Competition winners to deliver UK's first hydrogen transport trials in Tees Valley

- winners of a £2.5 million research and development (R&D) competition to accelerate the use of hydrogen transport in the Tees Valley area unveiled
- successful projects will see diesel buses retrofitted with hydrogen fuel cells, supermarket chains benefitting from hydrogen delivery vans and the police and NHS using hydrogen vehicles for rapid response services
- trials will show how hydrogen-fuelled vehicles can be quick and easy to drive and refuel, cleaning up the air in our local areas as we aim to meet our net zero ambitions

Hydrogen transport pilots in the Tees Valley area will establish the UK as a leader in the technology and propel us towards our net zero goals, Transport Secretary Grant Shapps has said today (17 August 2021), as he unveiled the winners of a £2.5 million R&D competition.

The successful trials will lead to supermarkets, emergency services and delivery companies using hydrogen-powered transport to move goods and carry out local services.

The trials will also help us to understand the role hydrogen has in meeting our 2050 net zero ambitions, which will inform our future investment decisions and prime export opportunities.

In collaboration with Stagecoach, Ricardo PLC will retrofit a double-decker diesel bus with a hybrid fuel cell system. The bus will be driven on local routes and learnings from this project will support fuel cell retrofit technologies in public transport across the UK.

One of the most wide-ranging projects sees Toyota delivering a number of hydrogen vehicles, including a forklift truck for warehouse operations, a passenger bus and 10 fuel cell passenger cars. These will be deployed across the town's rapid response services, such as emergency response units for the Cleveland Police and NHS patient support.

HV Systems plans to demonstrate the use of hydrogen in delivery vans in the Tees Valley area. The vans will be operated in collaboration with a leading supermarket chain, running between 19 superstores and their main distribution centre.

The project aims to show how delivery vans fitted with fuel cells can have increased range, faster refuelling times than battery-electric versions and speed parity with conventional diesel vehicles.

In collaboration with Sainsbury's, Element Energy will also be trialling a

hydrogen-powered heavy goods vehicle (HGV) in the Tees Valley area. The vehicle will be operated from a local distribution centre and will be carrying out goods deliveries in the area.

Transport Secretary Grant Shapps said:

> With less than 100 days to go until COP26, I'm committed to supporting industry to develop innovative new technologies that will decarbonise transport, helping us to build back greener and level up the country.
>
> By harnessing the power of hydrogen technology, we can pave the way for its use across all transport modes, creating cleaner, greener more efficient transport systems across the UK.

This announcement comes weeks after the launch of government's Transport decarbonisation plan, a world-leading 'greenprint' that sets out a credible path for the UK to achieve net zero emissions by 2050 and lead the world in tackling climate change.

The funding follows the unveiling of an official masterplan for the UK's first-ever hydrogen transport hub, which could be fully operational by 2025 – helping to create up to 5,000 new jobs in the North East over the long-term as we continue to level up the economy.

Tees Valley Mayor Ben Houchen said:

> Through trialling the use of hydrogen in transport across Teesside, Darlington and Hartlepool, we are spearheading the path to a greener future by developing the knowledge and expertise needed to roll hydrogen out as a fuel source across the country.
>
> In Teesside, we already produce 50% of the UK's hydrogen, so there is no better place for this research to take place.
>
> This new investment shows how Teesside is leading the way in the drive for the UK to be net zero by 2050, creating good-quality, well-paid, clean energy jobs in the process.

David Tozer, Head of Land and Maritime Transport, Innovate UK, said:

> Innovate UK is pleased to support these innovative projects across the Tees Valley in partnership with the Department of Transport.
>
> Deploying hydrogen vehicles and vessels at scale and showcasing the UK's long-term aspirations in this space, is essential in delivering UK commitments to decarbonisation.

