‘Human influence on the climate system will have far-reaching consequences as floods, drought, storms, heatwaves and heavy rainfall become more intense and possibly more frequent. Transport and trade routes, including key chokepoints, are likely to be disrupted affecting global markets and supply chains.’

**UK Ministry of Defence  
Global Strategic Trends (2018)**

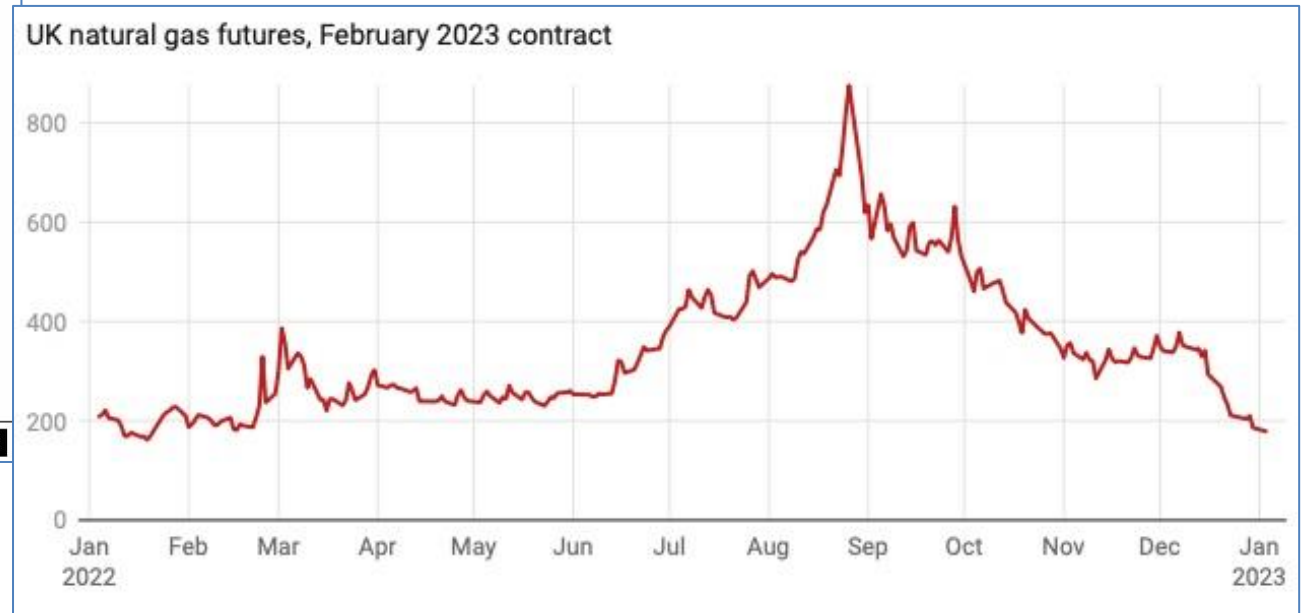
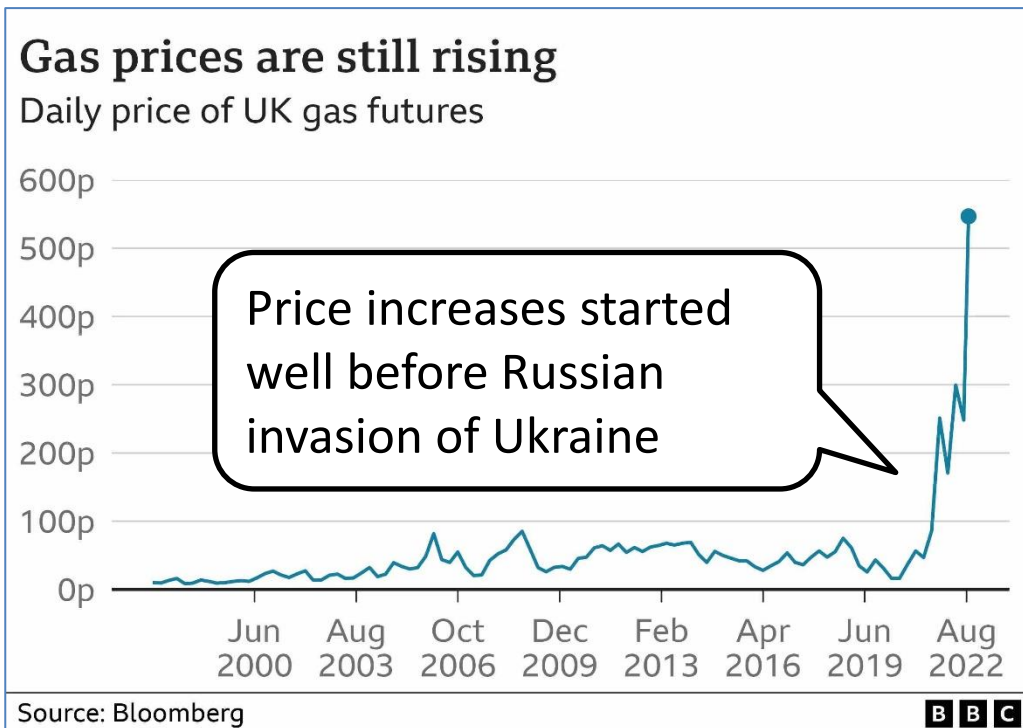


## Energy price shocks

Brent crude oil price (\$/Barrel, 2018 - 2022)

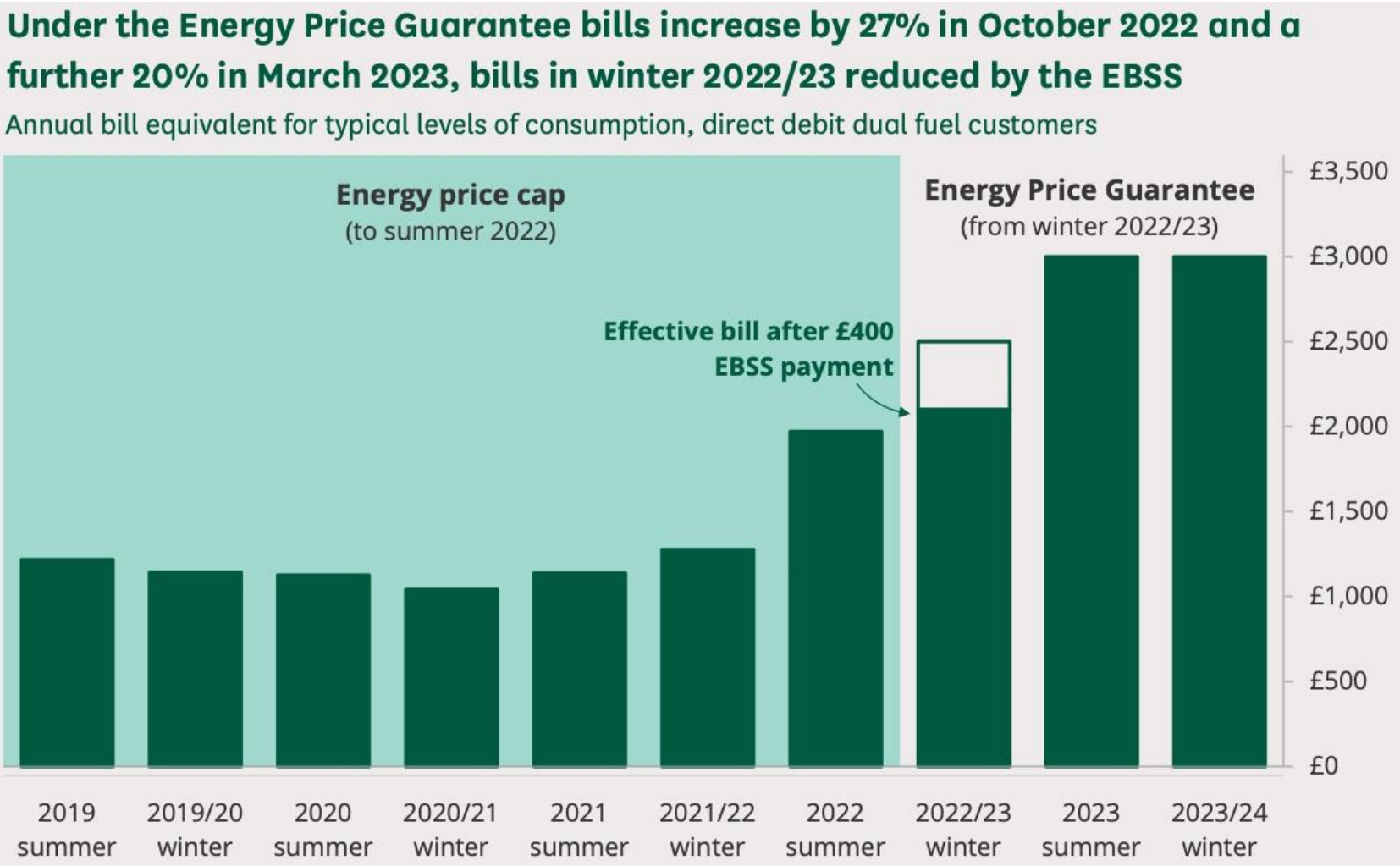


## Energy price shocks



Source: BBC news / Bloomberg (Aug2022); Evening Standard / Bloomberg (Jan 2023). Prices in pence per therm

# Energy bills



Source: House of Commons Library (Jan 2023)



# Policy responses



# Policy responses



## Climate Change Act 2008

### CHAPTER 27

### CONTENTS

#### PART 1

#### CARBON TARGET AND BUDGETING

##### *The target for 2050*

- 1 The target for 2050
- 2 Amendment of 2050 target or baseline year
- 3 Consultation on order amending 2050 target or baseline year

##### *Carbon budgeting*

- 4 Carbon budgets
- 5 Level of carbon budgets
- 6 Amendment of target percentages
- 7 Consultation on order setting or amending target percentages
- 8 Setting of carbon budgets for budgetary periods
- 9 Consultation on carbon budgets
- 10 Matters to be taken into account in connection with carbon budgets

## Climate Change Act (2008)

- Long-term target for 2050 (80% reduction in GHG emissions compared to 1990)
- Five-year carbon budgets, plus government plans or strategies
- Scrutiny and advice by independent Committee on Climate Change
- Annual CCC progress reports to Parliament & specialist reports



# Policy responses



## Policy responses



‘Although this year has taken a very different path to the one we expected, I haven’t lost sight of our ambitious plans to level up across the country. My Ten Point Plan will create, support and protect hundreds of thousands of green jobs, whilst making strides towards net zero by 2050.

