

Debate Pack  
10 June 2022  
Number CDP 2022/0107

By Elizabeth Rough,  
Nikki Sutherland

---

## The future hydrogen economy

1	Overview	2
1.1	Production and supply of hydrogen	2
1.2	Uses of hydrogen	5
1.3	Government policies and support for hydrogen	6
	UK Hydrogen Strategy	6
	British Energy Security Strategy	8
	Hydrogen policy papers and consultations	9
2	Parliamentary material	12
2.1	Debate	12
2.2	PQs	12
3	News items and press releases	19
4	Useful links	21

# 1

## Overview

The Government has legally binding targets, under the Climate Change Act 2008, to reach ‘net zero’ greenhouse gas emissions by 2050. It was one of the first major world economies to pass such a law.<sup>1</sup> The Government has defined net zero as balancing any emissions:

[...] by schemes to offset an equivalent amount of greenhouse gases from the atmosphere, such as planting trees or using technology like carbon capture and storage.<sup>2</sup>

To meet the Government’s net zero target, the Committee on Climate Change (CCC – who advise the Government on emissions targets and reducing greenhouse gas emissions) has advised that “energy will need to be supplied almost entirely carbon-free”.<sup>3</sup> Hydrogen has been identified as an alternative option to carbon-based fuels, especially in sectors that find it hard to decarbonise, such as heating, transport (including heavy goods, shipping, and aviation) and some industrial processes.<sup>4</sup>

In the CCC’s 2018 report on [Hydrogen in a low-carbon economy](#), it found that hydrogen is a credible option to help decarbonise the UK energy system, alongside energy efficiency measures and electrification based on zero-carbon electricity. It added that hydrogen is not a ‘silver bullet’ solution and that production of low-carbon hydrogen at scale will rely on deployment of carbon capture and storage. Hydrogen was viewed by the CCC as “best used selectively”, and particularly in those sectors where “the alternative is continuing to burn unabated fossil fuels or where there are limits to feasible electrification”.<sup>5</sup>

## 1.1

### Production and supply of hydrogen

Hydrogen is a fuel that does not contain carbon and therefore does not produce carbon dioxide (CO<sub>2</sub> – a key greenhouse gas that contributes to

---

<sup>1</sup> In June 2019, the Government amended the Climate Change Act 2008 (through [the Climate Change Act 2008 \(2050 Target Amendment\) Order 2019](#)) to commit the UK to achieving net zero by 2050, compared to the previous target of an 80% reduction in emissions by 2050. [UK becomes first major economy to pass net zero emissions law - GOV.UK \(www.gov.uk\)](#), 27 June 2019

<sup>2</sup> [UK becomes first major economy to pass net zero emissions law - GOV.UK \(www.gov.uk\)](#), 27 June 2019

<sup>3</sup> Committee on Climate Change, [Hydrogen in a low-carbon economy](#), November 2018, p6

<sup>4</sup> Sectors can be harder to decarbonise for many reasons, but a key reason is that the energy these sectors use cannot easily be replaced with electricity (an energy source with many low carbon generation options such as a renewables).

<sup>5</sup> Committee on Climate Change, [Hydrogen in a low-carbon economy](#), November 2018, p7

climate change) when burned. In a “hydrogen economy”, hydrogen would be used in place of fossil fuels and help decarbonise the energy system.

Some current methods of producing hydrogen, however, do generate CO<sub>2</sub> emissions. This is because ‘pure’ hydrogen does not exist freely in nature; it occurs in compounds – typically water, natural gas and coal, or biomass. Other energy sources therefore have to be used to separate it from these. Consequently, hydrogen tends to be thought of as an ‘energy carrier’; it is a “convenient way to store, move and use energy extracted from other sources”.<sup>6</sup>

The method used to produce hydrogen has an impact on its carbon (and environmental) footprint. Most existing large-scale production relies on fossil fuels, resulting in greenhouse gas (GHG) emissions.

The key methods for producing hydrogen are:

- **Steam methane reforming (SMR)** produces hydrogen and CO<sub>2</sub> from methane via high temperature processing. SMR accounts for around half of global hydrogen production. Natural gas is the most cost-effective source of methane, but energy is lost in the process so natural gas demand could increase if hydrogen from SMR were to replace natural gas for heating. If exploited without carbon capture, usage and storage (CCUS)<sup>7</sup> then this would be more carbon intensive than the direct burning of natural gas, but with CCUS estimates say between 80%-90% of the carbon emissions can be captured (resulting in what is called “blue” hydrogen).<sup>8</sup> Further information is available in the Library briefing paper on [Carbon Capture Usage and Storage](#) (March 2020).
- **Gasification** converts organic material to hydrogen through a multi-step process. Gasification of coal accounts for roughly 18% of global hydrogen production, although a small number of plants have begun using biomass as a lower carbon alternative.<sup>9</sup> Gasification using biomass

---

<sup>6</sup> Carbon Brief, [In-depth Q&A: Does the world need hydrogen to solve climate change?](#), 30 November 2020; US Department of Energy, National Renewable Energy Laboratory, [Hydrogen Basics](#), not dated (accessed 7 June 2022)

<sup>7</sup> Sometimes referred to as just CCS i.e. without the “utilisation” or “usage” but key parts of the process remain the same.