UK government launches plan for a world-leading hydrogen economy

- First-ever vision to kick start world-leading hydrogen economy set to support over 9,000 UK jobs and unlock £4 billion investment by 2030
- consultation also launched to look at ways to overcome cost gap between low carbon hydrogen and fossil fuels
- £105 million in UK government funding provided to support polluting industries to significantly slash their emissions

Tens of thousands of jobs, billions of pounds in investment and new export opportunities will be unlocked through government plans to create a thriving low carbon hydrogen sector in the UK over the next decade and beyond, the Business and Energy Secretary Kwasi Kwarteng has set out today (17 August).

The UK's first-ever Hydrogen Strategy drives forward the commitments laid out in the Prime Minister's ambitious 10 Point Plan for a green industrial revolution by setting the foundation for how the UK government will work with industry to meet its ambition for 5GW of low carbon hydrogen production capacity by 2030 – which could replace natural gas in powering around 3 million UK homes each year as well as powering transport and businesses, particularly heavy industry.

A booming, UK-wide hydrogen economy could be worth £900 million and create over 9,000 high-quality jobs by 2030, potentially rising to 100,000 jobs and worth up to £13 billion by 2050. By 2030, hydrogen could play an important role in decarbonising polluting, energy-intensive industries like chemicals, oil refineries, power and heavy transport like shipping, HGV lorries and trains, by helping these sectors move away from fossil fuels. Low-carbon hydrogen provides opportunities for UK companies and workers across our industrial heartlands.

With government analysis suggesting that 20-35% of the UK's energy consumption by 2050 could be hydrogen-based, this new energy source could be critical to meet our targets of net zero emissions by 2050 and cutting emissions by 78% by 2035 – a view shared by the UK's independent Climate Change Committee. In the UK, a low-carbon hydrogen economy could deliver emissions savings equivalent to the carbon captured by 700 million trees by 2032 and is a key pillar of capitalising on cleaner energy sources as the UK moves away from fossil fuels.

Business & Energy Secretary Kwasi Kwarteng said:

> Today marks the start of the UK's hydrogen revolution. This home-grown clean energy source has the potential to transform the way we

> power our lives and will be essential to tackling climate change and reaching Net Zero.
>
> With the potential to provide a third of the UK's energy in the future, our strategy positions the UK as first in the global race to ramp up hydrogen technology and seize the thousands of jobs and private investment that come with it.

Energy & Climate Change Minister Anne-Marie Trevelyan said:

> Today's Hydrogen Strategy sends a strong signal globally that we are committed to building a thriving low carbon hydrogen economy that could deliver hundreds of thousands of high-quality green jobs, helps millions of homes transition to green energy, support our key industrial heartlands to move away from fossil fuels and bring in significant investment.

The government's approach is based on the UK's previous success with offshore wind, where early government action coupled with strong private sector backing has earned the UK a world leading status. One of the main tools used by government to support the establishment of offshore wind in the UK was the Contracts for Difference (CfD) scheme, which incentivises investment in renewable energy by providing developers with direct protection from volatile wholesale prices and protects consumers from paying increased support costs when electricity prices are high.

As such, the government has today launched a public consultation on a preferred hydrogen business model which, built on a similar premise to the offshore wind CfDs, is designed to overcome the cost gap between low carbon hydrogen and fossil fuels, helping the costs of low-carbon alternatives to fall quickly, as hydrogen comes to play an increasing role in our lives. Alongside this, the government is consulting on the design of the £240 million Net Zero Hydrogen Fund, which aims to support the commercial deployment of new low carbon hydrogen production plants across the UK.