Our green industrial revolution will be powered by the wind turbines of Scotland and the North East, propelled by the electric vehicles made in the Midlands and advanced by the latest technologies developed in Wales’

Boris Johnson, 18<sup>th</sup> November 2020





## Policy responses

### A 10-Point Plan to Reduce the European Union's Reliance on Russian Natural Gas

3 March 2022

iea



EUROPEAN  
COMMISSION

Brussels, 18.5.2022  
COM(2022) 230 final

**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN  
PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN  
ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE  
REGIONS**

**REPowerEU Plan**

{SWD(2022) 230 final}

Policy paper

### British energy security strategy

Updated 7 April 2022

England and Wales

Secure, clean and affordable British energy for the long term.



IEA, European Commission,  
UK government



## Policy responses

 [News](#) [Politics](#) [Opinion](#) [Culture](#) [Money](#) [Sport](#) [Life & More](#) [Puzzles](#) 

[Conservatives](#) [Labour](#) [Liberal Democrats](#) [Brexit](#) [Scotland](#) [Analysis](#)

### **Rishi Sunak: 'I'll make UK energy independent by 2045 so energy crisis never happens again'**

The former chancellor confirmed that if he becomes prime minister on September 5, he would put in place immediate support for households – particularly the most vulnerable – faced with soaring energy bills



i news, 13<sup>th</sup>  
August 2022



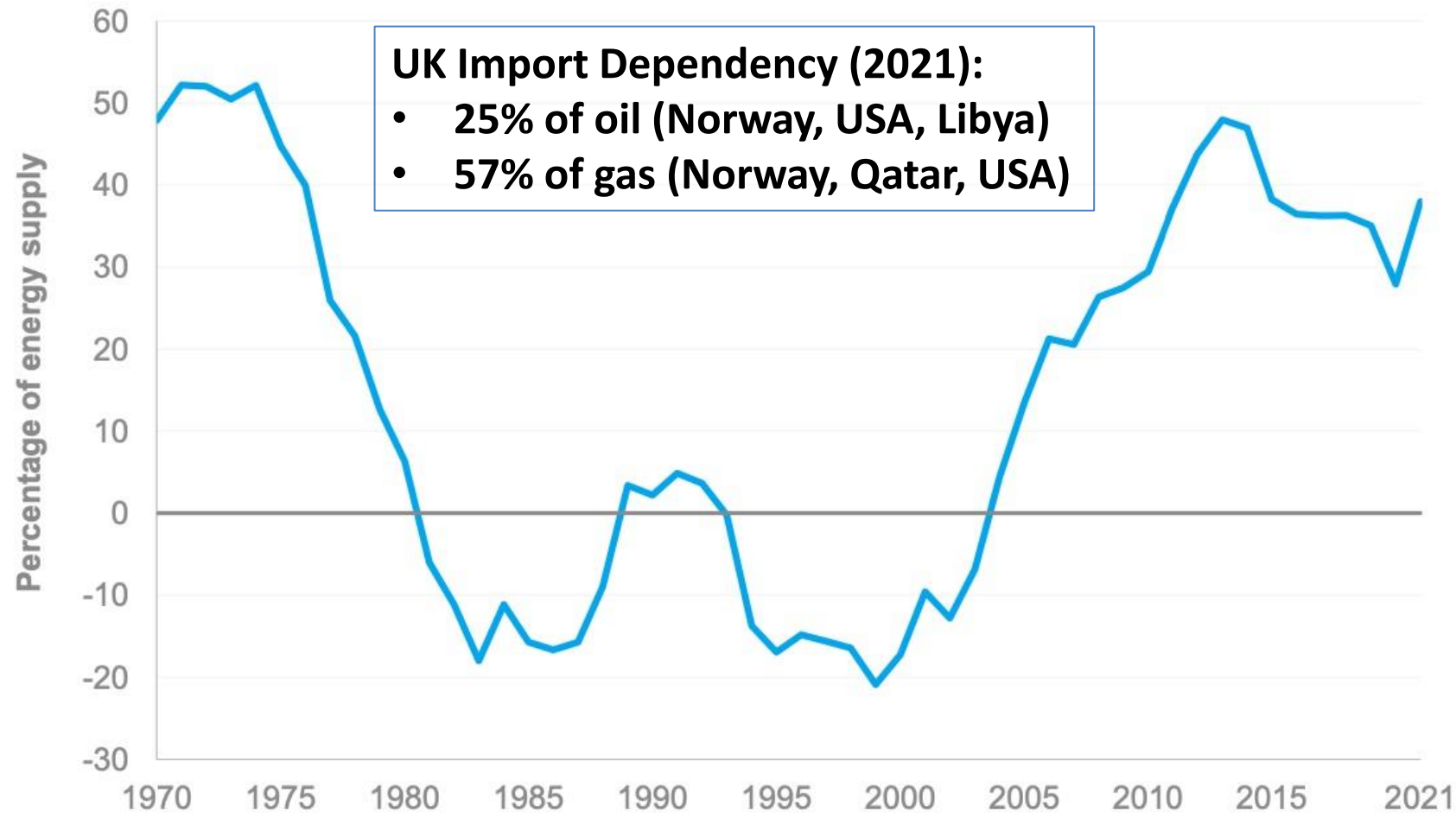
# Policy Responses

## The British Energy Security Strategy



- Includes many plans that had already been announced in the '10 point plan' in late 2020
- Phasing out Russian coal and oil by the end of 2022; stopping imports of Russian LNG 'as soon as possible'
- Modest reductions in energy bills (£350 / year for most); followed by much larger reductions later in 2022
- New licenses for oil and gas development in North Sea
- Long term plans for low carbon energy supply: offshore wind, nuclear and green hydrogen in particular
- Very little on reducing demand / energy efficiency
- Energy for transport not fully included in strategy

## Where do our oil and gas imports come from?



## Reducing reliance on Russia



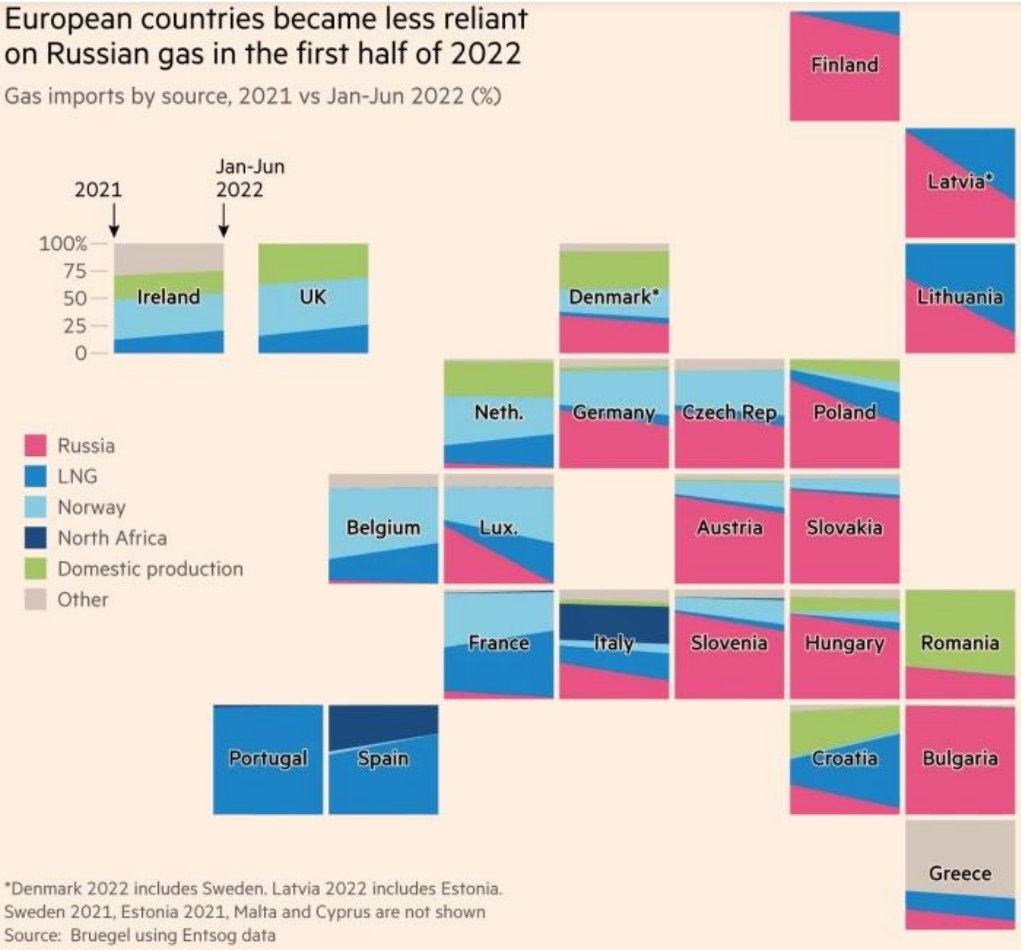
9% of the UK's oil consumption came from Russia in 2021

4% of the UK's gas consumption came from Russia in 2021 (as LNG)

