



Department for
Business, Energy
& Industrial Strategy

Hydrogen Advisory Council

Fifth Meeting – Summary

21 May 2021

Attendees

Co-Chairs:

Rt Hon Kwasi Kwarteng MP, Secretary of State for Business, Energy and Industrial Strategy (BEIS) (**SoS**)

Sinead Lynch, UK Country Chair, Shell (**SL**)

Council members:

Name	Role	Organisation
Rt Hon Anne-Marie Trevelyan MP	Minister for Business, Energy and Clean Growth (BEIS delegate co-chair)	Department for Business Energy and Industrial Strategy
Paul Bogers	Vice President - Hydrogen	Shell
Baroness Julia Brown	Offshore Wind Sector Champion	
Alex Grant	Executive Vice President of Global Strategy and Business Development & UK Country Manager	Equinor
Duncan Clark	Head of UK Region	Orsted
Marcus Newborough (deputising for Graham Cooley)	Development Director	ITM Power
Andrew Doyle	Executive Director	Mitsubishi UFJ Financial Group
Richard Halsey	Capabilities Director	Energy Systems Catapult
Dr Susi Wiseman (deputising for Alan James)	Hydrogen and CCS project technical authority	Pale Blue Dot
Jon Maddy	Senior Lecturer	University of South Wales
Peter Mather	UK Head of Country	BP
Jim Mercer	President UK & Ireland	BOC / Linde
Chris Manson-Whitton	Director	Progressive Energy
Professor Nilay Shah	Director of the Centre for Process Systems Engineering & Head of Chemical Engineering	Imperial College London
Steve Scrimshaw	Vice President	Siemens Energy Limited UK & Ireland
Jane Toogood	Sector Chief Executive, Efficient Natural Resources	Johnson Matthey
Geir Tuft	CEO	Inovyn

Name	Role	Organisation
Chris Train	'Gas Goes Green' lead	Energy Networks Association
Alistair Phillips-Davies	CEO	SSE
Katharine Palmer	Global Head of Sustainability	Lloyd's Register, Marine & Offshore
Jonathan Brearley	CEO	Ofgem
Sam French (guess attendee as Industry Chair of the 2020s Roadmap working group)	Business Development Director	Johnson Matthey

Government observers:

Name	Organisation
Paro Konar	Department for Business Energy and Industrial Strategy
Rita Wadey	Department for Business Energy and Industrial Strategy
Will Lochhead	Department for Business Energy and Industrial Strategy
Alison Conboy	Department for Business Energy and Industrial Strategy
Graham MacGruer (deputising for Bob Moran)	Department for Transport
Spencer Clifford (deputising for Danny Dunne)	Department for International Trade
Syeda Quader (deputising for Andrew Robertson)	Her Majesty's Treasury
James Fleming	Engineering and Physical Sciences Research Council
Juliet Cramb-Low (deputising for Margo MacIver)	Scottish Government
Ian Meikle	Innovate UK
Iona Mylek	Department for Business Energy and Industrial Strategy
Jeremy Brutus	Department for Business Energy and Industrial Strategy
Steven Mills	Department for Business Energy and Industrial Strategy

1: Welcome (Sinead Lynch (SL))

SL welcomed the group, and gave a brief industry overview on the progress made since the last Council meeting:

- **ITM 20MW electrolyser (Glasgow):** The Green Hydrogen for Scotland partnership announced in April 2021 that a planning application has been made for a 20MW electrolyser to be sited at Scottish Power Renewables' Whitelee Wind Farm near Glasgow, the UK's largest onshore wind farm.
- **SSE/Equinor Keadby hydrogen power project (Humber):** SSE and Equinor announced plans in April to jointly develop the world's first 100% hydrogen-fuelled power station in the Humber region, with a peak demand of 1.8GW hydrogen.
- **NanoSun** announced in April that they have completed development of their mobile Hydrogen Refuelling Station, enabling local hydrogen distribution.

2: Ministerial Update (Secretary of State (SoS), Minister Trevelyan (AMT))

SoS remarked on the progress made by both industry and government over the past year on work to support the development of hydrogen as a low carbon energy carrier for the UK. He updated that work continues on the Hydrogen Strategy, which is expected to be published ahead of summer recess. He hopes that the strategy will have a galvanising effect on the sector and recognises its importance for investors. SoS has recently met with investors with significant interest in UK hydrogen.

SoS noted government's recent announcement that the UK will set the world's most ambitious climate change target into law: reducing emissions by 78% by 2035 compared to 1990 levels in line with recommendations from the independent Climate Change Committee. Internationally, the G7 and COP presidencies provide important opportunities to drive efforts to develop a global hydrogen economy.

AMT confirmed that we are working at pace on the hydrogen strategy/ She has been pleased to meet with many of the Council members and other hydrogen stakeholders over recent months. She noted that the 2030 5GW production ambition is an important starting point for the development of the hydrogen economy across the UK.

3: Framing the Hydrogen Strategy – 2020s Roadmap (Jane Toogood (JT), Iona Mylek (IM))

JT introduced the Roadmap which is intended as a guide to frame action across the 2020s to deliver the government's 2030 ambition and position the hydrogen economy for the significant ramp up that will be required following this.