Other measures included in the UK's first-ever Hydrogen Strategy include:

- outlining a 'twin track' approach to supporting multiple technologies including 'green' electrolytic and 'blue' carbon capture-enabled hydrogen production, and committing to providing further detail in 2022 on the government's production strategy
- collaborating with industry to develop a UK standard for low carbon hydrogen giving certainty to producers and users that the hydrogen the UK produces is consistent with net zero while supporting the deployment of hydrogen across the country
- undertaking a review to support the development of the necessary network and storage infrastructure to underpin a thriving hydrogen sector
- working with industry to assess the safety, technical feasibility, and cost effectiveness of mixing 20% hydrogen into the existing gas supply. Doing so could deliver a 7% emissions reduction on natural gas

- launching a hydrogen sector development action plan in early 2022 setting out how the government will support companies to secure supply chain opportunities, skills and jobs in hydrogen

CEO of ITM Power Dr Graham Cooley said:

> By supporting the creation of a UK home market, today's announcement is a very welcome step in helping British companies cement their positions as world leaders in hydrogen technology. The industry needs a policy landscape in place that identifies priorities and support mechanisms for rolling out green hydrogen production in the UK and that's just what today's Hydrogen Strategy sets out.
>
> Green, zero-carbon hydrogen can abate greenhouse gas emissions from industry, transport and heat. It can be used to store our abundant renewable energy from offshore wind and longer term, be used to create export markets. This is a win for the UK's decarbonisation plans, a win for cleaner air and a win for British jobs.

Hydrogen Director at National Grid Antony Green said:

> The transition to a green economy will require a mix of technologies and hydrogen will play a vital role. This strategy signals the UK's commitment to hydrogen and provides the certainty needed to boost consumer and investor confidence and support commercial solutions. Importantly, unlocking the potential of hydrogen as a clean energy solution requires significant pace and innovation to scale up production, and the guidance from government today will be key to triggering the investment and buy-in needed to achieve this.

Chief Policy Director at CBI Matthew Fell said:

> With hydrogen key to unlocking decarbonisation across carbon-intensive sectors, as well as stimulating high levels of skilled green jobs, the government's Hydrogen Strategy is a key milestone in the delivery of the UK's 10 Point Plan.
>
> As a leader in high skilled manufacturing, and with an extensive legacy in energy production, the UK stands perfectly positioned to capitalise on the opportunities provided by hydrogen.
>
> As the countdown to COP26 continues, hydrogen is an area where the UK can lead by example on the global stage, showcasing the value of strong partnerships between government and the private sector on the road to reducing emissions.

Chief Executive at SSE Alistair Phillips-Davies said:

> We strongly welcome the publication of this first-ever Hydrogen Strategy and hope to turn this encouraging strategy into firm and rapid action through our exciting plans. These include working with Equinor on the world's first major hydrogen-fired power station at Keadby and developing hydrogen storage caverns at Aldbrough, as well as our partnership with Siemens to co-locate hydrogen production facilities at our wind farms. The strategy is a welcome first step to realising the potential of hydrogen.

Prioritising and supporting polluting industries to significantly slash their emissions, the government also announced today a £105 million funding package through its Net Zero Innovation Portfolio that will act as a first step to build up Britain's low carbon hydrogen economy. The investment will help industries to develop low carbon alternatives for industrial fuels, including hydrogen, which will be key to meeting climate commitments. This includes:

- £55 million Industrial Fuel Switching Competition. Funding will support the development and trials of solutions to switch industry from high to low carbon fuels such as natural gas to clean hydrogen, helping industry reach net zero by 2050
- £40 million Red Diesel Replacement Competition. Providing grant funding for the development and demonstration of low carbon alternatives to diesel for the construction, quarrying and mining sectors, with the aim of decarbonising these industries reliant on red diesel, a fuel used mainly for off-road purposes such as in bulldozers. With red diesel responsible for the production of nearly 14 million tonnes of carbon each year, the investment supports the UK government's budget announcement removing the entitlement to use red diesel and rebated biodiesel
- £10 million Industrial Energy Efficiency Accelerator (IEEA). Offering funding to clean technology developers to work with industrial sites to install, test and prove solutions for reducing UK industry's energy and resource consumption

This comes as the Transport Secretary unveils the winners of a £2.5 million R&D competition for hydrogen transport pilots in the Tees Valley area, which will lead to supermarkets, emergency services and delivery companies trialling hydrogen-powered transport to move goods and carry out local services.

