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The UK's new Hydrogen Strategy

The UK published its long awaited Hydrogen Strategy in August 2021 alongside a wider package of policy documents on hydrogen, including a consultation on a hydrogen business model to stimulate private investment in new low carbon hydrogen projects, a consultation on the design of the £240 million Net Zero Hydrogen Fund (NZHF) confirmed out to 2025 to support new hydrogen production projects, and a consultation on a UK Low Carbon Hydrogen Standard that will define what is meant by low carbon hydrogen.

As a result of its geography, geology, infrastructure and capabilities, the UK is in a strong position to expand both its demand and supply of low carbon hydrogen. The Hydrogen Strategy identifies that as a global leader in commitment to decarbonisation (both in terms of policy commitments and confirmed emission reductions), the UK is in a good position to become a hydrogen pioneer on the global stage. The UK Government's analysis suggests that by 2030, the UK hydrogen economy could be worth £900million and support over 9,000 jobs, and by 2050, under a high hydrogen scenario, the hydrogen economy could be worth up to £13 billion and support up to 100,000 jobs. The Hydrogen Strategy attempts to mobilise the cash required to achieve these goals.

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The key messages are that:

- Support for clean hydrogen will be built around a single "low carbon hydrogen standard" based on a greenhouse gas emissions threshold to be developed by 2022.
- Whilst the "low carbon hydrogen standard" will not distinguish between different means of hydrogen production that satisfy the standard, green hydrogen (produced from renewable electricity), blue hydrogen (produced predominantly from natural gas with carbon capture, utilisation and storage (CCUS) and pink hydrogen (produced using nuclear electricity) are expected to play a key role.
- Support will be technology agnostic, but may favour current lowest costs technologies initially.
- The UK is targeting five GW of low carbon hydrogen production capacity by 2030, and recognizes that 20-35 percent of the UK's final energy consumption may come from hydrogen by 2050.
- Hydrogen use cases will focus on those areas that electrification cannot easily meet, such as the UK steel, chemical and refinery sectors; heavy road, marine and ultimately aviation transport; and domestic heat (e.g. by blending hydrogen into the existing gas network).
- A production focused business model (the "support model") will be developed by 2022 to provide UK Government support to new hydrogen projects with the first projects expected to be awarded support in Q1 2023.
- The support model proposes to build on and adapt the existing contract for difference (CfD) model being used to support UK renewables and as the baseline for the CCUS Dispatchable Power Agreement and Industrial Carbon Capture Contract – given this approach and the interaction with blue, green and/or pink hydrogen familiarity with the UK's support regimes for renewables, CCUS and nuclear may be important to understand a hydrogen project's full chain risk profile.
- The support model business focuses on:
  - **Market price risk –** the risk that the price received by hydrogen producers for their product is lower than their cost of production.
  - **Volume risk –** the risk that volume of sales falls below a level that allows producers to recover their production cost.

- Support for market price risk is expected to initially take the form of a "variable premium", setting the natural gas price as a price floor and paying the recipient the difference between an agreed strike price and the higher of: (i) the natural gas price floor; and (ii) the achieved sale price, with the support model including additional contractual incentives for producers to seek higher priced sale, such as a gainshare mechanism or a periodic payment linked to achieving or exceeding a defined pricing threshold, or benchmark to avoid sales remaining at the natural gas price floor for the duration of the contract.
- Strike prices will initially be set bilaterally before moving in the medium term to a competitive allocation process (e.g. auction) that could provide separate pots for different production technologies with different cost bases to ensure a diversity of projects are awarded support, and not just the lowest cost technology at a point in time.
- Support for volume risk is expected to be based on a "sliding scale" paying a higher level of price support on initial volumes, allowing the producer to recover fixed costs at relatively low offtake volumes and with the level of price support tapering off as volumes increase, with last volumes recovering only marginal costs and equity returns – importantly, the support model envisages no support for producers if offtake volumes fall to zero after the contract is in place.

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- The strike price will be indexed – this may provide some protection in respect of input fuel costs, but the nature of the indexation calculation is yet to be determined and may not cover all of this risk.
- The UK government is still considering the appropriate contract length for the support model.
- A hydrogen producer benefitting from the support model will still be expected to bear the following risks:
  - Market price risk below the natural gas floor.
  - Volume and stranded asset risk to the extent not covered by the volume mechanism in the support model (including where offtake volumes fall to zero).
  - Input fuel costs risk to the extent not covered by indexation through the support model.
  - Construction risk.
  - Technology and first of a kind ("FOAK") risk.
  - Input fuel supply disruption risk (e.g. unavailability of input fuel).
  - Qualifying hydrogen risk where the producer is at fault (and possibly also where it isn't).
  - Change in law, policy or regulatory framework risk (beyond the anticipated narrow protection to be provided in respect of certain unforeseeable and material changes).
  - Uninsurability risk.
  - Decommissioning risk.
- The NZHF intends to make £240million of grant funding available to co-fund the capital costs of developing and building low carbon hydrogen production projects - this capex support could be used to cover a fixed percentage of a production project's initial construction cost estimate.

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The Hogan Lovells team is monitoring the continued development of the UK's support for clean hydrogen alongside global developments in hydrogen production, transportation, use, storage and regulation.

Talk to our team for further information.

Alex Harrison
Head of Power, Renewables and Energy Transition
T +44 20 7296 5853
E alex.harrison@hoganlovells.com

Ben Sulaiman
Head of Oil, Gas and LNG
T +44 20 7296 5905
E ben.sulaiman@hoganlovells.com

Shah Jahan H. Khandokar
Senior Associate
T +44 20 7296 5921
E shahjahan.khandokar@hoganlovells.com

Emily Harris
Associate
T +44 20 7296 5174
E emily.harris@hoganlovells.com

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