UK Journey to phase out coal power

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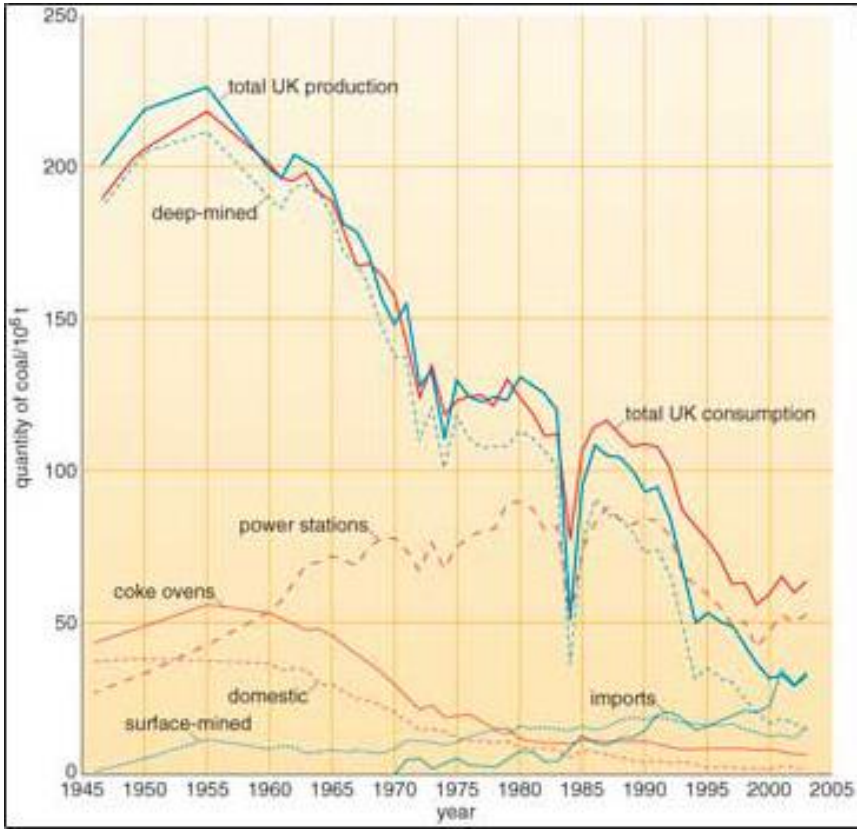
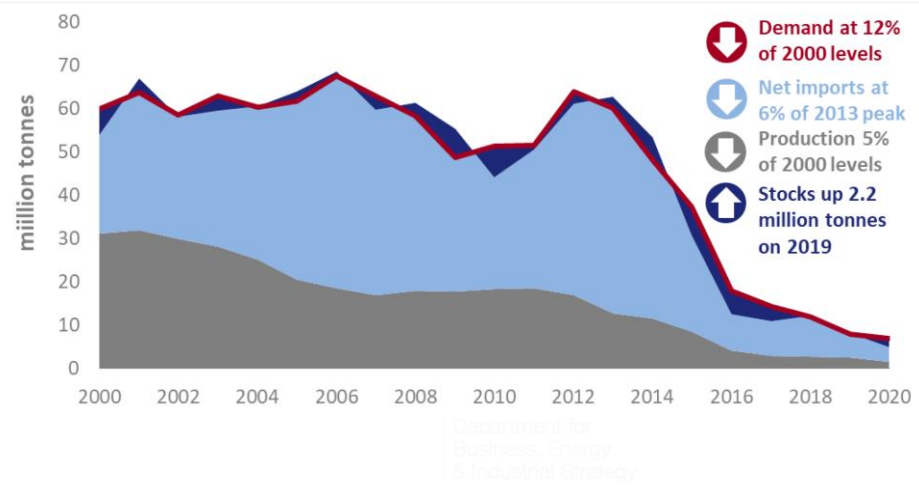
UK's long transition from coal



UK production peaked in 1913 at 292 m.t employing 1.1m miners



Coal Trucks lined up for export in Cardiff dock

UK Team visiting Big Pit near Merthyr Tydfil – south Wales – now a National Museum commemorating Coal mining in Wales

History of UK coal sector

Economy-wide

In 1575, the first coal mine was sunk under the Firth of Forth. By 1700, British coal output stood at about 3m tonnes, increasing to meet demand for fuel to power steam engines. It grew to a height of 287m tonnes by early 20th Century.