Associate Director for the Carbon Trust Paul Huggins said:

> The previous rounds of the Industrial Energy Efficiency Accelerator have seen over £8 million of funding awarded to 16 successful projects. The programme has been instrumental in securing the first industrial demonstration of a wide range of innovative technologies, with the future potential to deliver up to 10 million

> tonnes of cumulative carbon savings over 10 years.
>
> Seeing these technologies working at scale on site will reduce the barriers to widespread industry adoption of energy saving technologies. We are delighted that BEIS has re-appointed the Carbon Trust and our partners, Jacobs and KTN, to deliver the next round of the IEEA and look forward to supporting the next wave of demonstration projects and further contributing to UK's industry transition toward net zero.

Hydrogen can be made as safe as natural gas. As the hydrogen economy develops, all necessary assessments will be carried out and measures put in place to ensure that hydrogen is stored, distributed and used in a safe way.

The UK government is already working with the Health and Safety Executive and energy regulator Ofgem to support industry to conduct first-of-a-kind hydrogen heating trials. These trials along with the results of a wider research and development testing programme will inform a UK government decision in 2026 on the role of hydrogen in decarbonising heat. If a positive case is established, by 2035 hydrogen could be playing a significant role in heating people's homes and businesses, powering cars, cookers, boilers and more – helping to slash carbon emissions from the UK's heating system and tackle climate change.

Director of Policy at the Association for Renewable Energy and Clean Technology (REA) Frank Gordon said:

> This Strategy provides welcome clarity. The REA urged the government to provide certainty for investors, deliver a technology neutral approach and highlight the range of low carbon pathways. The Hydrogen Strategy starts to answer those calls and offers a positive vision for the role of hydrogen in meeting the UK's net zero ambitions.
>
> Backed up by the Net Zero Hydrogen Fund, a revenue support scheme for hydrogen production and a standard methodology to define when hydrogen is low carbon, we believe this Strategy can provide a stimulus for British-based hydrogen production over the coming years.

Chief Executive of Energy UK Emma Pinchbeck said:

> Hydrogen and CCUS are going to be incredibly valuable for sectors that will be difficult to decarbonise with electricity – and so we welcome that today's Hydrogen Strategy takes an economy-wide approach to developing these innovative technologies. The UK has real potential for hydrogen and CCUS, both of which can deliver new skilled jobs, particularly in places where the UK already has a proud industrial and energy heritage.

Executive Director at the Aldersgate Group Nick Molho said:

> We welcome the consultation on business models to make large-scale low carbon hydrogen production commercially viable and the commitment to develop a robust standard to ensure UK hydrogen production is consistent with the net zero target.
>
> Low carbon hydrogen has a crucial role to play in cutting emissions in complex sectors of the economy, such as long-range road transport and heavy industry in both clustered and dispersed sites. The key to ramping up production and cutting the cost of low carbon hydrogen – including the scaling up of green electrolysis capacity – will be to combine meaningful demonstration projects in sectors such as steel and investment in skills, with rapid clarity on the market mechanisms industry can rely on to make a predictable return on investment.

The Hydrogen Strategy is one of a series of strategies the UK government is publishing ahead of the UN Climate Summit COP26 taking place in Glasgow this November. The UK government has already published its Industrial Decarbonisation Strategy, Transport Decarbonisation Strategy and North Sea Transition Deal, while its Heat and Buildings and Net Zero Strategies will be published this year.