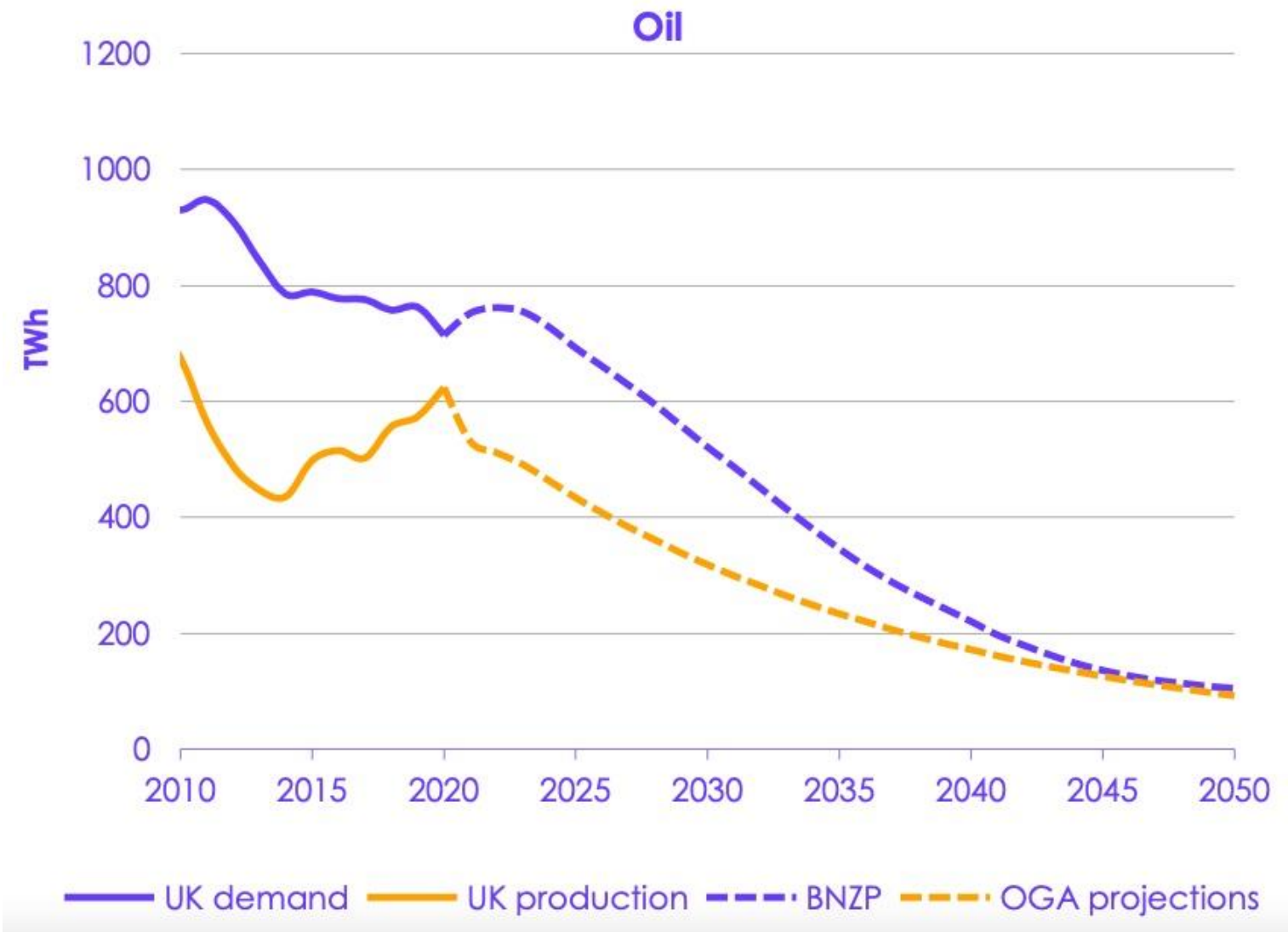




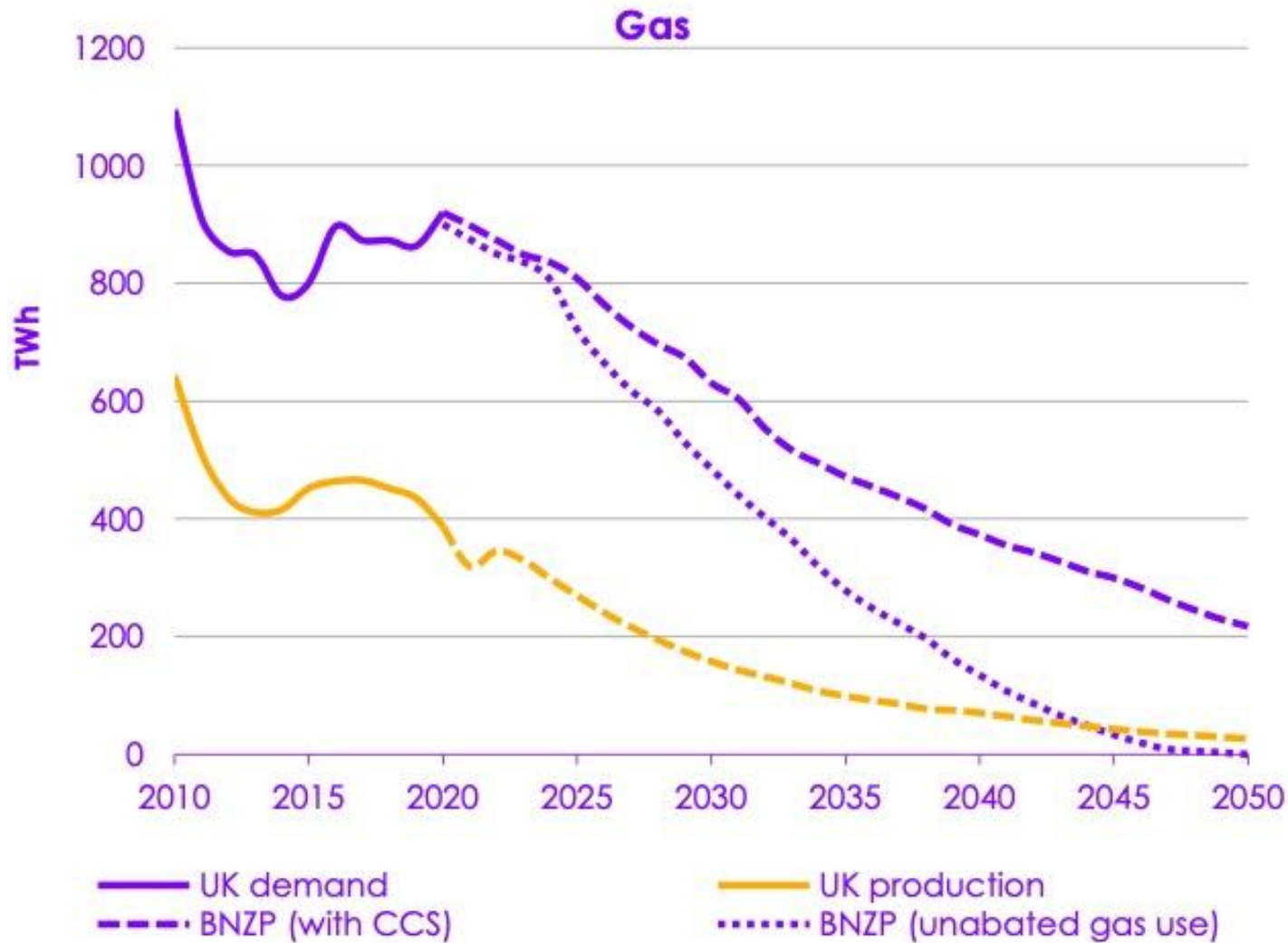
# Reducing reliance on Russia



# Investing in new UK oil and gas production



# Investing in new UK oil and gas production



Climate Change  
Committee,  
Letter to BEIS  
Secretary of  
State, 2022





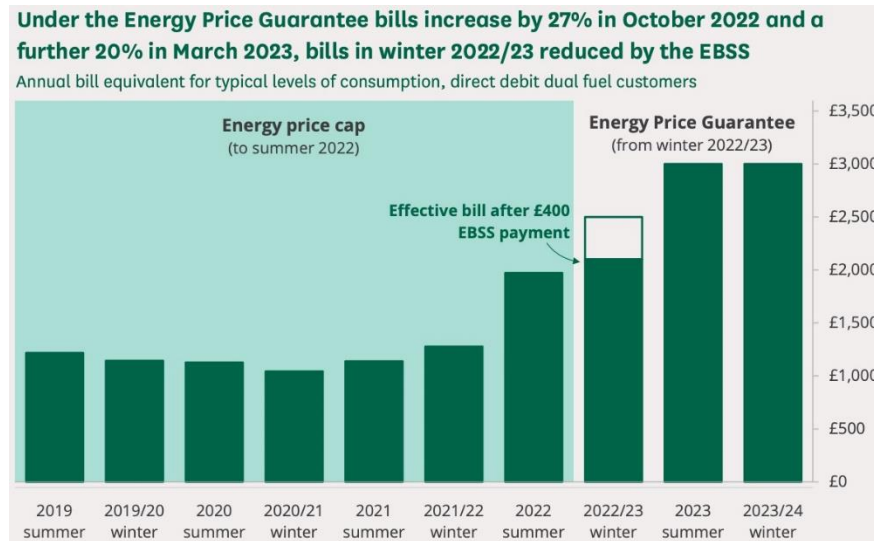
## Managing the transition



‘On no one quality, on no one process,  
on no one country, on no one route,  
and on no one field must we be  
dependent. Safety and certainty in oil  
lie in variety and variety alone’.

Winston Churchill, 1913

# The costs of subsidising energy bills



Source: House of Commons Library (Jan 2023); HM Government



## Growth Plan, September 2022:

- Cap average bills to £2500 for two years from October 2022 (£31bn cost in 2022/23)
- Six month support for businesses (£29bn in 2022/23)
- Windfall tax on oil and gas (£28bn revenue; 4 years)

## Autumn Statement, November 2022

- Higher cap on household bills from April 2023 (cost: £25bn in 22/23; £13bn in 23/24)
- Lower cost of business support in 22/23 (£18bn)
- Windfall tax on oil & gas (£42bn revenue; 5.5 years)
- Higher capital allowances for investment in low carbon technologies on platforms
- Electricity generator levy (£14bn revenue; 5.5 years)