<sup>8</sup> Parliamentary Office of Science and Technology, [Low-carbon hydrogen supply](#) (opens PDF), June 2021, p3

The colours used to describe hydrogen vary, but in short blue hydrogen is produced through SMR using CCS, green hydrogen is produced through electrolysis, and grey or brown hydrogen relates to production with different fossil fuels. See for example this article in Power Technology, [What colour is your hydrogen?](#) July 2020

<sup>9</sup> Committee on Climate Change, [Hydrogen in a low-carbon economy](#), November 2018, p19; P Balcombe et al, [The carbon credentials of hydrogen gas networks and supply chains](#), Renewable and Sustainable Energy Reviews, Volume 91, August 2018, Pages 1077-1088

has an estimated carbon footprint around half that of natural gas and with CCUS it can have negative carbon emissions.<sup>10</sup>

- **Electrolysis** (known as green hydrogen) uses electricity to separate water into oxygen and hydrogen. It is estimated to account for 4% of global production.<sup>11</sup> Electrolysis is currently expensive relative to other methods of producing hydrogen, although cost reductions are anticipated. Electrolysis can be very low carbon, but depends on the carbon footprint of the electricity used to produce it, e.g. using renewable electricity is lower carbon than using electricity produced from fossil fuels.<sup>12</sup> This method could have additional benefits for electricity grids by using surplus electricity at times when supply is high (e.g. sunny or windy days) but demand is low. Supply and demand must always be balanced on electricity grids and maintaining this balance is a key challenge for decarbonising electricity.<sup>13</sup>

If hydrogen is to be used as a substitute for fossil fuels, to help reduce GHG emissions, low carbon production methods would need to be expanded substantially. An in-depth analysis of the development of these methods can be found in the Parliamentary Office of Science and Technology POSTnote on [Low-carbon hydrogen supply](#) (opens PDF - June 2021).

At present, hydrogen is also expensive to produce, as the International Energy Agency (IEA) explains:

All energy carriers, including fossil fuels, encounter efficiency losses each time they are produced, converted or used. In the case of hydrogen, these losses can accumulate across different steps in the value chain. After converting electricity to hydrogen, shipping it and storing it, then converting it back to electricity in a fuel cell, the delivered energy can be below 30% of what was in the initial electricity input. This makes hydrogen more 'expensive' than electricity or the natural gas used to produce it. It also makes a case for minimising the number of conversions between energy carriers in any value chain. That said, in the absence of constraints to energy supply, and as long as CO<sub>2</sub> emissions are valued, efficiency can be largely a matter of economics, to be considered at the level of the whole value chain.<sup>14</sup>

---

<sup>10</sup> Negative emissions are due to the fact the biomass absorbed carbon when growing, and then the carbon released when the biomass is converted to hydrogen is captured and stored, resulting in a net removal of carbon from the atmosphere.

<sup>11</sup> Parliamentary Office of Science and Technology, [Low-carbon hydrogen supply](#), POSTnote, 645 June 2021

<sup>12</sup> Sustainable Gas Institute, [A greener gas grid: what are the options?](#), July 2017, section 3.1

<sup>13</sup> Policy Connect, [Next Steps for the Gas Grid: Future Gas Series Pt 1](#), September 2017, p34

<sup>14</sup> IEA, [The Future of Hydrogen. Seizing today's opportunities](#) (opens PDF), June 2019, p33

## 1.2

# Uses of hydrogen

Hydrogen is currently used in the UK but is mainly limited to the chemicals sector where, for example, it is a ‘feedstock’ (input) in the Haber process to make ammonia, which is used in many fertilisers. It is also used in oil refineries to convert crude oil into other products, as well as in the “food, methanol, metals and electronics industries”.<sup>15</sup> A report published by the International Energy Agency (IEA) on [The Future of Hydrogen](#) (June 2019) sets out some of the potential, future uses of hydrogen across multiple sectors. These are summarised in Box 1 below.