At its height the UK coal mining industry employed 1.2million people.

Whole villages and towns were fed, fuelled and built on the coal mining industry and the employment it brought.

Closures

Pit closures began in the Post-War period as UK mining could not economically compete with cheap imported coal

The 1980s Miners strikes were a defining moment for the UK labour movement and the affects are still felt

December 2015 – last deep coal mines closed

Open cast mining has steadily declined since 2010

Imports

By 2005 imports exceeded domestic production. However, coal demand has steadily declined since due to decling coal power generation

All of society

1840s a Royal Commission looked into child labour – changing laws.

Modern Trade Unionism in the UK formed out of the coal sector, with Keir Hardie (a former miner) being the first Labour MP.

Legacy

Mitigating the effects

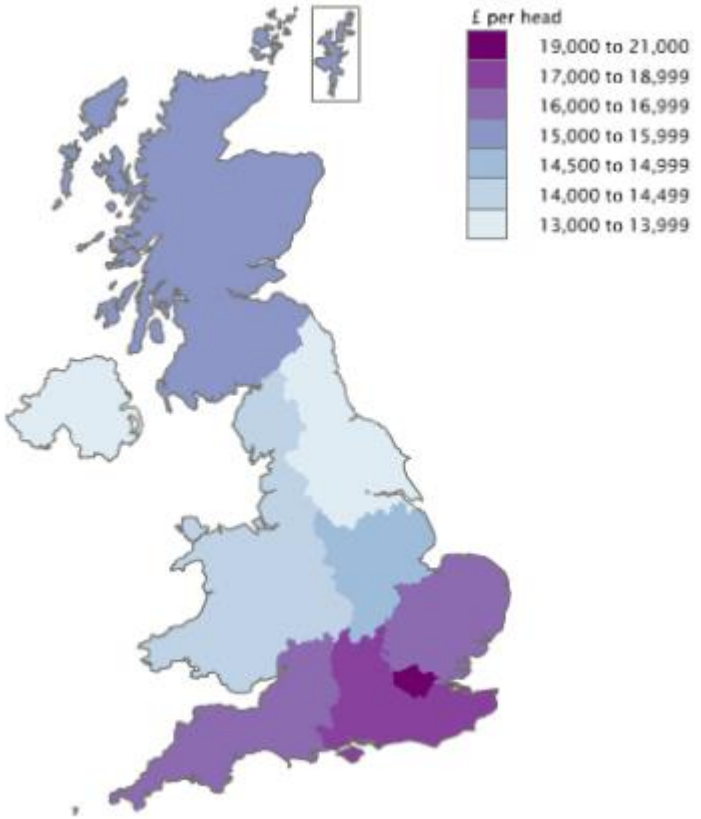
- Social security net
- Creation of the Welsh Development Agency to ex South Wales coal mining areas
- European Union funding
- Civil society: e.g. Coalfields Regeneration Tru

De-Industrialisation

- Based on 2017 data the UK now has 7 regions defined as below the average GDP (Eurostat data) – this is up from 3 in prior data sets.