## Comparing UK and EU responses

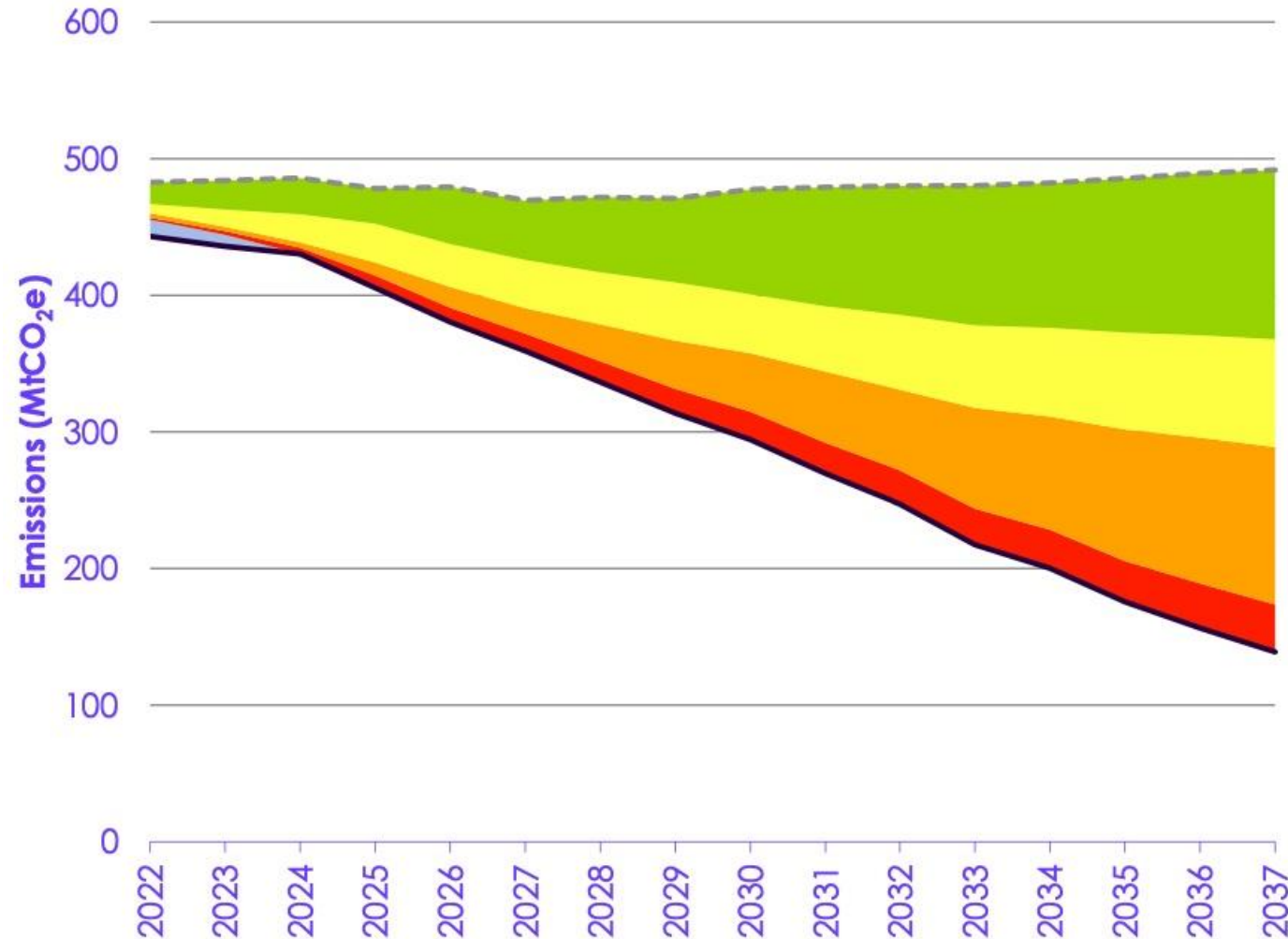
	British Energy Security Strategy (April '22)	REPowerEU Strategy (March & May '22)
<b>Overall aim</b>	Reduce demand for imported oil and gas (phase out Russian oil and coal by the end of 2022)	Independent from Russian fossil fuels well before 2030; reduce Russian gas by 2/3 by end of 2022
<b>Fossil fuels</b>	Further develop domestic oil and gas reserves	Diversify international sources; common purchasing platform
<b>Renewables &amp; nuclear</b>	Accelerate onshore/offshore wind, solar & nuclear (3x current capacity); 95% low carbon electricity by 2030, zero-carbon by 2035	45% renewables (economy wide) by 2030 (current target = 32%); 600 GW solar PV by 2030 (4x today)
<b>Hydrogen</b>	>10GW production capacity by 2030, half 'green' (renewable)	40GW renewable production capacity; 10Mt production & 10mt renewable import by 2030
<b>Networks &amp; Markets</b>	Overall electricity network planning & operation; review of market operation in 2022	Accelerated investment in key cross-border electricity and gas networks
<b>End-use consumption &amp; efficiency</b>	Existing mechanisms, plus zero-VAT on energy saving materials, boiler upgrade scheme, and proposals to 'rebalance' costs away from electricity bills to incentivise electrification	Increase binding economy-wide energy efficiency targets; review and increase stringency on existing EU-wide measures (e.g. Ecodesign; energy performance of buildings)



Is government getting its priorities right?



## Is government ambition on track?

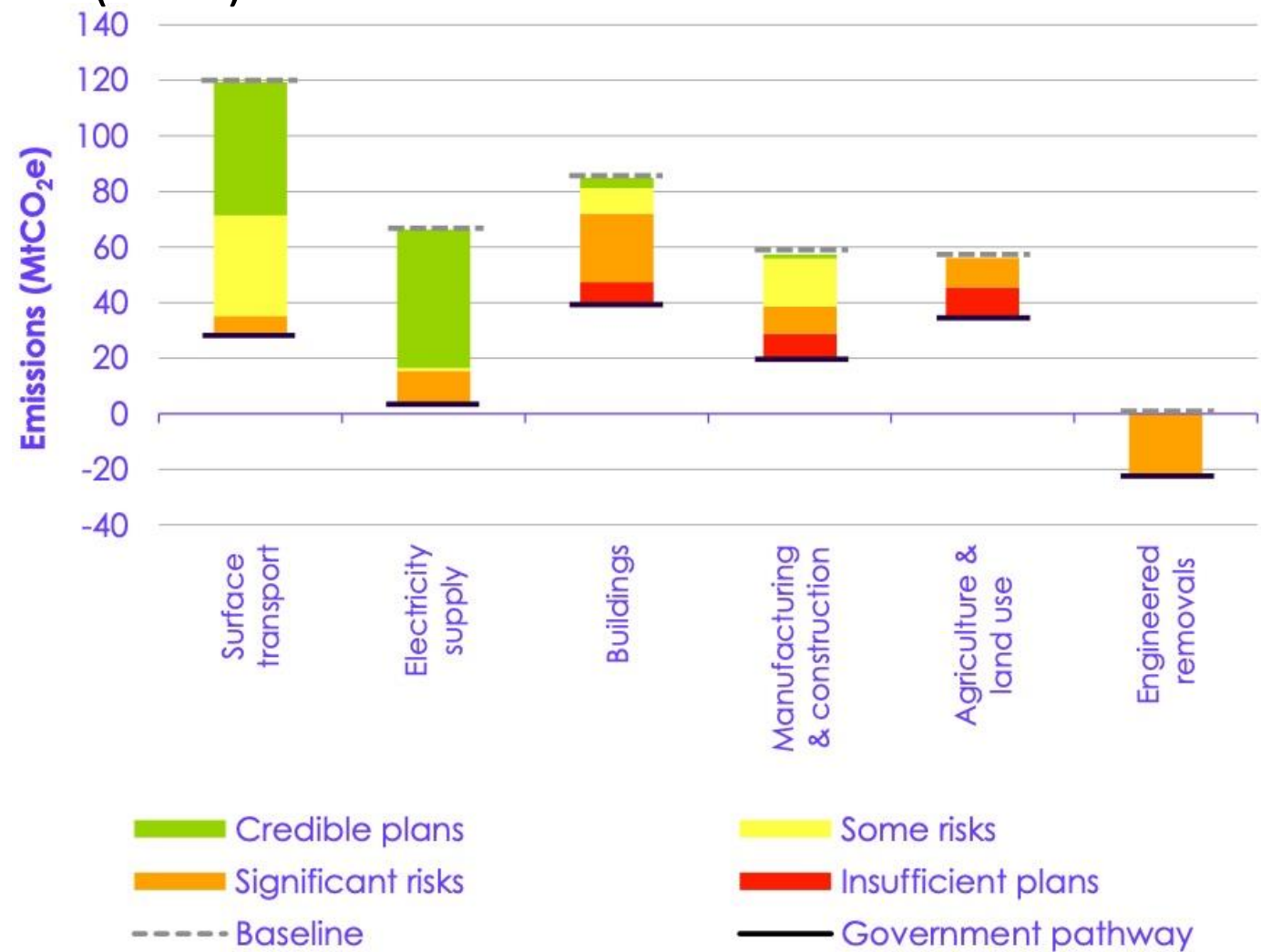


CCC Annual  
Progress  
Report (2022)



# Is government ambition on track?

Policies and plans (2035)



CCC Annual  
Progress  
Report (2022)

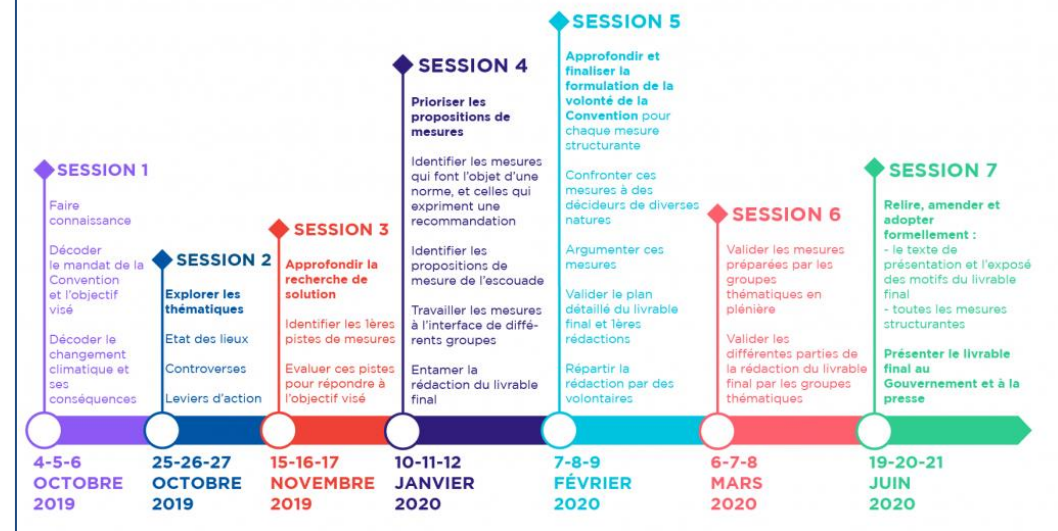




# Is government getting its priorities right?




**Objectif de la Convention citoyenne sur le climat :**  
**Proposer des mesures pour réduire d'au moins 40% les émissions des Gaz à Effet de Serre d'ici 2030 dans une logique de justice sociale**