### 1 Future uses of hydrogen in the energy system

- Hydrogen use today is dominated by **industry**, namely: oil refining, ammonia production, methanol production and steel production. Virtually all of this hydrogen is supplied using fossil fuels, so there is significant potential for emissions reductions from clean hydrogen.
- **In transport**, the competitiveness of hydrogen fuel cell cars depends on fuel cell costs and refuelling stations while for trucks the priority is to reduce the delivered price of hydrogen. Shipping and aviation have limited low-carbon fuel options available and represent an opportunity for hydrogen-based fuels.
- **In buildings**, hydrogen could be blended into existing natural gas networks, with the highest potential in multifamily and commercial buildings, particularly in dense cities while longer-term prospects could include the direct use of hydrogen in hydrogen boilers or fuel cells.
- **In power generation**, hydrogen is “one of the leading options” for storing renewable energy, and hydrogen and ammonia can be used in gas turbines to increase power system flexibility. Ammonia could also be used in coal-fired power plants to reduce emissions.

Source: International Energy Agency (IEA) on [The Future of Hydrogen](#), June 2019

---

<sup>15</sup> Committee on Climate Change, [Hydrogen in a low-carbon economy](#), November 2018, p19

## 1.3

# Government policies and support for hydrogen

## UK Hydrogen Strategy

In November 2020, the Government published [The Ten Point Plan for a Green Industrial Revolution](#) (opens PDF). It included a commitment to publishing a hydrogen strategy in 2021, a timeline of next steps for the development of hydrogen as a fuel and heating source, and a target to establish 5GW of low carbon hydrogen production capacity by 2030.

An [Energy White Paper](#), published in December 2020, repeated the commitment to publish a hydrogen strategy in early 2021, including the 5GW target, and reiterated the support for hydrogen set out in the Ten Point Plan.

The All Party Parliamentary Group (APPG) on Hydrogen, in its report on [The role of hydrogen in powering industry](#) (July 2021), argued that the Government needed to go further than this target and should “continue to expand beyond its existing commitments of 5GW production in the forthcoming Hydrogen Strategy”.<sup>16</sup> The target was subsequently doubled in April 2022 as part of the British Energy Security Strategy (see below).

A detailed [UK Hydrogen Strategy](#) followed in August 2021. The Government described hydrogen as having a “critical” role to play in the UK’s transition to net zero and set out how it thinks the production, distribution, storage and use of hydrogen needs to be developed if the UK is to have a domestic, low-carbon hydrogen sector.<sup>17</sup>

The Strategy contains details of how the UK’s hydrogen economy will be “scaled up”, including through:

- expanding domestic **hydrogen production**, supported by a £240m [Net Zero Hydrogen Fund](#) (which was launched in May 2022) for co-investment in early hydrogen production projects. The Government has also funded a [£33m Low-Carbon Hydrogen Supply Competition](#) for demonstrator plants. Under its “future production strategy”, the Government estimates that the expansion of the hydrogen economy could mean that, by 2050, “between 250-460TWh of hydrogen could be needed across the economy, delivering up to a third of final energy consumption”.<sup>18</sup> A nearer-term aspiration of “1GW production capacity by 2025” is also set out in the Strategy;

---

<sup>16</sup> APPG on Hydrogen, [The role of hydrogen in powering industry](#), July 2021, p4

<sup>17</sup> HM Government, [UK Hydrogen Strategy](#), August 2021, CP475, p4

<sup>18</sup> HM Government, [UK Hydrogen Strategy](#), August 2021, CP475, p38

- significant development and scale up of **hydrogen network and storage infrastructure**, with a £68 million [Longer Duration Energy Storage Demonstration competition](#) and a review of hydrogen network and storage requirements. At present, hydrogen tends to be produced and used in the same location;
- **scaling up the use of low carbon hydrogen** in the UK across different sectors, including heating buildings and transport, with feasibility studies, trials and pilot projects planned, such as hydrogen domestic heating trials. Hydrogen is particularly singled out in the Strategy as an important method to decarbonise industrial processes and thus help ‘hard to electrify’ UK industrial sectors;<sup>19</sup>
- establishing a **market framework** for hydrogen and a “supportive **regulatory framework**”. The Government has recently published its response to the consultation on a [Low Carbon Hydrogen Business Model](#) (April 2022).