They are:

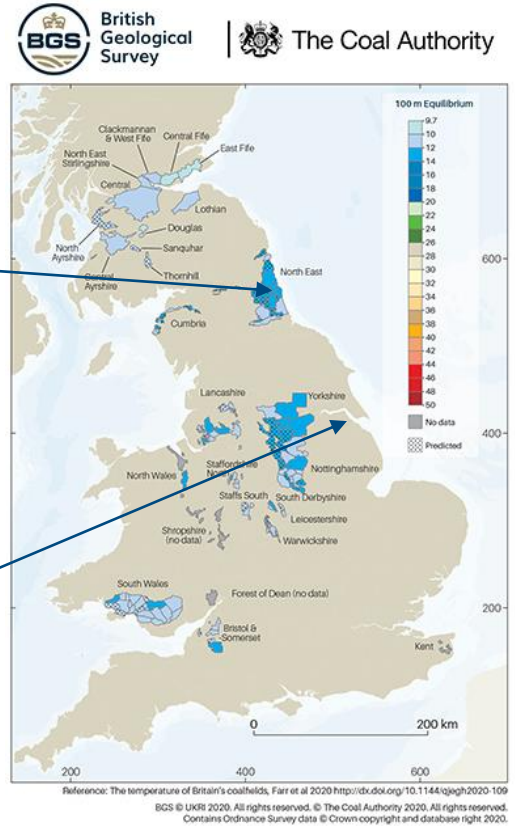
- West Wales and the Valleys (home of coal mining);
- Southern Scotland;
- Cornwall & Isles of Scilly
- Outer London - East & North East
- Lincolnshire
- South Yorkshire
- Tees Valley & Durham



Transition

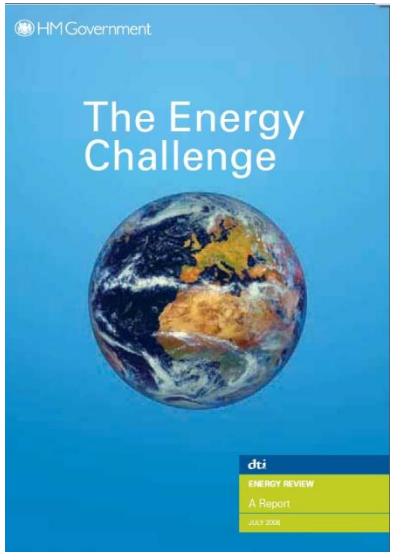
Blyth subsea manufacturing facility and gigavolt factory