# Is government getting its priorities right?

## Decarbonising the power sector

  
THE BARTLETT  
INSTITUTE FOR  
SUSTAINABLE RESOURCES


**Separating electricity from gas prices through Green Power Pools: Design options and evolution**

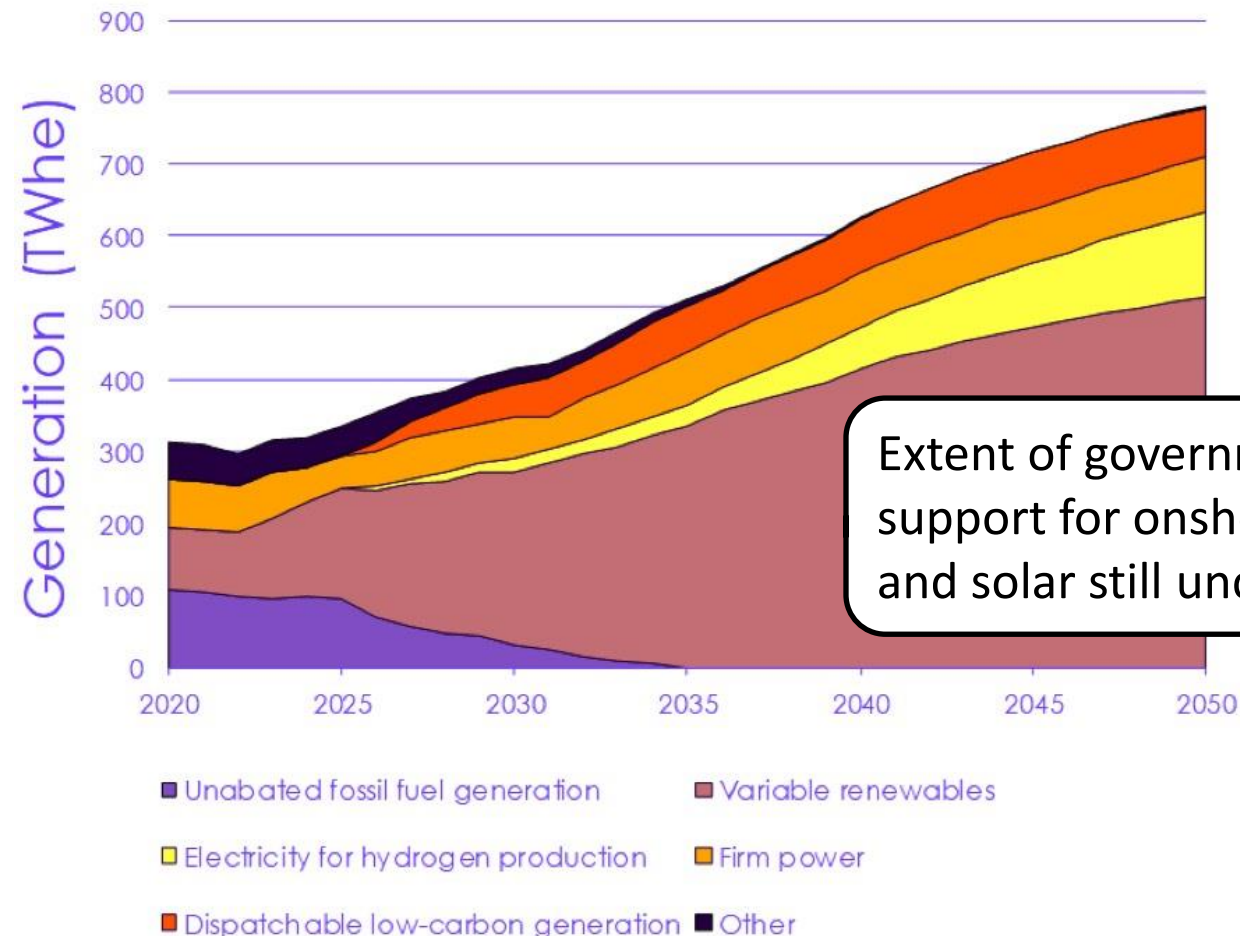
UCL Institute for Sustainable Resources  
Series *Navigating the Energy-Climate Crises*  
Working Paper #4  
Michael Grubb, Paul Drummond and Serguey Maximov

This paper develops a detailed proposal for an efficient way to channel the value of large-scale renewables, which have become much cheaper than gas-driven wholesale electricity prices, to consumers at 'cost-plus' prices. This would reduce the fiscal pressure on governments for market-wide subsidies and offer more stable support for consumers most in need. We detail how this 'green power pool' approach could interact with the wholesale market to ensure firm power, also bringing transparency to the cost of balancing the variable renewables output and maintaining incentives for efficient supply and demand responses. We illustrate the approach with reference to the cost and volume trajectories of UK renewables backed by government CfDs, targeted initially to particular consumer groups, as a first step in a wider transition towards direct consumer access to cheap renewables

**Keywords:** electricity market design; energy crisis; renewable energy; CfD; long-run contracts; energy transition; energy poverty

