

Energy White Paper: Powering our Net Zero Future

This Policy Briefing provides summary information on the UK Government report **Energy White Paper: Powering our Net Zero Future**¹, which sets out how the UK will transition to a low-carbon energy system and reach net zero emissions by 2050. This briefing focuses on the topics that are of interest for Scottish Renewables. Section 2 and 3 outline how the power sector and the electricity system will achieve net zero by 2050. Section 4 focuses on the role of clean technologies to decarbonise buildings and section 5 describes the labour force transition from the oil and gas industry to renewables.

KEY COMMITMENTS

TRANSFORM ENERGY

Building a cleaner, greener future for the country, the people and the planet, by measures including:

- **Targeting 40GW of offshore wind by 2030, including 1GW floating wind**, alongside the expansion of other low-cost renewables technologies.
- **Supporting the deployment of Carbon Capture Usage and Storage (CCUS) in four industrial clusters** including at least one power CCUS project, to be operational by 2030 and putting in place the commercial frameworks required to help stimulate the market to deliver a future pipeline of CCUS projects.
- **Establishing a new UK Emissions Trading System**, aligned to the net zero target, giving industry the certainty, they need to invest in low-carbon technologies.
- **Aiming to bring at least one large scale nuclear project to the point of Final Investment Decision** by the end of this Parliament, subject to clear value for money and all relevant approvals.
- **Consulting on whether it is appropriate to end gas grid connections to new homes being built from 2025**, in favour of clean energy alternatives.
- **Growing the installation of electric heat pumps**, from 30,000 per year to 600,000 per year by 2028.
- **Building world-leading digital infrastructure for the energy system** based on the vision set out by the independent Energy Data Taskforce, publishing the UK's first Energy Data Strategy in spring 2021, in partnership with Ofgem.

SUPPORT A GREEN RECOVERY FROM COVID-19

Growing the economy, supporting thousands of green jobs across the country in new green industries and creating new export opportunities, by measures including:

- **Increasing the ambition in the Industrial Clusters Mission four-fold**, aiming to deliver four low-carbon clusters by 2030 and at least one fully net zero cluster by 2040.
- **Investing £1 billion up to 2025 to facilitate the deployment of CCUS in two industrial clusters** by the mid-2020s, and a further two clusters by 2030, supporting the ambition to capture 10MtCO₂ per year by the end of the decade.
- Working with industry, **aiming to develop 5GW of low-carbon hydrogen production capacity by 2030**.

CREATING A FAIR DEAL FOR CONSUMERS

Protecting the fuel poor, providing opportunities to save money on bills, giving consumers warmer, more comfortable homes and balancing investment against bill impacts.

OIL AND GAS INDUSTRY SHIFTING TOWARDS A NET ZERO ECONOMY.

- Committing funding towards **the Global Underwater Hub in Aberdeen** with satellites in North East England And Southern England. This new economic development hub will take a strategic approach to growing the national world-leading subsea engineering, technology and services sector as the **global subsea market diversifies away from oil and gas and shifts towards supporting new marine growth sectors such as renewables**.

¹ <https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future>

1 Introduction

The Energy White Paper builds on the Prime Minister’s ten point plan and confirms the Government commitment for taking action to ensure that the UK achieves net zero emissions by 2050. The paper puts in place a strategy for the wider energy system that:

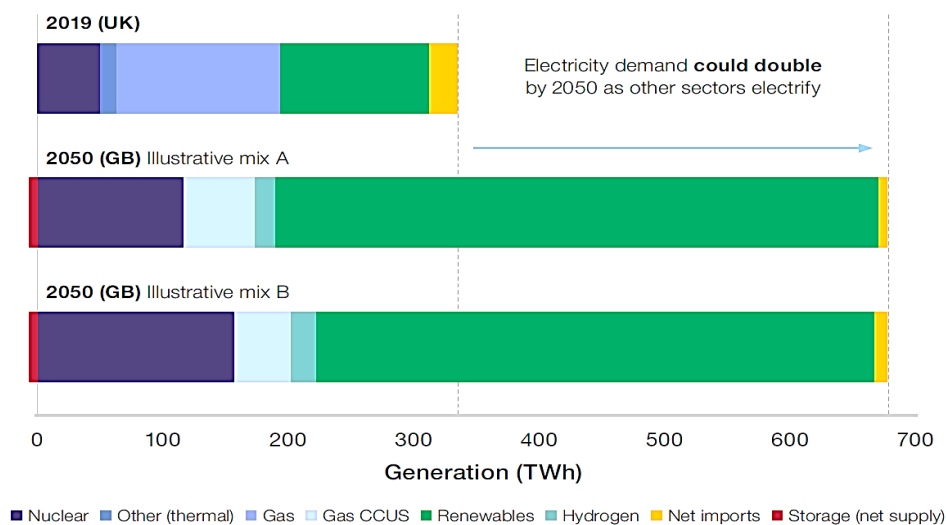
- **Transforms energy**, building a cleaner, greener future for the UK
- **Supports a green recovery**, growing the economy, supporting thousands of green jobs across the country in new green industries and leveraging new green export opportunities
- **Creates a fair deal for consumers**, protecting the fuel poor, providing opportunities to save money on bills, giving us warmer, more comfortable homes and balancing investment against bill impacts.