Significant progress has been made in terms of understanding outcomes, and what needs to happen in parallel across different workstreams to deliver them. **JT** thanked Council members and the Working Group members for their inputs and work to create a cohesive picture from the expert inputs.

IM thanked the Working Group. Reiterated the purpose of the Roadmap as a guide rather than a critical path to help reach the 2030 ambition, and to position ourselves for the ramp up towards Carbon Budget 6 (CB6) and Net Zero.

IM noted that the Roadmap informs the hydrogen strategy content and framework, and the details underpinning the Roadmap will be set out in the rest of the Strategy. We are considering how we will use the Roadmap as a systematic framework or blueprint for implementation in the longer term beyond the strategy publication.

The following points and responses were raised in discussion:

- Welcome for the whole-system approach set out in the Roadmap.
- Consideration of offshore production in Roadmap.
- Business models and early funding for smaller projects needed quickly to get projects established and meet Carbon Budgets. Discussion on whether the business model should focus on supply and/or end use, and whether multiple business models should be designed tailored to project size.
- Importance of developing supply chains noted, including mapping requirements for Tier One and Tier 2 components of the value chain (e.g., burners, boilers, compressors, flow heaters) to mitigate against bottlenecks in the pathway to 2030 and beyond.
- Recognition of the importance of the complex interdependencies and integration challenges of developing a hydrogen and Net Zero energy system.
- Important to align with Devolved Administrations as well as global markets. BEIS is working closely with all of the Devolved Administrations and Hydrogen Strategy will take a UK approach. BEIS is involved in international fora, including Mission Innovation and the Clean Energy Ministerial.
- Importance noted on need to deliver at pace.
- Importance noted on the strategy publication, and ensuring actions aligns with broader decarbonisation pathways, including the Industrial Cluster process
- Clarity on relationships with existing markets to allow organisations can plan their own interventions and outcomes.
- Replacement of existing use of grey hydrogen applications.

4: Evolution of Hydrogen Networks - early thinking (Jeremy Brutus (JB))

JB: The evolution of hydrogen networks is critical to the development of the hydrogen economy and linking up production and demand. This includes pipeline and non-pipeline solutions. **JB** set out the potential evolution of hydrogen networks over the 2020s, following the Roadmap format, and outlined key issues, including future proofing, technical and regulatory issues, as well as funding considerations.

The following points and responses were raised in discussion:

- Need to be confident in making pragmatic decisions now to give confidence on future investments and to achieve scale quickly. Balance required between directed coordinated planning and a market-led approach.

- Collaborative time-phased master plans could be useful; could be developed with stakeholders to explore high, low, and base demand scenarios, and to develop a clearer understanding of the infrastructure requirements.
- Storage is an important consideration and could help to balance demand variability against relative inflexibility of production.
- Need to consider public perceptions around hydrogen and safety.
- Oversizing of early pipelines may have value in allowing for future networks to grow.
- Consistent hydrogen standards across networks could support development and coordination.
- Need to consider the scale and nature of public and private investment required across the decade.
- Warned against comparison with the existing gas network, and assumptions around its future. Hydrogen networks may be used for different purposes.
- Small scale distribution and local electrolysis will also be important.
- Updating billing methodologies will be required if hydrogen is to be blended into the existing gas network.

5: Seizing the economic opportunities of a growing hydrogen economy – approach (Steven Mills (SM), Steve Scrimshaw (SS))

SM: Government has given a clear signal that the UK intends to be at the forefront of developing a hydrogen economy. Taking a maximalist approach to build and promote the UK supply chain by initially looking at opportunities across the full value chain, maximising job and export opportunities and advocating the UK as a world class case for investment.

SM updated on the Sector Development working group which has supported our early thinking for the strategy and future work.

SS thanked the working group for their work. Next phase for the group will be to get into the detail, looking at technologies and product systems. Will consider procurement strategies and how we create jobs. Overall objective to increase UK added value and high-quality jobs.

The following points and responses were raised in discussion:

- Future potential to export knowledge to support other countries to develop their hydrogen economies.
- Offshore wind experience provides a useful template for a nascent hydrogen economy - important to learn from this and focus on promoting UK content in the hydrogen supply chain.
- Existing UK supply chains in other industries could diversify to support hydrogen applications, for example, in automotive.
- Consider Tier 1 and Tier 2 supply chains (e.g. storage vessels, compressors) which can also benefit SMEs, as well as thinking about large scale industrial supply chains.

Item 6: Actions from previous meetings

RW thanked all the speakers. **RW** outlined actions from previous meetings:

No.	Action	Lead	Update
A4.1	E4tech to share findings with Standards and Regulations working group	BEIS	E4tech have shared interim findings with the working group in February and March.
A4.3	BEIS Hydrogen teams to consider the need to support hydrogen production for research and development.	BEIS	Science and Innovation team are working closely with the Hydrogen Strategy and Production teams to consider this.

RW outlined that there will be a light touch review of the Council and its working groups this summer. The working groups have been very useful and we want to ensure they are aligned with the priorities which will be set out in the strategy. The Research and Innovation working group will be established in the coming weeks.

RW also updated on the organisation of hydrogen teams across the Department

Item 7: Closing remarks

SL thanked everyone for attending and for their contributions to papers and working groups. The next Council meeting will likely be in July.

SoS thanked attendees and noted the progress that has been supported by the Council.