**Journal of Economic Literature (JEL) Classification Codes:** L16; L51; L94; L98; O4; Q28; Q58

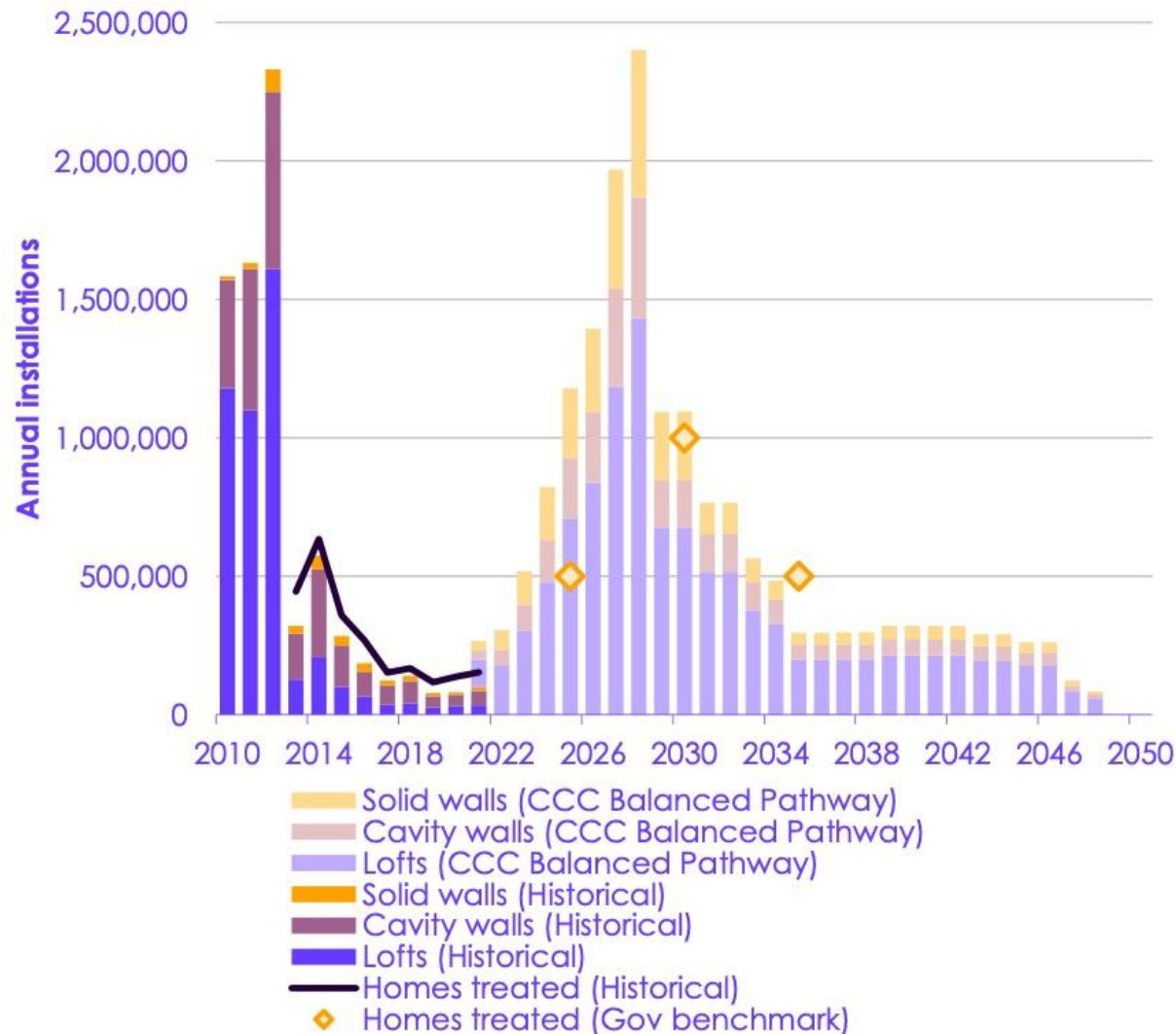




Source: Climate Change Committee Sixth Carbon Budget (2021); UCL ISR



# Energy efficiency in homes

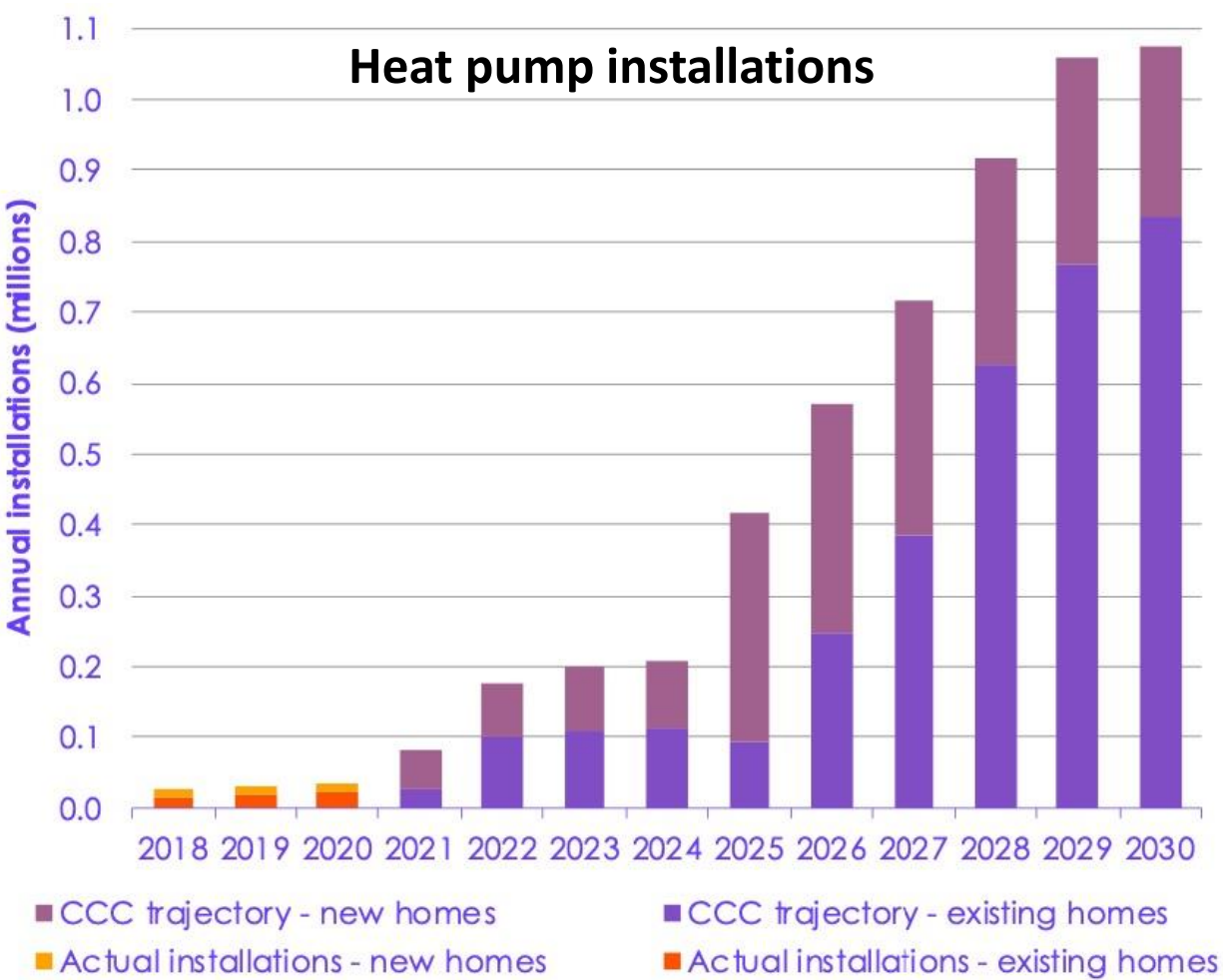


- 59% of homes in England rated band D or below in 2022
- ECO scheme for low income households extended until 2026; budget of £1bn a year
- New target of reducing demand from buildings and industry by 15% by 2030
- Task force to work out how to meet this target
- Extra £6bn of funding, in the next Parliament!

Source:  
CCC Progress Report (2022)