Case studies

Across the UK innovative projects are already taking place, kickstarting Britain’s world-leading low carbon hydrogen economy. This includes:

- In Scotland. The Acorn Hydrogen project located in St Fergus, Aberdeenshire, is taking advantage of existing oil and gas infrastructure to reform North Sea natural gas into low carbon hydrogen with the emissions created from generating the hydrogen, safely removed and stored through carbon capture, usage and storage. The project is being led by Storegga, with funding and support from industry partners including Harbour Energy, Shell, the UK and Scottish Governments and the European Union.
- In Northern Ireland. The development of hydrogen-powered buses by Wrightbus in Belfast. The company has invested heavily into developing hydrogen fuel cell buses and has received over £8 million over the last four years from Government research and development funding for the automotive sector.
- In Wales. In Port Talbot a project by Hanson Cement is demonstrating how hydrogen from renewable energy can help decarbonise cement manufacturing.
- In England. As part of the BEIS-funded HyNet Industrial Fuel Switching Competition, Unilever alongside Progressive Energy are running a trial to switch an onsite natural gas-fired boiler to hydrogen. The boiler, located at Unilever’s Port Sunlight facility on the Wirral, raises steam used for the manufacture of home and personal care products.

Notes to editors

A full list of ongoing hydrogen projects across the UK, as well as explainers about what hydrogen is and how it works is available.

The Hydrogen Strategy will be published today.

The UK government is also publishing the following documents:

- Low Carbon Hydrogen Standards Consultation
- Net Zero Hydrogen Fund Consultation
- Hydrogen Business Model Consultation

Today's Hydrogen Strategy package also contains further detail on different ways to produce hydrogen and our technical cost projections of each technology out to 2050, and an annex setting out the analysis and evidence underpinning the Hydrogen Strategy and consultations.

Through the safety workstream of the Hy4heat programme, the UK government has supported work to assess the safe use of hydrogen gas in certain types of domestic properties and buildings, as part of preparation for the first community trials using hydrogen as a heating source.

Further support the UK government is providing for hydrogen projects include:

1. £240 million Net Zero Hydrogen Fund to support new hydrogen production projects;

2. Hydrogen Business Model to stimulate private investment in new low carbon hydrogen projects;

3. Phase 2 of the £315 million Industrial Energy Transformation Fund to support industry to switch to low carbon fuels, including hydrogen;

4. Up to £60 million through the Low Carbon Hydrogen Supply 2 competition to support innovative hydrogen production, transport and storage technologies;

5. £68 million Longer Duration Energy Storage Demonstration competition;

6. World-leading trials of hydrogen for heating, including a hydrogen neighbourhood trial by 2023, hydrogen village trial by 2025 and potential pilot hydrogen town by the end of the decade;

7. Up to £183 million for transport decarbonisation, including trials and roll-outs of hydrogen technologies for buses, HGV lorries, shipping and aviation, including:

- up to £120 million this year through the Zero Emission Bus Regional Areas (ZEBRA) scheme towards 4,000 new zero emission buses, either hydrogen or battery electric, and infrastructure needed to support them
- up to £20 million this year to design trials for both electric road system and hydrogen long haul heavy road vehicles (HGVs) and to run a battery electric trial to establish the feasibility, deliverability,

costs and benefits of each technology
- up to £20 million this year for the Clean Maritime Demonstration Competition
- up to £15 million this year for the ‘Green Fuels, Green Skies’ competition to support the production of first-of-a-kind sustainable aviation fuel plants in the UK
- £3 million this year to support the development of a Hydrogen Transport Hub in Tees Valley, and £4.8 million (subject to business case) to support the development of a hydrogen hub in Holyhead, Wales

The £95 million UK government funding package and £10 million Industrial Energy Efficiency Accelerator (IEEA) comes from the £1 billion Net Zero Innovation Portfolio. See details of all 3 competitions, and how to register interest. As part of the £10 million IEEA, the government has awarded £1.7 million to the Carbon Trust to be the delivery partner for the programme.

Guidance: COVID-19: how to work safely in domiciliary care in England

A resource for those working in domiciliary care providing information on the use of personal protective equipment (PPE).

COP26 President visits India ahead of landmark climate summit

COP26 President Alok Sharma visits India to discuss further collaboration on climate action ahead of the vital summit in Glasgow in November.