The Government also explains in the Strategy that it is working with the Health and Safety Executive (HSE) and industry “to assess the potential for 20% hydrogen blending into the gas network”, to reduce reliance on natural gas and help create a market for hydrogen.<sup>20</sup>

Alongside the Strategy, the Government published [Hydrogen production costs 2021](#), providing “levelised cost estimates for hydrogen production technologies”. It defines levelised costs as the “average cost over the lifetime of the plant per MWh of hydrogen produced”.<sup>21</sup>

### External commentary on the Strategy

Below are some sources providing external commentary on the Strategy:

- [The United Kingdom’s Hydrogen Strategy | Center for Strategic and International Studies \(csis.org\)](#), 28 October 2021
- [In-depth Q&A: How will the UK’s hydrogen strategy help achieve net-zero? - Carbon Brief](#), 17 August 2021
- [Delivering Net Zero: The UK Hydrogen Strategy - Investable or a risky - Slaughter and May Insights](#), 2 September 2021
- [EAC comment: Hydrogen Strategy - Committees - UK Parliament](#), 17 August 2021

---

<sup>19</sup> HM Government, [UK Hydrogen Strategy](#), August 2021, CP475, p52

<sup>20</sup> HM Government, [UK Hydrogen Strategy](#), August 2021, CP475, p7

<sup>21</sup> BEIS, [Hydrogen production costs 2021](#), 17 August 2021

- [UK Hydrogen Strategy published, with Government targeting £4bn of private investment by 2030 - edie](#), 17 August 2021

## British Energy Security Strategy

The [British energy security strategy](#) was published on 7 April 2022. Information accompanying the policy paper provides a brief overview of the need for the strategy and how it builds on existing policies:

The 'British energy security strategy' builds on the Prime Minister's '[Ten point plan for a green industrial revolution](#)', and the '[Net zero strategy](#)'.

This plan comes in light of rising global energy prices, provoked by surging demand after the pandemic as well as Russia's invasion of Ukraine. This will be central to weaning Britain off expensive fossil fuels, which are subject to volatile gas prices set by international markets we are unable to control, and boosting our diverse sources of homegrown energy for greater energy security in the long-term.<sup>22</sup>

The main proposals for hydrogen are:

- Doubling our ambition to up to 10GW of low carbon hydrogen production capacity by 2030, subject to affordability and value for money, with at least half of this coming from electrolytic hydrogen. By efficiently using our surplus renewable power to make hydrogen, we will reduce electricity system costs.
- Aiming to run annual allocation rounds for electrolytic hydrogen, moving to price competitive allocation by 2025 as soon as legislation and market conditions allow, so that up to 1GW of electrolytic hydrogen is in construction or operational by 2025.
- Designing, by 2025, new business models for hydrogen transport and storage infrastructure, which will be essential to grow the hydrogen economy.
- Levelling the playing field by setting up a hydrogen certification scheme by 2025, to demonstrate high-grade British hydrogen for export and ensure any imported hydrogen meets the same high standards that UK companies expect.<sup>23</sup>

The Strategy identifies two forms of electrolytic hydrogen: 'green' hydrogen (described as being produced via electrolysis) and 'pink' hydrogen (described as being produced via electrolysis, but with energy from a nuclear power plant).<sup>24</sup>

---

<sup>22</sup> Department for Business, Energy and Industrial Strategy (DBEIS) and Prime Minister's Office, [British energy security strategy](#), 10 Downing Street, 7 April 2022

<sup>23</sup> HM Government, [British energy security strategy \[PDF\]](#), 7 April 2022, p23

<sup>24</sup> HM Government, [British energy security strategy \[PDF\]](#), 7 April 2022, p22

Proposals involving hydrogen for the oil and gas and electricity sectors, as well as for international gas flows, are also outlined in the Strategy:

- Oil and gas:
  - the Strategy outlines options to reduce reliance on imported fossil fuels, including using hydrogen as an alternative to natural gas. It commits to “Publishing delivery roadmaps for CCUS [Carbon capture, utilisation and storage] and hydrogen to provide clear signals to industry to invest this month”.<sup>25</sup>
- Electricity:
  - the Strategy says the Government will ensure “consideration is given to the siting of hydrogen electrolyzers to best use surplus low carbon electricity and reduce network constraints.”<sup>26</sup>
  - It also says the Government will establish “the Future System Operator [for the national electricity grid] as soon as practicable to drive our overall transition and oversee the UK energy system”.<sup>27</sup> The Government provided more detail on the [Future System Operator in a press release on 6 April 2022](#):
    - The Future System Operator (FSO), to be launched once legislation is passed and timelines have been discussed with key parties, will look at the Great Britain’s energy system as a whole, integrating existing networks with emerging technologies such as hydrogen.<sup>28</sup>
- International gas flows:
  - the Strategy says the UK is “Providing a key EU entry point for non-Russian supplies of gas” and that the Government is “examining our infrastructure to [...] promote gas infrastructure to be hydrogen-ready”.<sup>29</sup>