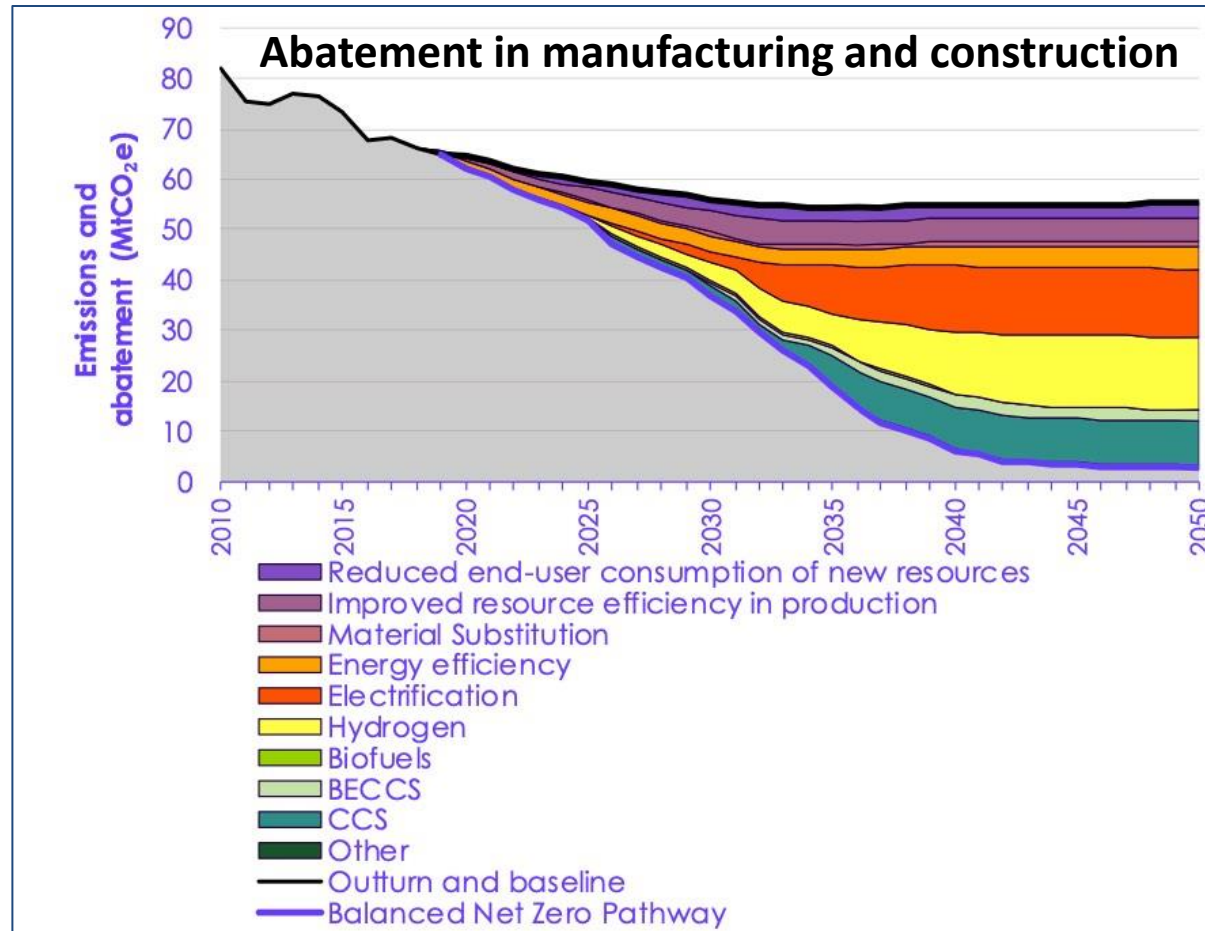


# Low carbon heating

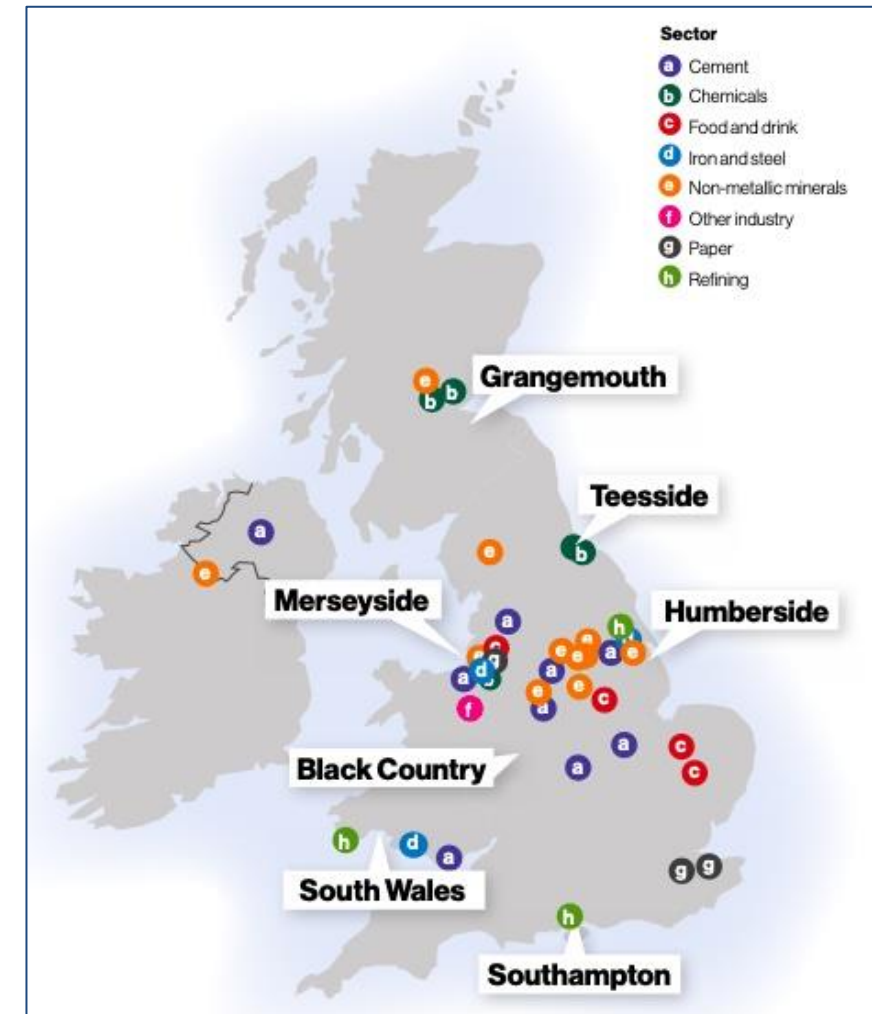


Source: HM Government; Climate Change Committee

## Decarbonising industry

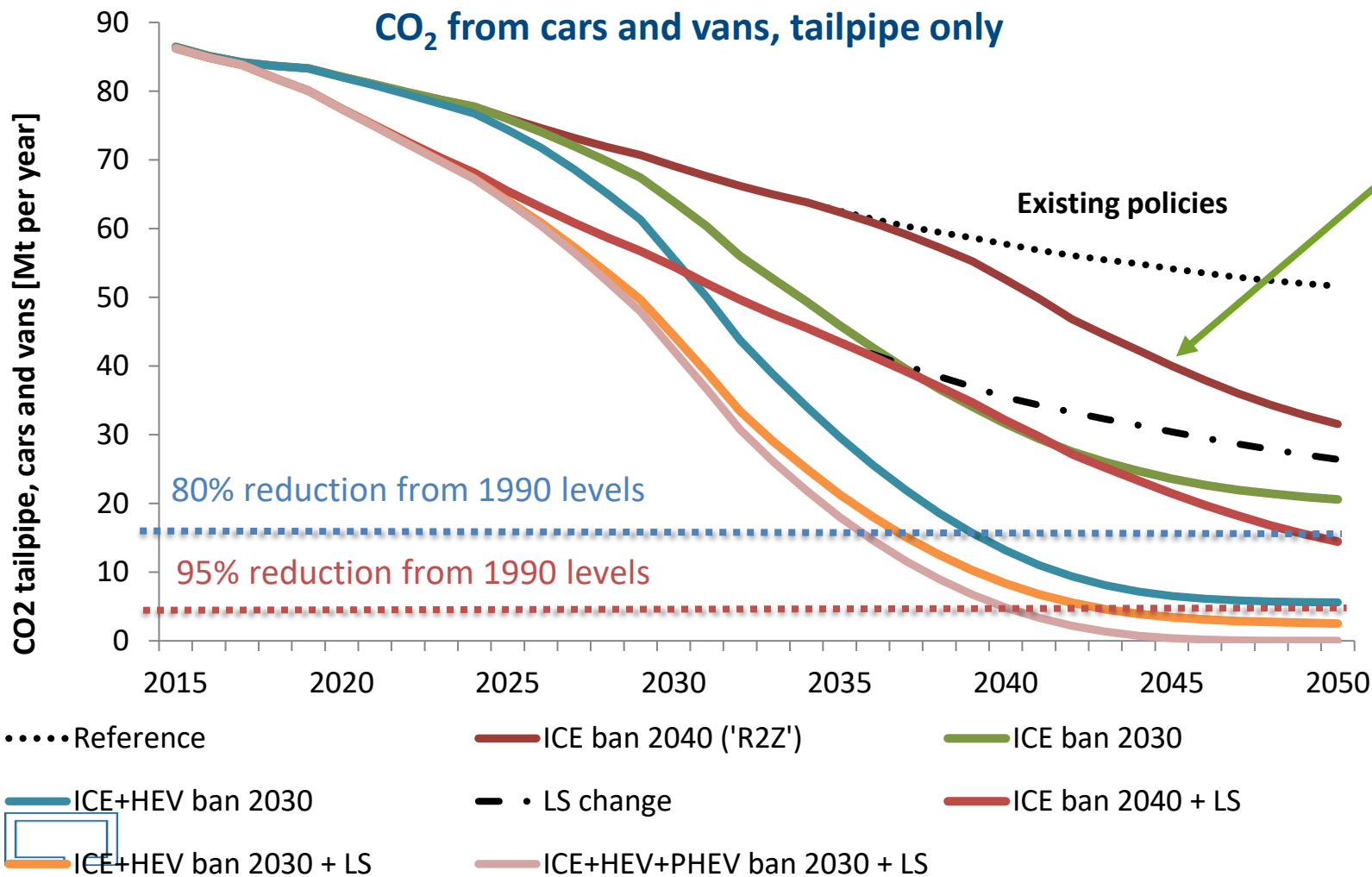


Source: Climate Change Committee; BEIS



Source: Brand and Anable (2019); Brand (2018)

# Road transport



‘Road to Zero’ ban **too little too late** – does **not** fit with our emissions targets

Still a lot of diesels on road in 2050

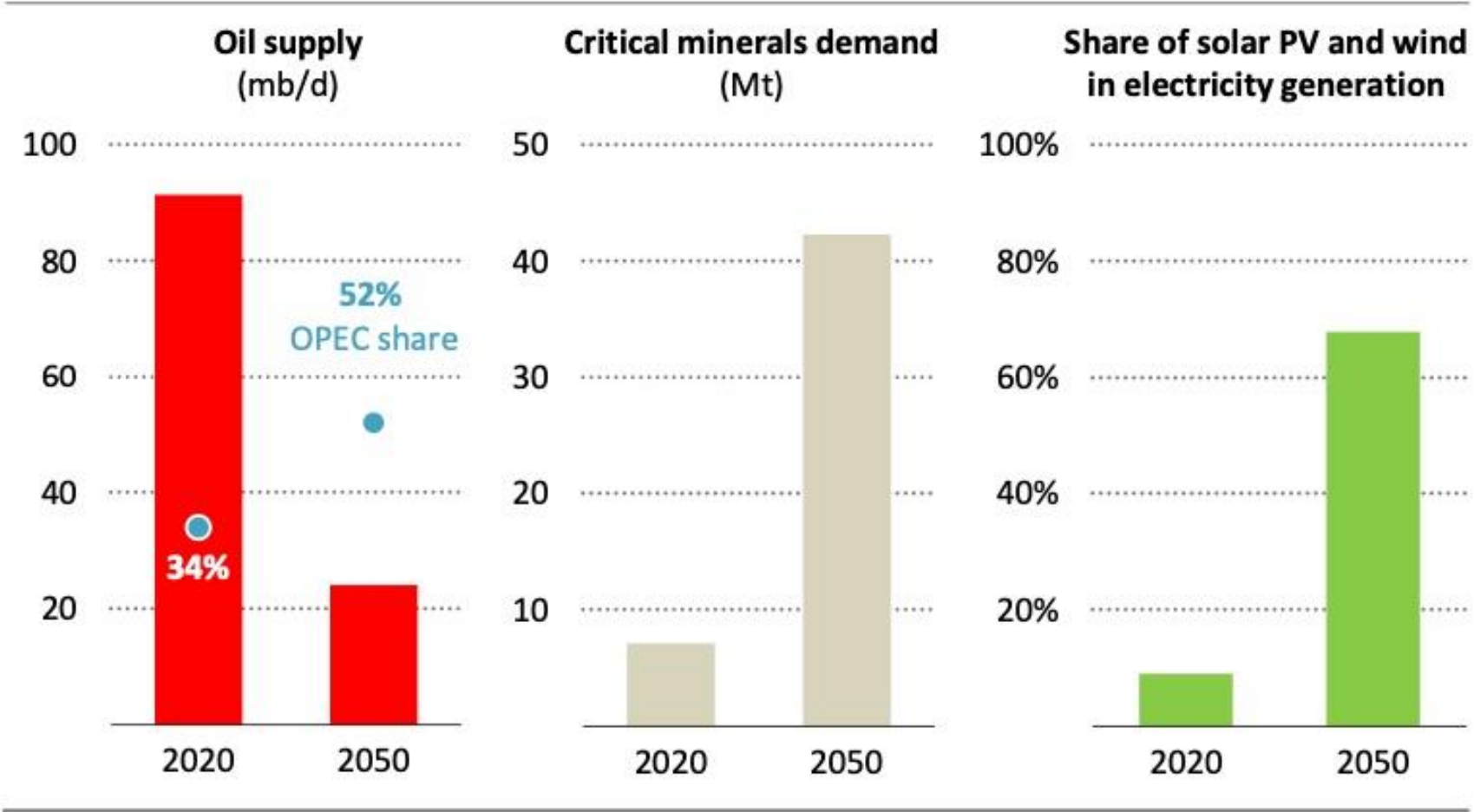
ULEV targets of R2Z only met when banning hybrids (HEV)

Lifestyle change brings earlier gains – ‘no delay’ due to fleet turnover

Largest and earliest savings in 2030 ban of non-plugin vehicles combined with more sustainable travel patterns

# Energy security implications of net-zero

Global energy security indicators in the net zero pathway



IEA (2021) Net Zero by 2050

Note: mb/d = million barrels per day; Mt = million tonnes.



# Energy security implications of net-zero

## Reserves of key minerals

### Cobalt reserves

Thousand tonnes	At end of 2021	Share	R/P ratio
Australia	1400	20.5%	251
Canada	220	3.2%	57
China	80	1.2%	36
Cuba	50	7.3%	126
Democratic Republic of Congo	3500	51.4%	38
Madagascar	10	1.5%	50
Morocco	13	0.2%	6
New Caledonia	64	0.9%	-
Papua New Guinea	47	0.7%	16
Philippines	260	3.8%	60
Russian Federation	250	3.7%	38
South Africa	40	0.6%	33
Zambia	270	4.0%	941
Rest of World*	69	1.0%	22
<b>Total World</b>	<b>6813.0</b>	<b>100.0%</b>	<b>52</b>

### Natural graphite reserves

Thousand tonnes	At end of 2021	Share	R/P ratio
Brazil	70000	19.2%	737
Canada	648	0.2%	84
China	73000	20.0%	89
India	8000	2.2%	199
Madagascar	26000	7.1%	295
Mexico	3100	0.8%	1867
Mozambique	25000	6.9%	347
Norway	600	0.2%	95
Russian Federation	25703	7.0%	1688
Sri Lanka	1500	0.4%	349
Turkey	90000	24.7%	5919
Ukraine	13761	3.8%	4322
Rest of World*	27600	7.6%	510
<b>Total World</b>	<b>364912</b>	<b>100%</b>	<b>298</b>

### Lithium reserves

Thousand tonnes	At end of 2021	Share	R/P ratio
Argentina	2200	10.9%	369
Australia	5700	28.1%	103
Brazil	9	0.5%	63
Chile	9200	45.4%	354
China	1500	7.4%	107
Portugal	60	0.3%	67
US	750	3.7%	833
Zimbabwe	220	1.1%	183
Rest of World*	530	2.6%	5221
<b>Total World</b>	<b>20255</b>	<b>100.0%</b>	<b>191</b>

### Rare earth metals reserves

Thousand tonnes	At end of 2021	Share	R/P ratio
Australia	4000	3.2%	177
Brazil	21000	17.0%	42000
China	44000	35.7%	262
India	6900	5.6%	1367
Madagascar	189	0.2%	59
Russian Federation	19380	15.7%	7454
Thailand	n/a	n/a	n/a
US	1800	1.5%	42
Rest of World*	26040	21.1%	823
<b>Total World</b>	<b>123309</b>	<b>100%</b>	<b>433</b>

\*Rest of World is the sum of only recorded reserves.  
n/a not available.

Sources: includes data from US Geological Survey,  
British Geological Survey © UKRI and World Mining Data.



