THE ASSOCIATION FOR RENEWABLE ENERGY & CLEAN TECHNOLOGY

Task & Finish group on waste/biomass to hydrogen projects and alternative pathways

8th June 2022

GREEN GAS HYDROGEN

Decarbonising the economy

@REAssociation

Agenda

- Welcome, housekeeping and introductions
- Setting the context
- Discussion on the need for a business model for hydrogen production from relevant pathways
- Low Carbon Hydrogen Standard: any outstanding questions?
- Next steps and close

Who was invited

- ABSL
- Drax
- Bayo Tech – apologies
- IBMS Group
- HiiROC
- Omni CT
- Peel NRE – not heard from them
- Future Earth Energy
- EQTECH
- Bioenergy Infrastructure Group - apologies
- In Perpetuum Partners - not heard from them
- Enfinium
- Centrica - apologies
- Reliagen - apologies
- Kew Technology

To recap

Hydrogen Investment Package launched on 8th April **heavily focused on electrolytic and CCUS-enabled routes**:

NZHF strand	Scope
Strand 1 – **now open for application**	Development Expenditure for Front End Engineering Design (FEED) studies and post FEED costs. All pathways in scope (as long as LCHS compliant. TRL≥ 7) plus other criteria
Strand 2 – **now open for application**	CAPEX (capital expenditure) for projects that do not require revenue support through the hydrogen business model. All pathways in scope (as long as LCHS compliant. TRL≥ 7) plus other criteria
Strand 3	CAPEX for non-Carbon Capture, Usage and Storage (CCUS) enabled projects that also require revenue support through the hydrogen specific business model. First round (summer 2022) electrolytic only. Future rounds TBC. TRL≥ 7 plus other criteria
Strand 4	CAPEX for CCUS-enabled projects (amongst those shortlisted under P2 cluster projects) that require revenue support through the hydrogen business model.

Reasons for exclusion of other pathways

- BEIS have initially focused on pathways that are ready to deploy at commercial scale now, to help build up hydrogen market
- '*Allows for better comparison between projects with similar technologies in first allocation round and ensure assessment remains on track to meet ambitious timelines*.' '*feedback suggests that all projects likely to meet eligibility criteria will be electrolytic, e.g. TRL ≥ 7 and COD of end of 2025*' (BEIS slides, Feb 2022).
- They need to 'keep it simple', to help them develop and test the complex Business Model they have developed.
- '*Difficult deployment history of ACT, with several high-profile examples of commercial scale plants failing to reach commissioning and full operation. These are complicated and technically challenging systems, which have proven difficult to scale despite many successful demonstration projects*.' (REA's draft briefing note for G&P WG)
- Hydrogen Strategy (analytical annex):
  - ✓CCUS-enabled methane reformation could supply **10 – 335 TWh**, electrolysis could supply **20 -135** TWh and BECCS could supply **50 – 100 TWh** of hydrogen by 2050. '*BECCS hydrogen technology is not currently expected to deploy until the mid-2030s, although technological and market developments could bring this date forward'.*

Other relevant policy in development

- *Industrial Carbon Capture Business Model*: projects that meet eligibility criteria published in March 2022. Examples:
  - ✓ Altalto Immingham waste to jet fuel
  - ✓ Lighthouse Green Fuels
  - ✓ Protos Biofuels
- Further consultation on SAF mandate expected later this year, including proposals for a *dedicated support mechanism for UK production of SAF*
- October 2021, GGR CfE response commits to issue consultation in 2022 on BEIS *preferred business models to incentivise early investment in GGRs*
- *UK ETS consultation*, closing on 17th June, gauging early views on how the scheme could *incentivise GGRs*
- *RTFO* includes dedicated sub-target for 'development' fuels
- NZIP funds and competitions, including Hydrogen BECCS Innovation Programme & the DAC and GGR programme (projects selected for Phase 1 announced on 26th May include Drax, Kew, ABSL, Peel NRE etc).
- In summary, lots of policy being developed and grants available, but not a clear business model yet to underpin development.

Pathways included in the discussion today

- Advanced conversion (e.g. gasification or pyrolysis) of waste streams such as refuse derived fuels, unrecyclable plastics and other wastes, which can include a mixture of biogenic and non-biogenic fractions
- Advanced conversion of non-biogenic waste streams
- Advanced conversion of waste gases from industrial processes
- Advanced conversion (e.g. gasification or pyrolysis) of biomass
- Steam methane reformation of biogas/biomethane
- Thermal Plasma Electrolysis (TPE) from biogas/biomethane or other sources

Any other important pathway that we should include?

Discussion points

- *Do you think there is a need for a business model specifically targeted at these pathways in BEIS hydrogen policy?*
- *Why the policy developments so far are not suitable for taking forward these routes to hydrogen, aside from mainly being focused on electrolysis or CCUS-enabled? This will likely be the first question from BEIS and we need to develop a clear position.*
- *Do you think BEIS has sufficient visibility of the projects being planned or is there merit in collating the pipeline of projects centrally (ie via the REA) and keeping BEIS updated on these?*
- *What do you think would be the most effective way to ensure these pathways are on BEIS' radar?*

LCHS

- The LCHS acknowledges biomass/waste conversion to hydrogen (with or without CCS)
- Most of our questions on the rules are applied to these pathways have been addressed in BEIS presentations at REA meeting hosted on 30th May (slides here, along with list of questions submitted in advance). *Do you have any questions on the standard?*
- Pathways that are not included in the standard should approach BEIS relevant team to set out their methodology to demonstrate compliance but standard review not until 2023.

Next steps

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Thank you

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