## Hydrogen policy papers and consultations

A wave of Government announcements and policy papers on hydrogen followed the publication of the British Energy Security Strategy. They were published on 8 April 2022 and included:

- [Hydrogen investor roadmap: leading the way to net zero](#) (a summary of Government policies designed to support the development of a low carbon hydrogen economy);

---

<sup>25</sup> HM Government, [British energy security strategy \[PDF\]](#), 7 April 2022, p15

<sup>26</sup> HM Government, [British energy security strategy \[PDF\]](#), 7 April 2022, p25

<sup>27</sup> HM Government, [British energy security strategy \[PDF\]](#), 7 April 2022, p25

<sup>28</sup> DBEIS, Ofgem and the Rt Hon Greg Hands MP Press Release, [Government future proofs Britain’s energy system with launch of new body to boost energy resilience](#), 6 April 2022

<sup>29</sup> HM Government, [British energy security strategy \[PDF\]](#), 7 April 2022, p27

- [UK Low Carbon Hydrogen Standard: emissions reporting and sustainability criteria](#) (sets a maximum threshold for the amount of greenhouse gas emissions allowed in the production process for hydrogen to be considered ‘low carbon hydrogen’. It builds on the [Options for a UK low carbon hydrogen standard: report](#), published in August 2021);
- [Fugitive hydrogen emissions in a future hydrogen economy](#) (considers the evidence of the potential leakage of hydrogen emissions into the atmosphere, in the move to a hydrogen economy, and any indirect effects on the climate);
- [Atmospheric implications of increased hydrogen use](#) (looks at current climate and atmospheric chemistry models to explore the atmospheric impacts of a global hydrogen economy);
- [Hydrogen Business Model and Net Zero Hydrogen Fund](#) (the Government launched a consultation on its “proposed approach to allocating Hydrogen Business Model and Net Zero Hydrogen Fund support through a joint allocation process for electrolytic hydrogen projects”. The consultation ran from 8 April to 6 May 2022. A Government Response has not yet been published. The Government also published [Low Carbon Hydrogen Business Model: indicative Heads of Terms](#));
- Government response to [Designing the Net Zero Hydrogen Fund](#) consultation (the fund will support the deployment of low carbon hydrogen production during the 2020s, with the consultation considering the type of funding, the technologies to support and funding eligibility. The Government response set out how the design of the fund would be modified, with funding split into 4 strands).

#### Hydrogen for heat. Facilitating a ‘grid conversion’ hydrogen heating trial, Government Response, 11 April 2022

The consultation sought views on legislative proposals to enable the Gas Distribution Network operator(s) to deliver a neighbourhood hydrogen heating trial, followed by a village scale trial, by converting local grids to enable 100% hydrogen heating. The Response indicates that the Government will proceed with the proposed legislative amendments required to facilitate the trials and that measures would also be introduced to implement new consumer protection frameworks for those in the trial

area(s).<sup>30</sup> A decision on where the village trial will take place is not expected until 2023.<sup>31</sup>

---

<sup>30</sup> BEIS, [Hydrogen for heat. Facilitating a 'grid conversion' hydrogen heating trial. Government response to consultation](#), April 2022

<sup>31</sup> [Developer unveils plans for four UK green hydrogen production sites, as Government firms up hydrogen village plans - edie](#), 11 April 2022

## 2 Parliamentary material

### 2.1 Debate

**Westminster Hall debate: [Potential for a Hydrogen Village](#)**

**HC Deb 24 May 2022 | Volume 715 c57WH-**

### 2.2 PQs

[New Low-Carbon Technologies](#)

**Asked by: Chris Clarkson**

As we transition away from gas, hydrogen—in particular green hydrogen generated by renewable sources such as that at Scout Moor wind farm in my Heywood and Middleton constituency—gives the UK the unique opportunity to become an exporter of energy. Does my right hon. Friend agree that that is good not just for our economy and energy security, but for communities such as Heywood and Middleton where it will create new and exciting jobs?

**Answered by: Greg Hands | Department: Business, Energy and Industrial Strategy**

My hon. Friend is a doughty champion for his constituency and for the hydrogen sector. I was at the global hydrogen summit about three weeks ago where exactly the possibility of hydrogen exports was very much the topic of the day. That is why we have doubled the ambition in our British energy security strategy to go to 10 GW of low-carbon hydrogen production by 2030, which will provide fantastic opportunities right the way across the country, notably in his constituency as well.

**HC Deb 07 June 2022 | Vol 715 c655**

[Carbon Capture and Storage and Hydrogen](#)

**Asked by: Stuart, Graham**

To ask the Secretary of State for Business, Energy and Industrial Strategy, what steps his Department is taking to help ensure that the UK maximises the potential economic opportunities of low carbon hydrogen and carbon capture, usage and storage.