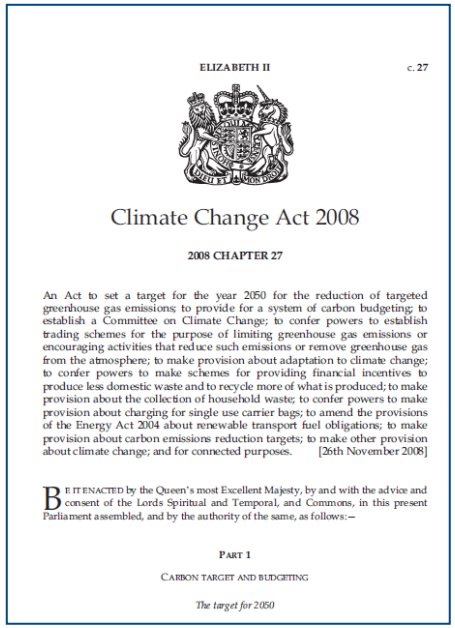
Hull Green Port Siemens Gamesa



Heat? One quarter of UK homes and businesses are above abandoned coal mines

UK policy journey from coal fired power generation




ELIZABETH II c. 27

Climate Change Act 2008

2008 CHAPTER 27

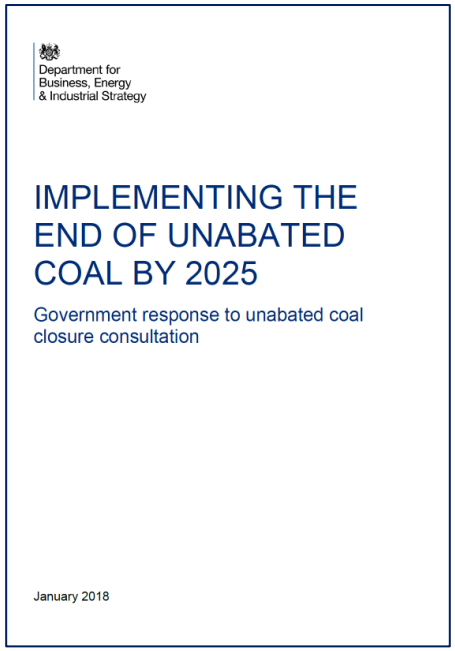
An Act to set a target for the year 2050 for the reduction of targeted greenhouse gas emissions; to provide for a system of carbon budgeting; to establish a Committee on Climate Change; to confer powers to establish trading schemes for the purpose of limiting greenhouse gas emissions or encouraging activities that reduce such emissions or remove greenhouse gas from the atmosphere; to make provision about adaptation to climate change; to confer powers to make schemes for providing financial incentives to produce less domestic waste and to recycle more of what is produced; to make provision about the collection of household waste; to confer powers to make provision about charging for single use carrier bags; to amend the provisions of the Energy Act 2004 about renewable transport fuel obligations; to make provision about carbon emissions reduction targets; to make other provision about climate change; and for connected purposes. [26th November 2008]

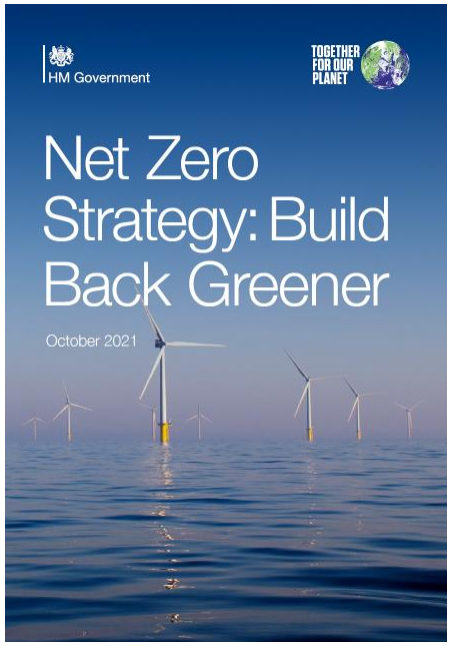
BE IT ENACTED by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

