

## Department for Business, Energy & Industrial Strategy

NET ZERO INNOVATION PORTFOLIO

UK Energy & Net Zero Innovation strategies in pursuit of Net Zero: challenges and opportunities ahead

Mark Taylor Deputy Director, Energy Innovation Delivery Science and Innovation for Climate and Energy

## PM's 10 Point Plan

#### **Point 10: Green Finance and Innovation**

- 10 Point Plan and Net Zero Strategy announced a broad set of policy measures to drive the UK to net zero, including a BEIS £1bn Net Zero Innovation Portfolio.
- To accelerate the commercialisation of innovative low-carbon technologies, systems and processes in the power, buildings, and industrial sectors, we will launch the £1 billion Net Zero Innovation Portfolio.
- The portfolio will focus on ten priority areas that correspond with this Ten Point Plan, including: future offshore wind; nuclear advanced modular reactors; energy storage and flexibility; bioenergy; hydrogen; homes; direct air capture and advanced CCUS; industrial fuel switching; and disruptive technologies such as artificial intelligence for energy.



#### The Ten Point Plan for a Green Industrial Revolution

Building back better, supporting green jobs, and accelerating our path to net zero





## We are legally committed to Net Zero by 2050 The 10PP paved the way for new policies



2030 Targets now include:

50 GW off-shore wind

20-30 Mt Carbon Capture

10 GW Low carbon Hydrogen production

Progress up to 8 new nuclear reactors



## **BEIS £1bn Net Zero Innovation Portfolio**

- Aims to accelerate the commercialisation of innovative low-carbon technologies, systems and business models in power, buildings and industry and decrease the costs of decarbonisation.
- Builds on previous £505m Energy Innovation Programme.
- Potential to unlock 300,000 jobs by 2030 in exports and domestic industry; enables savings across low carbon sectors; will have a strong regional impact.
- Leverages £1bn industry matched funding.
- <u>https://www.gov.uk/government/collections/net-zero-innovation-portfolio</u>



## **The Advanced Nuclear Fund**

£385m of funding to support R&D in advanced nuclear technologies and create further optionality for nuclear to play a significant role in reaching our net zero and energy security ambitions.







#### <u>SMR</u>

Funding for the Low Cost Nuclear Challenge - Phase 2.

#### <u>AMR</u>

Funding work to put UK on a trajectory to a HTGR demonstration by early 2030's

#### Cross cutting

Funding for underpinning R&D and engagement.

#### **NZIP** Offshore Wind Programmes

Programme	Radar	Composites	Floating Offshore Wind (FOW)
Aim	To develop technologies enabling the coexistence of future offshore windfarms alongside UK air defence surveillance systems.	To incorporate radically new composite-based components in the next-generation of offshore wind turbines, and demonstrate how they can be manufactured and delivered in the UK context.	To demonstrate FOW technologies to encourage market confidence, investment and further development to bring down the Levelised Cost of Energy (LCOE).
Detail	• £4.3m	• £5m	• £34m
Partners	The Science Inside		
		20MW+ Opportunity	#1 #2 #3 Foundations / Floaters

## **Flexibility Innovation Programme**

Up to £65m to develop innovative solutions to enable **large-scale widespread electricity system flexibility** through smart, flexible, secure, and accessible technologies and markets





#### **Energy Storage Innovation**

- Energy storage is expected to be one of the key components in a **smarter, more flexible energy system** which can maximise the use of intermittent and distributed renewable generation.
- Longer duration storage (across days, weeks and months) could help reduce the cost of meeting net zero by storing excess low carbon generation for longer periods of time

The £68m LODES (Longer Duration Storage Demonstration Programme aims to accelerate commercialisation of innovative longer duration (minimum 4 hours) energy storage projects at different technology readiness levels



## Hydrogen supply and end-use

Significant funding to drive down the cost of hydrogen supply and to support its widespread usage as an energy vector, with hydrogen use predicted to grow markedly.



#### Hy Supply 2

Hy Supply 2 backs 28 new ongoing projects. Prior programme funded ITM Gigastack green h2 project to cut cost of electrolyser stacks by 40%.

#### Hy Supply (to 2021)

First Hy Supply competition also funded the FEED study for HyNet, 1 of 2 first h2 clusters in the UK enabling transition in the North West

#### Hy4Heat / Skills&Stds

Appliances developed for Hy4Heat will be used in upcoming occupied trials. Follow on skills and standards work will support safe repurposing of pipes.

# Industry



### Carbon Capture & Utilisation

The UK's first industrial scale plant

#### Cement



World's first 'net zero' commercial cement (100% blend of hydrogen & biomass)

#### **Glass Production**



Created the lowest carbon float glass ever produced with biofuels

#### Energy Efficiency



Application of ultrasound to allow the injection moulding process to occur at lower temperatures and pressures



# Bioenergy with CCS



#### Bioenergy Value Chain – Negative Emission Technologies

# 40 -50 -60 -70 9

Figure 3.11.a Sources of abatement in the Balanced Net Zero Pathway for the GHG

removals sector

ear

#### CCC CB6 - BECCS

#### **Biomass Feedstocks - £36m**

- Ph1 25 projects
- Ph2 11 innovation projects + 1 demonstrator

#### Hydrogen from BECCS - £5m Ph1

- AGT Study, Sept 21
- H2BECCS Ph1 Dec 21

## **Greenhouse Gas Removals**



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12 Event title



# Conclusions

- Innovation is creating opportunities and new technology solutions
- NZIP programme providing government support for Innovation
- Consistent with delivering energy security
- Need to turn innovation into deployed solutions
- Requires collaboration and risk taking by Government and the private sector
- The energy transition is underway and MUST deliver Net Zero