**Answering member: Greg Hands Department: Department for Business, Energy and Industrial Strategy**

The Government has committed to publishing a Sector Development Action Plan to set out how government and industry will support UK companies to seize supply chain opportunities, skills and jobs across the hydrogen economy. In addition, the Government's aim to capture and store 20-30 MtCO<sub>2</sub> per year by 2030 will offer significant opportunities for investment and UK exports.

**HC Deb 05 April 2022 | PQ 148077**

[Hydrogen: Storage](#)

**Asked by: Stuart, Graham**

To ask the Secretary of State for Business, Energy and Industrial Strategy, what assessment his Department has made of the levels of hydrogen storage capacity required to (a) facilitate the anticipated growth of and (b) help guard against price spikes in that market; and what steps he plans to take to help ensure that that capacity is delivered in a timely manner.

**Answering member: Greg Hands | Department: Department for Business, Energy and Industrial Strategy**

In the UK Hydrogen Strategy, the Government set out that hydrogen storage can support the hydrogen economy in a range of ways that position it as a strategic asset as part of a fully decarbonised, net zero economy. In the strategy, the Government committed to undertake a review of systemic hydrogen storage requirements in the 2020s and beyond, including its potential role as a critical enabler for some end-use sectors.

The review is underway and will consider whether funding or other incentives are needed, whether regulation might be required to ensure that the necessary storage infrastructure is available when needed, and what form this might take.

**HC Deb 05 April 2022 | PQ 148075**

[Imports: Hydrogen](#)

**Asked by: Sobel, Alex**

To ask the Secretary of State for Business, Energy and Industrial Strategy, whether he plans to ban the import of Russian produced hydrogen sourced from methane; and whether he has made an assessment of the available options to achieve that.

**Answering member: Greg Hands | Department: Department for Business, Energy and Industrial Strategy**

The Government is not aware of any significant imports of hydrogen produced in Russia to the UK. The Government is focussed on developing the hydrogen economy in the UK and working with industry to achieve 5GW of low-carbon hydrogen production capacity in the UK by 2030.

**HC Deb 01 April 2022 | PQ 146722**

### Carbon Capture and Storage and Hydrogen

**Asked by: Stuart, Graham**

To ask the Secretary of State for Business, Energy and Industrial Strategy, what steps he will take to ensure that policy and regulation in the development of hydrogen and carbon capture, utilisation and storage in the UK supports the development of UK capability as part of delivering value for money for the public purse.

**Answering member: Greg Hands | Department: Department for Business, Energy and Industrial Strategy**

The UK Hydrogen Strategy makes clear that maximising UK capabilities across the value chain is a key aim of developing our hydrogen economy. The Strategy committed government to publishing a Sector Development Action Plan in 2022, which will set out what government and industry will do to support the UK supply chain to develop capabilities in production, transportation, distribution and storage and various end uses.

The Government's Carbon Capture, Usage & Storage (CCUS) supply chain roadmap sets out how government and industry can support UK capability in the CCUS supply chain as part of an investable, cost-effective and delivery focused sector. The industrial clusters will be the starting point for a new carbon capture industry, which could support up to 50,000 jobs in the UK by 2030, including a sizeable export potential.

**HC Deb 22 March 2022 | PQ 139311**

### Hydrogen

**Asked by: Lord McCrea of Magherafelt and Cookstown**

To ask Her Majesty's Government what steps they will take to support the hydrogen sector across the UK.

**Answering member: Lord Callanan | Department: Department for Business, Energy and Industrial Strategy**

The UK Hydrogen Strategy reaffirms the Government's aim to have 5GW of low carbon hydrogen production capacity in the UK by 2030. In the strategy, the Government lays the foundations for a thriving hydrogen economy by 2030, setting out how the Government will support innovation and stimulate investment to rapidly scale up low carbon hydrogen production and use across the economy this decade.

The Government has announced that it will set up the Industrial Decarbonisation and Hydrogen Revenue Support scheme (IDHRS), which will support both electrolytic ('green') and CCUS enabled ('blue') low carbon hydrogen production. The Government will be providing up to £140 million to establish the scheme, including up to £100 million to award contracts of up to 250MW of electrolytic hydrogen production capacity in 2023 with further allocation in 2024. This means that 500MW of electrolytic hydrogen production projects will be operational or in construction by 2025. The Government will also announce the revenue envelope for CCUS-enabled hydrogen and industrial carbon capture in 2022, which will allow contracts, from 2023, to be awarded for up to 1GW of CCUS-enabled hydrogen.