PART 1

CARBON TARGET AND BUDGETING

The target for 2050

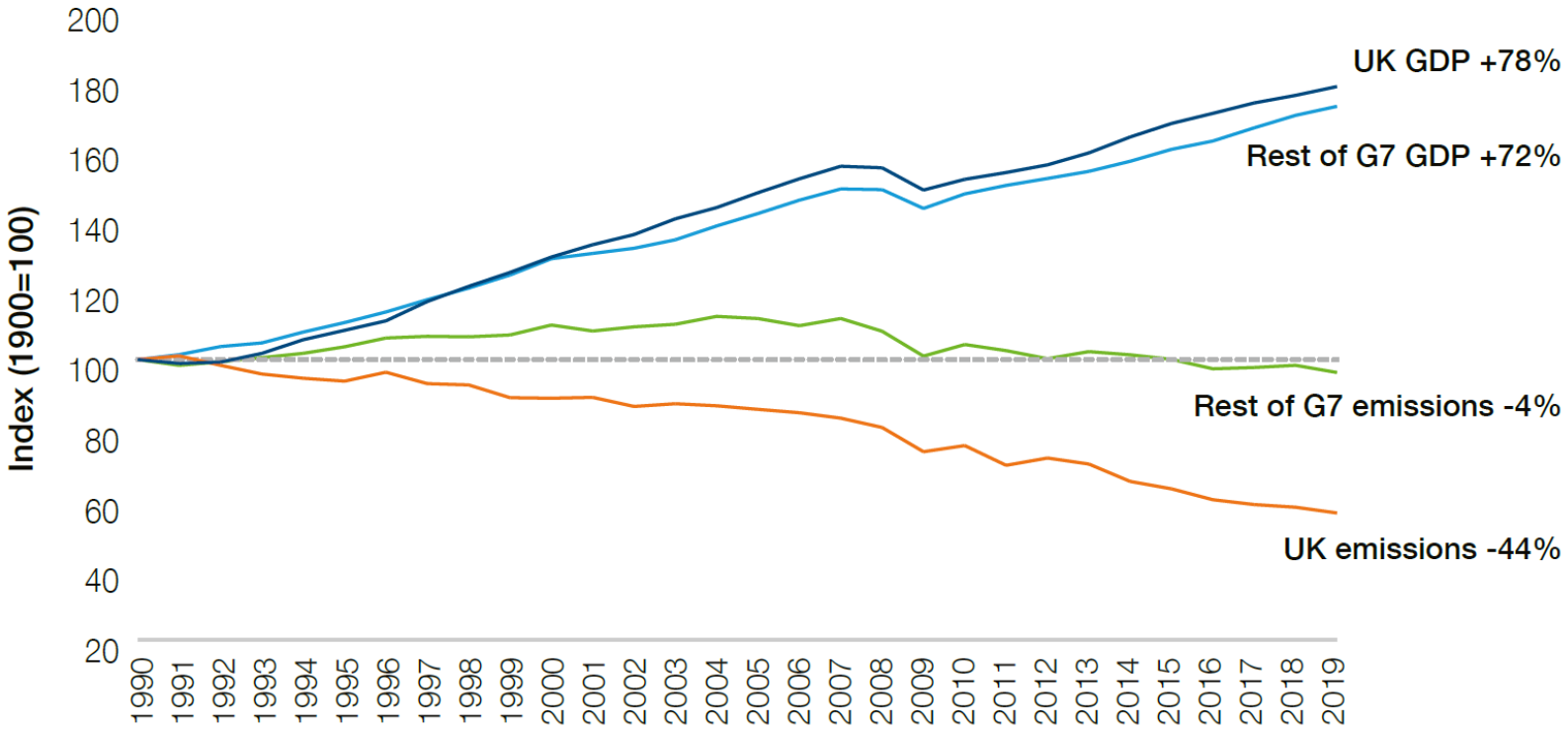




- Electricity Market Reform 2012
- Carbon price support
- Capacity Market Mechanism