The Prime Minister’s ten point plan includes offshore wind, nuclear, green public transport, cycling and walking, hydrogen, jet zero and green ships, greener building, protecting the natural environment, zero emission vehicles, CCUS, green finance and innovation.

2 Power

The report states that a low-cost, net zero consistent system is likely to be composed predominantly of wind and solar. However, to make sure that the system is also reliable, intermittent renewables need to be complemented by technologies which provide power, or reduce demand, when the wind is not blowing, or the sun does not shine. Today this includes nuclear, gas with CCUS and flexibility provided by batteries, demand side response, interconnectors and short-term dispatchable generation providing peaking capacity, which can be flexed as required.

Figure 1: Electricity mix today & Illustrative 2050 Mixes



Source: Energy Trends, table 5.1 and 6.1; BEIS analysis.

In order to achieve the energy generation mix by 2050 (see figure 1), high levels of renewables will be required as well as new technologies such as CCUS. For this the Government will:

- Target 40GW of offshore wind by 2030, including 1GW floating offshore wind, alongside the expansion of other low-cost renewable technologies.
- Support the deployment of at least one power CCUS project, to be operational by 2030, and put in place the commercial framework required to help stimulate the market to deliver a future pipeline of power CCUS projects.
- Consult on steps to ensure that new thermal plants can convert to low carbon alternatives.

The economic benefits of clean electricity are associated with £2.6bn target annual exports of offshore wind goods and services and 60,000 direct and indirect jobs that could be supported by the offshore wind sector by 2030. For this the Government is supporting:

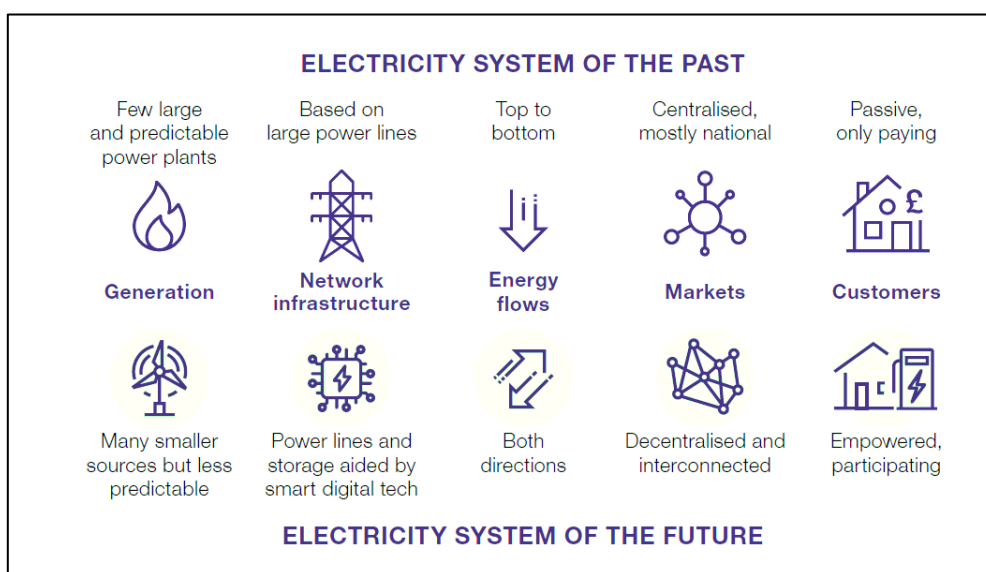
- The delivery of the industry’s target of 60 per cent UK content in offshore wind projects by 2030, through more stringent requirements for the CfD supply chain plan process.
- The delivery of a £160 million scheme and a competitive process to support the development of offshore wind manufacturing infrastructure.