COP26 President visits India ahead of landmark climate summit

- Mr Sharma set to meet senior ministers from the Indian Government and leaders from industry and civil society
- Visit to focus on opportunities for India to play a leading role in making COP26 a success

COP26 President Alok Sharma has arrived in New Delhi on a three-day visit (16 to 18 August) for discussions with senior Indian ministers and leaders from industry and civil society, on the vital role India has in helping to make sure the climate change summit is a success.

With fewer than 100 days to go until the landmark summit in Glasgow, UK, the in-person visit represents the UK's commitment to raise global ambition on climate action for a balanced and inclusive outcome at COP26.

In his meetings with key climate stakeholders, Mr Sharma is expected to point to the role India can play at the summit through profiling its ambitious domestic plans, and by joining the growing number of countries who have updated their 2030 emissions targets under the Paris Agreement.

This comes as the UK calls on all G20 countries to sign up to net zero, set out clear plans to cut emissions by 2030, and commit to ending coal power, transitioning to electric vehicles, and restoring nature, with the richest nations providing financial support to the rest of the planet to go green.

The UK and India are already working closely together including research and innovation for a clean energy transition and to improve global resilience – through the India-led International Solar Alliance (ISA) and the Coalition for Disaster Resilient Infrastructure (CDRI), and the Green Growth Equity Fund.

This is Mr Sharma's second visit to India in 2021, he is expected to meet with Bhupender Yadav, Minister of Environment, Forest and Climate Change and RK Singh, Minister of Power and New and Renewable Energy.

Alok Sharma, COP26 President-Designate, said:

> India has a vital role to play as the world comes together in Glasgow to demonstrate renewed action under the Paris Agreement. India's leadership – including through the International Solar Alliance and Coalition for Disaster Resilient Infrastructure – is hugely important as we look to build global resilience ahead of COP26 and beyond.
>
> All countries – including the UK and India – have a historic opportunity to build back greener from the Covid pandemic. Providing climate resilient jobs that also promote economic growth will lead to a green industrial revolution that also makes financial sense.

Alex Ellis, British High Commissioner to India, said:

> The COP26 summit this November is our last best chance to set the world on the path towards a global warming limit of 1.5 degrees. India is already taking impressive action, for example on renewables. With most of the infrastructure that India will need by

> 2040 yet to be built, it can lead the way in new clean technology and infrastructure. As Prime Ministers Johnson and Modi agreed in the 2030 Roadmap, the UK and India are committed to working closely on this journey – in the run up to COP26 and beyond.

In November the UK will host the UN climate change conference COP26 in Glasgow in partnership with Italy. This will provide an opportunity for the world to come together and commit to urgent action. The UK is already setting a strong example on climate action, with a legally binding target to cut emissions to net zero by 2050.

Further information

The UK has committed to doubling its International Climate Finance to at least £11.6 billion over the next five years, to help developing countries to take action. Between 1990 and 2018, the UK nearly halved emissions whilst growing the economy by 75%, and will cut coal use in the power sector entirely by 2024 and stop the sale of petro/diesel vehicles in 2030.

India and the UK are working together to boost climate resilience and advance clean energy transition. Climate is one of the pillars of the India-UK 2030 Roadmap.

The UK and India co-chair the Coalition for Disaster Resilient Infrastructure (CDRI), promoting disaster resilient infrastructure planning, development, policy and financing across the world. We are sharing knowledge on power sector reform, adaptation and resilience, renewables, energy efficiency and electric mobility. The UK is supporting India to adapt to the impacts of climate change (co-chairing the Governing Council of CDRI) and encouraging private sector investment into green finance.

The UK and India are also working in partnership to take action together. The UK is investing in India’s renewable and clean transport sectors, for example through our joint Green Growth Equity Fund (which includes investment of £120m by each country), as well as multilateral funds. We have joint research and innovation partnerships to develop the next generation of solar buildings and energy efficiency solutions.

Through the Commonwealth Litter Programme, the UK and India are also working to address plastic pollution from both land and sea-based sources. A Twin Cities Marine Litter Initiative to address waste management at regional and city level is also being discussed.

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