- Contract for Difference, Renewable Obligation, Feed-in-Tariffs
- Energy Performance Standard for new build generation (2014)
- Coal phase out commitment (2015)

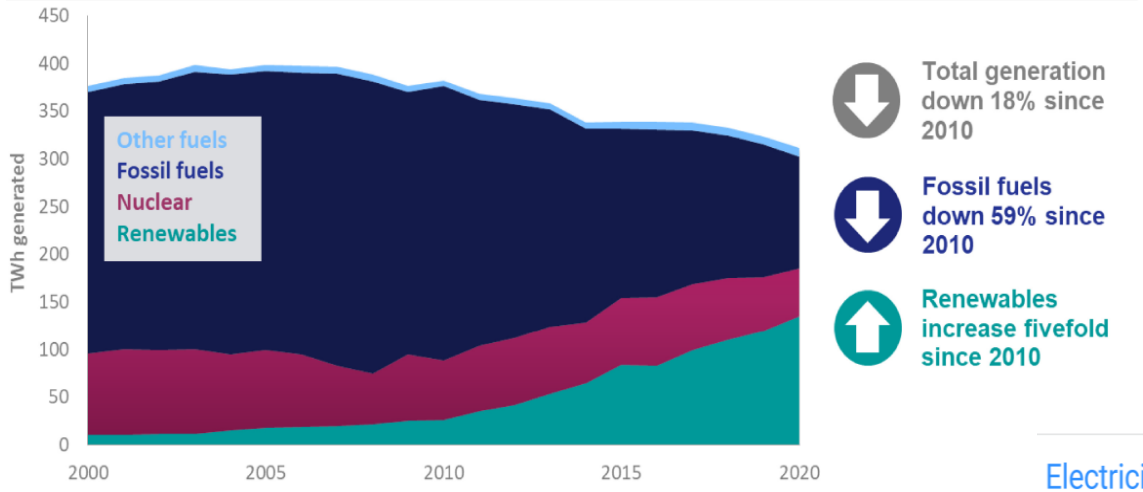
Decoupling economic growth from emissions