3 Energy system

The report states that the Government will work to minimise the costs to consumers, ensuring that electricity networks are able to integrate increasing renewable generation while ensuring that the system’s rules and governing institutions support the transition away from fossil fuels.

3.1 Electricity system

The electricity system of the past was constituted by few large and predictable power plants based on large power lines and with the energy flowing in one direction. It used to be centralised and passive for consumers. By contrast, the electricity system of the future is expected to have generation coming from many smaller sources and less predictable sources with power lines and storage aided by smart digital tech. This system is expected to be decentralised, interconnected, and with customers empowered and participating.



The report states that in order to make sure that there is enough generation capacity to satisfy demand when renewables are not able to produce electricity the Capacity Market (CM) will be the primary policy mechanism for delivering the security of electricity supply.

The report also outlines the benefits of interconnectors in the electricity system. Interconnection increases the ability of Great Britain’s (GB) electricity market to trade with other markets, enhances the flexibility of the energy system and has been shown to have clear benefits for decarbonisation. Alongside the white paper, the Government published a report which demonstrates how a higher level of interconnector capacity could decrease emissions in GB as well as reducing total system costs.

The key commitments are:

Efficient electricity markets

- Publishing a new Smart Systems Plan in spring 2021, jointly with Ofgem, and define electricity storage in law, legislating when Parliamentary time allows.
- Through the Net Zero Innovation Portfolio, the Government will launch a major competition to accelerate the commercialisation of first-of-a-kind longer duration energy storage, as part of £100 million investment in storage and flexibility innovation, with delivery from spring 2021.

Network infrastructure

- The Government will legislate, when Parliamentary time allows, to enable competitive tendering in the building, ownership and operation of the onshore electricity network.
- The rollout of charging and associated grid infrastructure along the strategic road network will be supported. This, to make the switch to EVs ahead of the phase out of the sale of new petrol and diesel cars and vans by 2030, and hybrids with significant zero emission capability by 2035.
- To minimise the impact on local communities, a more efficient approach to connecting offshore generation to the mainland grid will be implemented.

Digital infrastructure

- A world-leading digital infrastructure for the energy system will be built, based on the vision set out by the Independent Energy Data Taskforce, publishing the UK's first Energy Data Strategy in spring 2021, in partnership with Ofgem.

4 Clean heat technologies

Buildings are the second largest source of emissions in the UK and most homes are currently using fossil fuels for heating, cooking and hot water. The challenge is to transform how buildings use energy in line with the net zero target, minimising the disruption to consumers, while safeguarding the quality of the environment in the building stock.

Key commitments of the Government regarding clean heat technologies

- The government will consult on whether it is appropriate to end gas grid connections to new homes, in favour of clean energy alternatives.
- The Government will grow the installation of electric heat pumps from 30,000 per year to 600,000 per year by 2028, supporting up to 20,000 jobs by 2030.
- The Government will work in partnership with industry to evaluate hydrogen as an option for heating homes and workplaces and develop plans for a possible pilot hydrogen town before the end of the decade.
- The role of 'hydrogen ready' appliances will be consulted in 2021.
- The Government is committing funding towards a new Heat Network Transformation Programme and will implement local authority zoning by 2025.
- The Government will develop a strategy for upskilling through the 'Green Jobs Taskforce' and a National Skills Fund, to be launched in 2021.

5 Labour force transition from the oil and gas industry to renewables.

The offshore oil and gas sector contributed about 0.9 per cent to the UK GVA in 2019 and has paid around £350 billion in production taxes since 1970/71. The sector is a source of high-quality jobs, supporting directly or indirectly around 147,000 jobs in total across the UK in 2018. **Many jobs supported by the sector are located in Scotland, particularly in Aberdeen**, a global hub for the oil and gas industry.

POLICY BRIEFING

December 2020



The Government will commit funding towards **the Global Underwater Hub in Aberdeen** with satellites in North East England And Southern England. This new economic development hub will take a strategic approach to growing the world-leading subsea engineering, technology and services sector as the **global subsea market diversifies away from oil and gas and shifts towards supporting new marine growth sectors such as renewables.**