In the coming months the Government will launch the £240 million Net Zero Hydrogen Fund, the first £100 million allocation round for electrolytic hydrogen projects and publish a sector roadmap with a focus on investment, in addition to a Sector Development Action Plan.

**HL Deb 15 March 2022 | PQ HL6536**

### [Hydrogen Sector](#)

**Asked by: Ian Paisley**

Does the Minister believe that the best way to stimulate the UK hydrogen strategy is to build hydrogen products that the public ultimately use, such as buses, trains and heavy goods vehicles? Will he commit to joining that up to the Department for Transport and encouraging it to get on with hydrogen bus development that will stimulate the entire economy?

**Answered by: Greg Hands | Department: Business, Energy and Industrial strategy**

The hon. Gentleman and I know that Northern Ireland has an incredible capability and tradition in bus making. He is absolutely right that hydrogen-powered buses have a big future. I mentioned Glasgow City Council's commitment to move to hydrogen buses, thanks to the Whitelee wind farm; I imagine that we will want to do something similar in Northern Ireland. I look forward to further engagement with the Northern Ireland Executive on the topic.

**HC Deb 22 February 2022 | Vol 709 c160**

### Hydrogen Sector

**Asked by: Jane Hunt**

Intelligent Energy in Loughborough is keen to build a hydrogen fuel cell gigafactory, hopefully in the east midlands freeport. How will my right hon. Friend help to promote hydrogen fuel cell technology and production in the UK so that we can lead the world in that technology, harness green jobs and growth and avoid having to play catch-up?

**Answering member: Greg Hands | Department: Business, Energy and Industrial strategy**

I thank my hon. Friend; it is always brilliant to get a question about that great hub of innovation and science in Loughborough, and it is brilliant to hear about Intelligent Energy's plans to build a hydrogen fuel cell gigafactory in the east midlands. That is the kind of investment that will support highly skilled jobs in the UK's nascent hydrogen economy and the Government's levelling-up agenda. The Government provide support for fuel cells through various funds, including the Advanced Propulsion Centre and the automotive transformation fund, which have already committed over £38 million to 16 projects with a total value of almost £85 million.

**HC Deb 22 February 2022 | Vol 709 c159**

### Hydrogen: Environment Protection

**Asked by: Rosindell, Andrew**

To ask the Secretary of State for Business, Energy and Industrial Strategy, whether his Department plans to buy and promote products from UK industries for the production of green hydrogen.

**Answering member: Greg Hands | Department: Department for Business, Energy and Industrial Strategy**

The Prime Minister's 10 Point Plan set out the UK Government's ambition for 5GW of hydrogen production capacity by 2030, including both electrolytic (green) and CCUS-enabled (blue) hydrogen.

The Government is clear that in supporting the growth of a hydrogen economy, the government should maximise economic benefits for the UK. The UK's natural assets, expertise, and innovation ecosystem provide the foundations for a world leading hydrogen sector. The Hydrogen Strategy makes clear the Government expects developers to ensure that competitive UK companies are in a fair position to bid into hydrogen projects, and the

Government will actively monitor results. The forthcoming Sector Development Action Plan will set out more detail.

**HC Deb 10 February 2022 | PQ 116882**

### Hydrogen: Infrastructure

**Asked by: Brown, Alan**

To ask the Secretary of State for Business, Energy and Industrial Strategy, what assessment he has made of the potential merits of a shared network infrastructure to support a liquid UK hydrogen market.

**Answering member: Greg Hands | Department: Department for Business, Energy and Industrial Strategy**

The Government recognises that network infrastructure will provide the link between production and demand, and is essential to the development of the hydrogen economy. Further work is needed to determine what the optimal hydrogen network looks like, and this will cover both pipeline and non-pipeline distribution. In the UK Hydrogen Strategy, the Government sets out a commitment to undertake a review of systemic hydrogen network requirements in the 2020s. This review is underway, and the Government has committed to provide an update on systemic hydrogen network requirements early this year.

**HC Deb 20 January 2022 | PQ 102682**

### Minister for Hydrogen Role

**Asked by: Ian Paisley**

I thank the Minister for his answer. The Minister will know that hydrogen covers all regions of the United Kingdom, and I hope he agrees with me that we need to create a golden thread that brings together all the Departments of Government so that we can maximise and make sure we do not miss out on the hydrogen revolution for the United Kingdom, because it will be a game changer for our economy. Does the Minister agree that such a Minister would help create a contact point for the engineering supply chain across all of the UK, which is worth billions of pound to our economy?