Figure 2: UK vs Rest of G7 GDP and GHG Emissions[9]



Source: The World Bank, UNFCCC National Inventory Submissions, ONS, BEIS Greenhouse Gas Inventory.

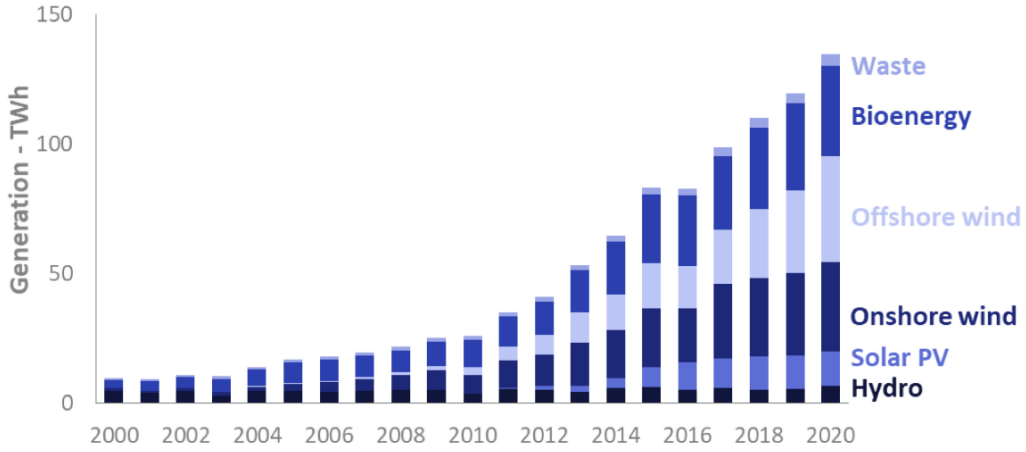
The impact on power generation



Total generation down 18% since 2010

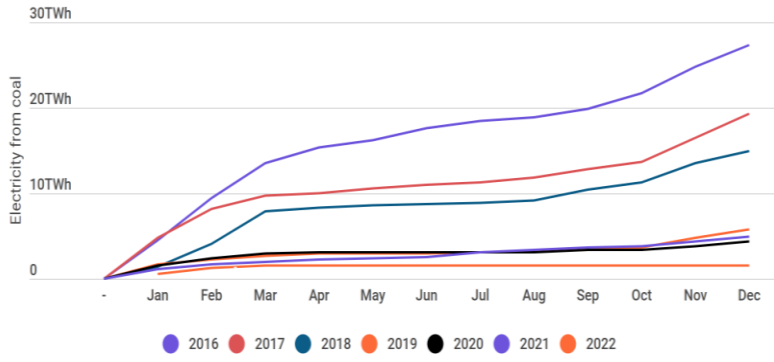
Fossil fuels down 59% since 2010

Renewables increase fivefold since 2010



Electricity from coal each year

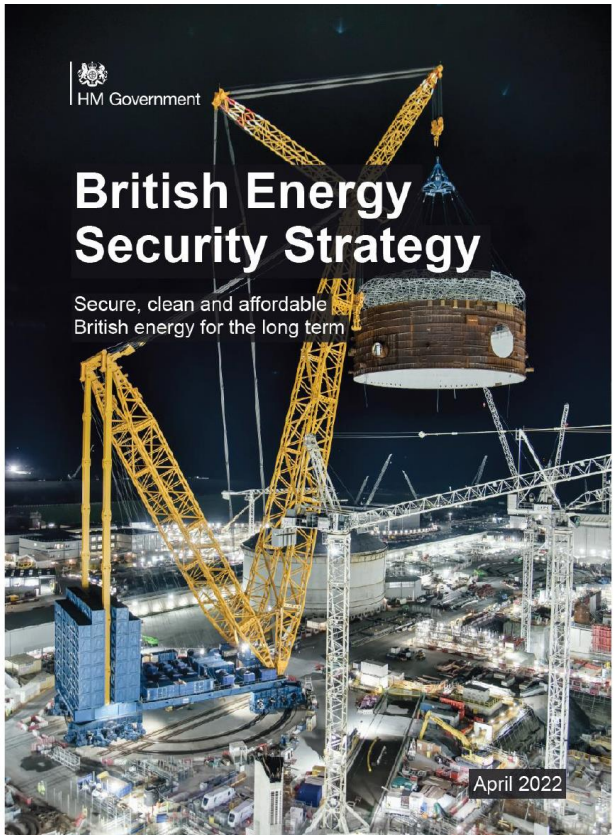
This chart shows the cumulative amount of electricity produced from coal power stations each year since 2016. Coal has a much bigger role in winter when demand for electricity is higher. In the summer, coal demand is suppressed.
Over time, electricity from coal reduces as more and more coal power stations are decommissioned.



Present (generation mix)

- Coal fired generation reduced from around 40% in 2012 to less than 2% in 2020
- In 2020 Great Britain went 5,000 hours without using coal for power and achieved 2 months of coal free operation in 2020
- Renewable technologies generated more electricity than fossil fuels for the first time in 2020
- Currently 2 active coal generators
- UK announced that it would bring forward coal phase out to 2024, which would mean that in 10 years we have reduced our reliance on unabated coal generation from around a third of our electricity supply to zero
- National Grid aiming for 100% zero carbon capability in 2025
- UK committed to decarbonise electricity system by 2035

Russia/Ukraine: implications



- On April 7, government published the Energy Security Strategy in response to high and rising fossil fuel prices, exacerbated by the Russian invasion of Ukraine
- Whilst government has stepped in to provide immediate support to families and businesses with rising bills, this cannot be relied on indefinitely – a longer term strategy was needed to bring the bills down and keep them down
- The Strategy sets out a package of measures to increase our energy independence and provide secure, affordable and clean energy into the future
- It focuses in the short term on improving energy efficiency and exploiting domestic oil and gas reserves as we transition to net zero with a longer term plan to see accelerated deployment of renewable and low carbon technologies