## Energy security implications of net-zero

### UK start-up plans world's longest subsea electric cable with Morocco

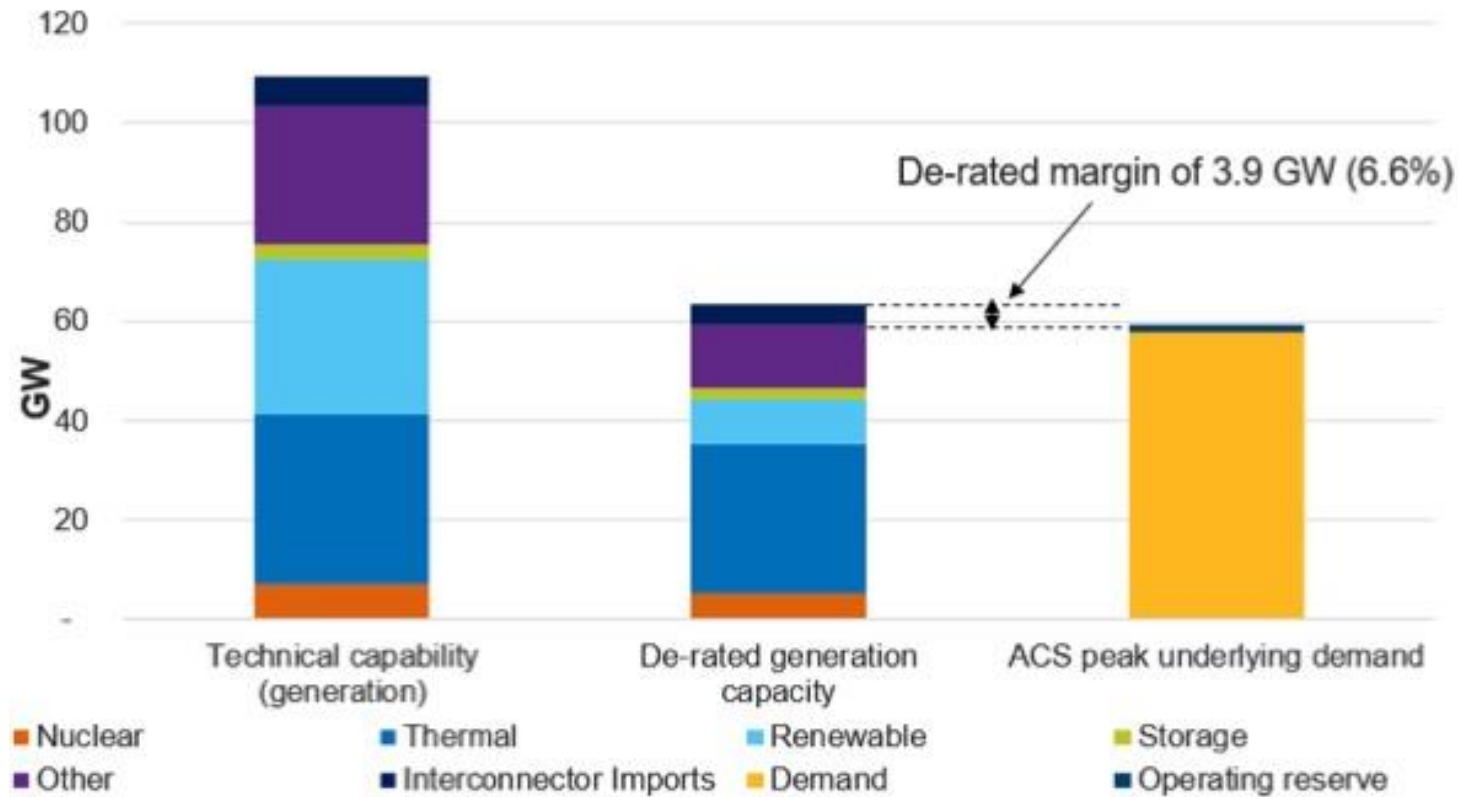
Former Tesco chief Dave Lewis behind £16bn Xlinks' project to take solar and wind energy from north Africa to Britain



Financial Times  
26<sup>th</sup> Sep 2021



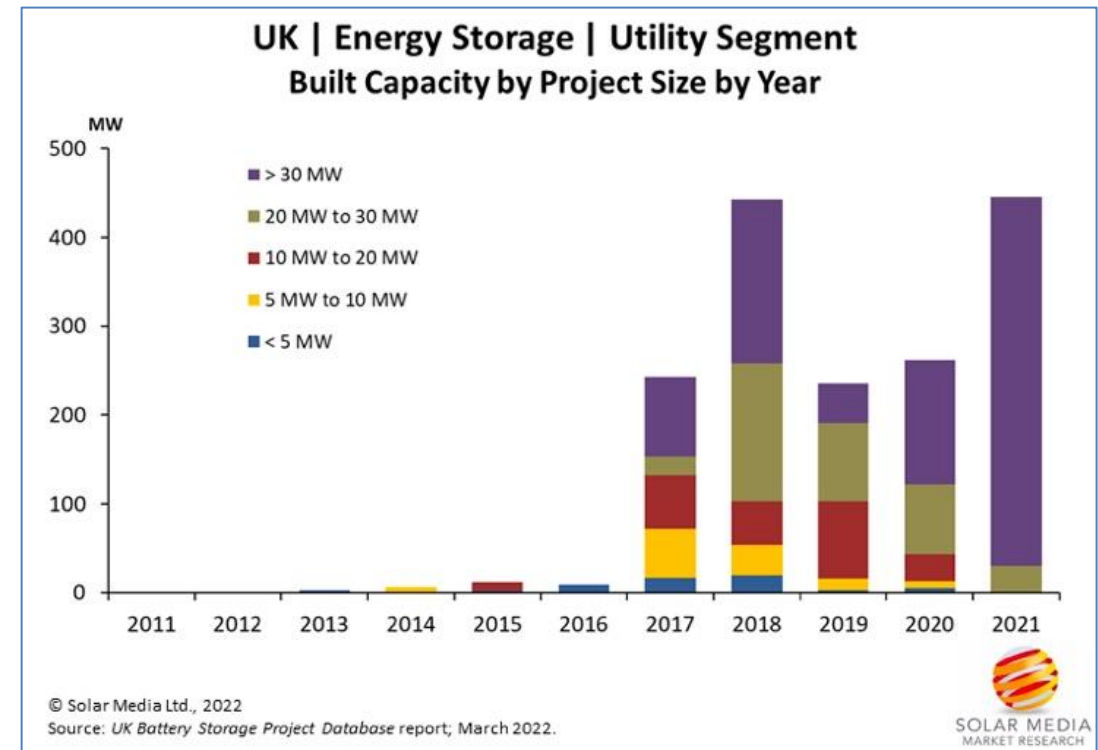
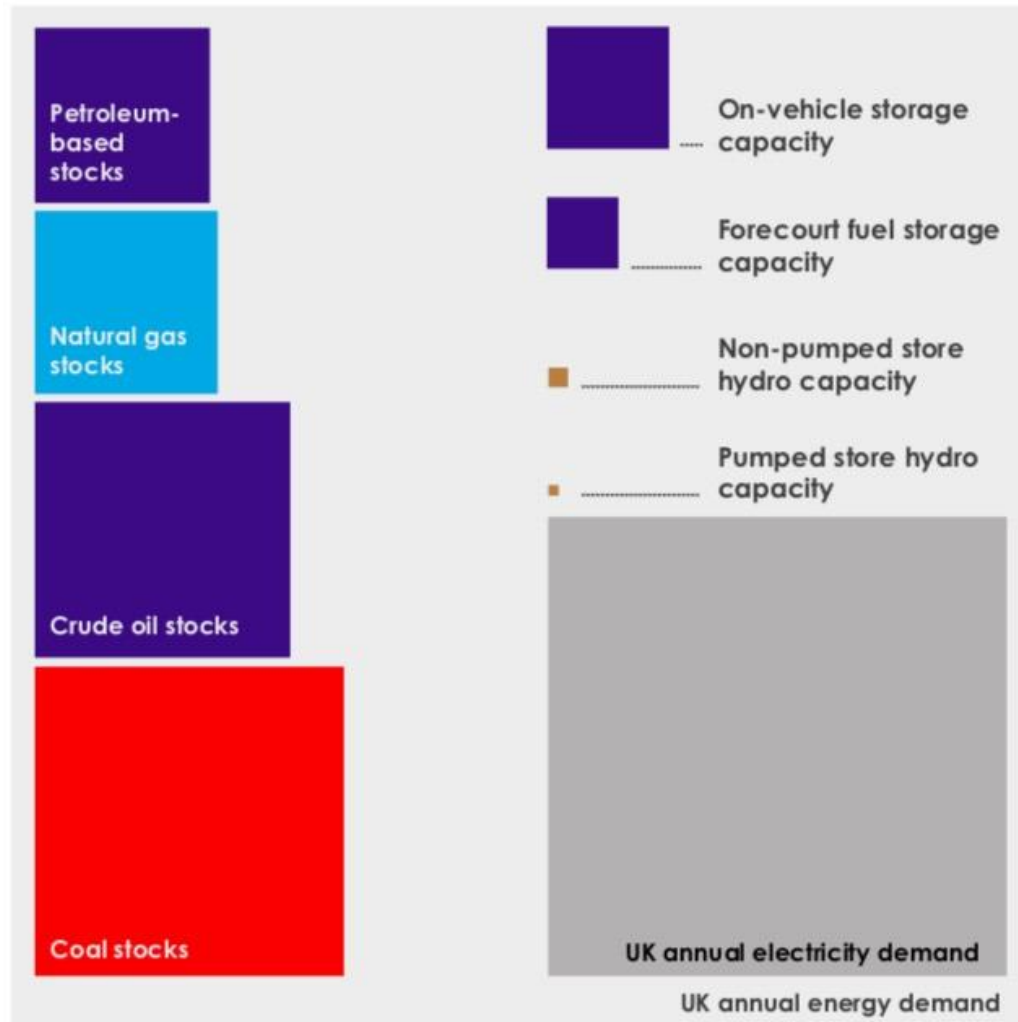
# Energy security implications of net-zero



Source: National Grid and National Infrastructure Commission



# Energy security implications of net-zero



Source: Scottish Government Energy Strategy; Solar Media

# Is the UK government getting it right?

- One-sided Energy Security Strategy: focus on longer term investment in low carbon energy technologies; shorter term investment in fossil fuels
- Energy demand getting a bit more attention now, but not enough
- Oil and transport largely absent – continues historic lack of integrated thinking
- Impression given by Ministers that new UK oil and gas licensing will make a significant difference: it won't
- Not enough focus to resilience during the transition, especially to ensure investment in enough energy storage





# Thanks

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