**Answered by: Nigel Adams | Department: Cabinet Office**

I know the hon. Gentleman is a doughty champion for this sector, with the Wrightbus company in his constituency, of which he is rightly proud. He should be aware, and I know he is aware, of the £100 million of new funding for the net zero innovation portfolio, which will support industry to switch to low-carbon fuels. The supply chain of course needs to be an integral part of

that, and it will certainly be taken into consideration as we develop this policy. I look forward to the opportunity of possibly visiting the site in the hon. Gentleman's constituency.

**HC Deb 13 January 2022 | Vol 706 c630**

## 3

# News items and press releases

Utility Week

9 June 2022

['Scotland's first' plastic-to-hydrogen power plant given green light](#)

Engineering and Technology

8 June 2022

[Artificial leaf devices can produce clean hydrogen from water](#)

Scotsman

7 June 2022

[Scots battery cell specialist to power up hydrogen hypercars and HGVs](#)

Energy Voice

6 June 2022

[Hydrogen Blending: From the North Sea to the network and into UK homes](#)

Chemical Engineer

11 May 2022

[Recommendations to support UK green hydrogen](#)

Herald

7 May 2022

[Energy suppliers make government call for more hydrogen to replace natural gas](#)

Department for Business, Energy and Industrial Strategy

12 January 2022

**[Government launches new scheme for technologies producing hydrogen from biomass](#)**

Center for Strategic & International Studies

28 October 2021

**[The United Kingdom's Hydrogen Strategy](#)**

Imperial College London

20 October 2021

**[Increasing hydrogen energy requires all technologies to be pushed forward](#)**

Inside Energy and Environment

18 August 2021

**[Hydrogen in the UK](#)**

Guardian

17 August 2021

**[Government reveals plans for £4bn hydrogen investment by 2030](#)**

## 4

### Useful links

Department for Business, Energy and Industrial Strategy

8 April 2022

[Fugitive hydrogen emissions in a future hydrogen economy](#)

Department for Business, Energy and Industrial Strategy

8 April 2022

[Hydrogen investor roadmap: leading the way to net zero](#)

Department for Business, Energy and Industrial Strategy

8 April 2022

[UK Low Carbon Hydrogen Standard: emissions reporting and sustainability criteria](#)

Department for Business, Energy and Industrial Strategy

17 August 2021

[UK government launches plan for a world-leading hydrogen economy](#)

[UK Hydrogen Strategy](#)

Catapult Network

[Accelerating a UK hydrogen economy](#) [pdf]

Innovate UK

[Hydrogen Economy Innovation Network](#)

### Disclaimer

The Commons Library does not intend the information in our research publications and briefings to address the specific circumstances of any particular individual. We have published it to support the work of MPs. You should not rely upon it as legal or professional advice, or as a substitute for it. We do not accept any liability whatsoever for any errors, omissions or misstatements contained herein. You should consult a suitably qualified professional if you require specific advice or information. Read our briefing '[Legal help: where to go and how to pay](#)' for further information about sources of legal advice and help. This information is provided subject to the conditions of the Open Parliament Licence.

### Sources and subscriptions for MPs and staff

We try to use sources in our research that everyone can access, but sometimes only information that exists behind a paywall or via a subscription is available. We provide access to many online subscriptions to MPs and parliamentary staff, please contact [hoclbraryonline@parliament.uk](mailto:hoclbraryonline@parliament.uk) or visit [commonslibrary.parliament.uk/resources](https://commonslibrary.parliament.uk/resources) for more information.

### Feedback

Every effort is made to ensure that the information contained in these publicly available briefings is correct at the time of publication. Readers should be aware however that briefings are not necessarily updated to reflect subsequent changes.

If you have any comments on our briefings please email [papers@parliament.uk](mailto:papers@parliament.uk). Please note that authors are not always able to engage in discussions with members of the public who express opinions about the content of our research, although we will carefully consider and correct any factual errors.

You can read our feedback and complaints policy and our editorial policy at [commonslibrary.parliament.uk](https://commonslibrary.parliament.uk). If you have general questions about the work of the House of Commons email [hcenquiries@parliament.uk](mailto:hcenquiries@parliament.uk).

The House of Commons Library is a research and information service based in the UK Parliament. Our impartial analysis, statistical research and resources help MPs and their staff scrutinise legislation, develop policy, and support constituents.

Our published material is available to everyone on [commonslibrary.parliament.uk](https://commonslibrary.parliament.uk).

Get our latest research delivered straight to your inbox. Subscribe at [commonslibrary.parliament.uk/subscribe](https://commonslibrary.parliament.uk/subscribe) or scan the code below:



 [commonslibrary.parliament.uk](https://commonslibrary.parliament.uk)

 [@commonslibrary](https://twitter.com/commonslibrary)