Russia/Ukraine implications

British Energy Security Strategy – April 2022

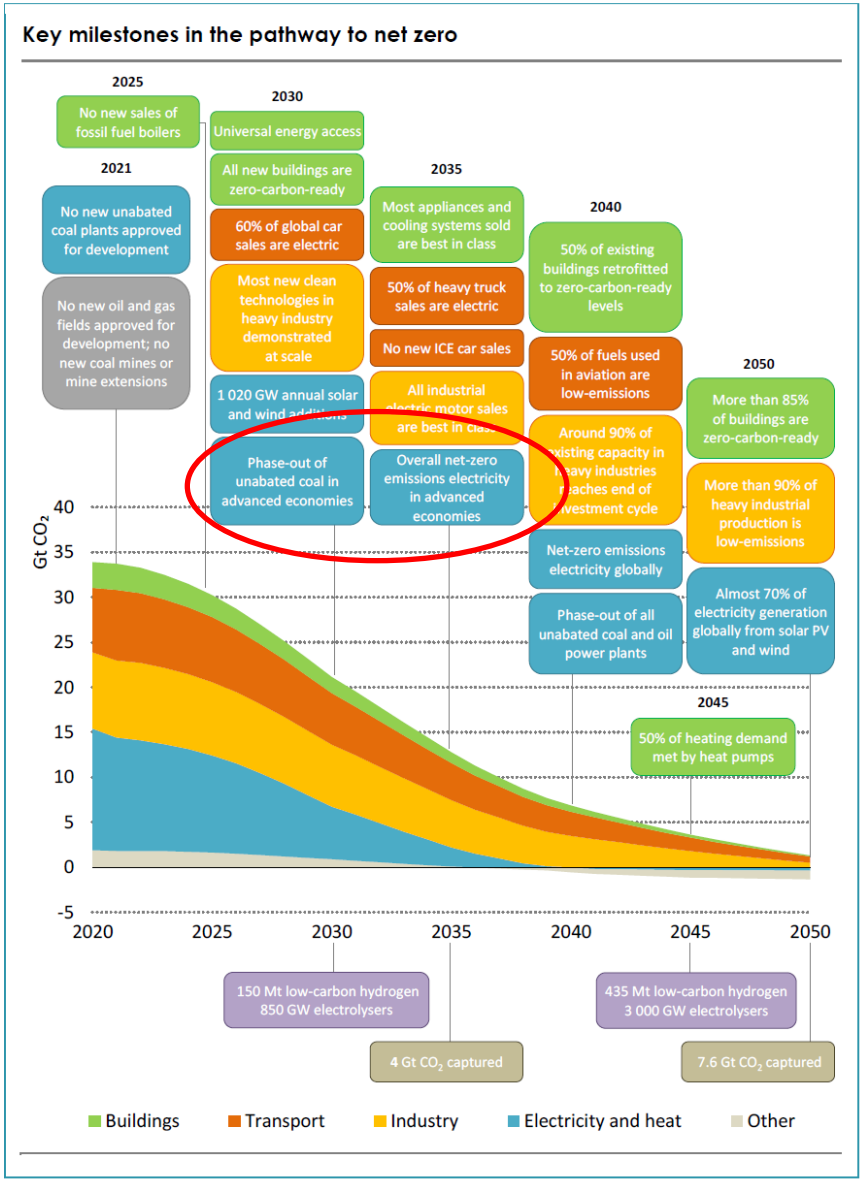
- **Nuclear**: up to 8 new reactors progressed over next series of projects, total 24GW by 2050, ~25% of projected demand
- **Solar**: Solar capacity expected increase 5x by 2035 to ~70GW through simplified planning processes and consult of amending planning
- **Offshore and Onshore wind**: Ambition for up to 50GW offshore wind by 2030, including 5GW floating (halving planning and regulation for offshore), consult on partnerships and community benefits for onshore wind.
- **Hydrogen**: double ambition to up to 10GW of low carbon hydrogen production by 2030
- **Oil & Gas**: Phase our Russian oil and coal by end 2022 and Russian LNG gas imports asap. Develop climate compatibility checkpoint for new licencing
- **Contingency measures**: Negotiations with 4 coal generators due to close in 2022 as emergency contingency. Government remains committed to coal phase out in 2024.

The global challenge

2030: Phase out unabated coal in advanced economies

2035: Overall net-zero emissions electricity in advanced economies

To this end, we commit to achieving a fully or predominantly decarbonised power sector by 2035. Recognising that coal power generation is the single biggest cause of global temperature increase, we commit to prioritising concrete and timely steps towards the goal of accelerating phase-out of domestic unabated coal power generation.
G7 Leaders Statement, Elmau June 2022



Department for Business, Energy & Industrial Strategy

International Collaboration on the Energy Transition

- COP26 Energy Transition Campaign, supported by the Powering Past Coal Alliance and the Energy Transition Council results in 190-strong coalition of countries and organisations at COP26, with countries such as Poland, Vietnam, Egypt, Chile and Morocco announcing commitments to phase out coal power.
- Glasgow Climate Pact sees parties agree to phase down unabated coal power and end inefficient fossil fuel subsidies.
- Establishment of Just Energy Transition Partnerships, including with RSA, Vietnam, Indonesia