



BEIS Hydrogen BECCS Innovation Programme - Supplier Event Q&A

23rd November 2021

This document answers questions raised at the 'Hydrogen BECCS Innovation Programme Virtual Supplier Engagement Workshop' held on the 23rd of November 2021 that may be relevant to applicants to the Hydrogen BECCS Innovation Programme.

Questions have been anonymised and include those communicated verbally at the event, submitted using the XLeap digital platform, and sent via email to H2BECCS@beis.gov.uk following the event.

Category 1 - Feedstock Pre-Processing

1. Is Industrial Hemp in scope for Category 1? For instance, in Carbon Sequestration, Harvest Efficiency and Yields, Anaerobic Digestion (AD) Biogas Yields assessments and Steam Methane Reforming (SMR) bench trials to produce Carbon Negative Hydrogen?

Answer: The processing of hemp for use in advanced gasification could be within scope for Category 1.

2. Is there a list of eligible feedstocks, or would applications that rely on mixed feedstocks experience any reduction in maximum funding due to their share of non-biogenic feedstock?

Answer: Any feedstock needs to be sustainably sourced and with a proportion of biogenic content. Further detail on feedstock eligibility will be included in the Invitation to Tender (ITT). As long as feedstocks meet these eligibility criteria, there will not be any reduction in maximum funding available

3. Are waste-based feedstocks in scope?

Answer: Waste-based feedstock that includes a minimum biogenic component will be in scope. Further detail on feedstock eligibility will be included in the ITT.

4. What is the expected minimum biological content of Refuse-Derived Fuel (RDF)?

Answer: Please refer to answer to question 2.

5. Can the metric of biogenic content be published?

Answer: Please refer to answer to question 2.

Category 2 – Gasification components

6. Within Category 2, would a project that looked at syngas treatment and H₂/CO₂ separation, that could be applied to biogenic and non-biogenic feedstocks be within scope?

Answer: Yes, assuming that the project being proposed is to apply the innovation to feedstocks with a biogenic component. This competition would not fund work to develop or test technologies using non-biogenic feedstocks only. Please also refer to the answer to question 2 for further guidance on eligible feedstocks.

Category 3 – Novel Biohydrogen Technologies

7. What distinction can be made between technologies in Category 3 that are deemed as in-scope or out-of-scope?

Answer: The core technology that the application focuses on needs to be innovative, able to achieve the programme's objectives and must not have been previously commercialised. This funding is not for further work on commercialised technologies. In Category 3, we would accept technologies capable of generating hydrogen from biogenic feedstocks where the core conversion technology is not gasification. Example technologies include pyrolysis, anaerobic digestion (dark fermentation), photo fermentation. If CO₂ is produced, applicants must demonstrate that the innovation is compatible with carbon capture.

Technology Scope

8. We refer to slide 22 and would like some clarification on 'Technology Exclusions'. 'Technologies generating hydrogen from non-biologically derived sources'-can you please confirm if refuse derived fuel (RDF) or solid recovered fuel (SRF) feedstocks will be allowable given that they will contain a proportion of fossil-fuel based plastics and other materials? Are you likely to place any limit on the non-biologically derived content?

Answer: Please refer to answer to question 2.

9. 'Power generation, or generation of any fuel other than hydrogen'-to maximise the efficiency of our process we expect to produce a sustainable liquid fuel alongside the hydrogen. Can you please confirm that the production of this additional fuel will not bar our technology?

Answer: Hydrogen production should be the primary focus of the innovation, processes which also generate power or other biofuels will be considered.

10. Is Carbon Capture, Usage and Storage (CCUS) in scope?

Answer: Carbon capture is within scope for Categories 2 and 3 under certain conditions. For both categories applicants must demonstrate that carbon capture is intrinsically linked to the Hydrogen BECCS innovation. Carbon capture is not in scope if it's a standalone innovation. Innovations solely addressing Use and Storage of captured carbon are also not in scope.

11. Are carbon capture utilisation technologies included in this scope - in conjunction with innovative H₂ production?

Answer: See answer to question 10.

12. Is Pyrolysis in scope?

Answer: Yes pyrolysis would be in scope for Category 3.

13. Is this programme based solely on innovative technology solutions or can that be expanded to innovative service-based solutions?

Answer: This programme is looking to support only technology innovations and not innovations in business models or other non-technology elements of the Hydrogen BECCS process.

14. With reference to slide 17, we have an Advanced Pyrolysis technology which will include a gasification phase to optimise the production of hydrogen. We are trying to assess whether we can bid under both Categories 2 and 3 or are these mutually exclusive, e.g. Gasification projects are under Category 2 and anything else under Category 3?

Answer: Category 2 applies to technologies focusing on improving syngas quality and upgrading for generation of hydrogen. A pyrolysis technology solution would fall under Category 3 which is for innovations that generate hydrogen from biogenic feedstocks where the core conversion technology is not gasification.

15. Category 1 type of projects: We think that our technology as a pre-processing technology for gasification could be of great interest for the project. Category 2 type of projects: The syngas needs to be removed of any traces of tars to be transformed in steam reforming and water swift reactions into a rich like H₂ gas. I would appreciate if you could provide your advice for these two potential projects and the possibility of partners to help in a potential more successful application?

Answer: Technologies that pre-treat feedstock and make it more suitable for gasification (Category 1), and technologies that remove contaminants such as tar from syngas (Category 2) are eligible for this competition. It is the applicant's responsibility to decide which category to submit their application to (See answer to question 24 for further guidance on this point). Attendees of the Supplier Engagement Workshop were invited to share their contact details for networking purposes and so that collaborative applications could be explored, and this list was shared with all attendees following the event

Eligibility

16. Is it possible to confirm whether Universities or Research Centres (Centres of Excellence) are eligible to participate in the Hydrogen BECCS programme call?

Answer: Yes, Universities and Research Centres are eligible to participate in the competition, as a lead organisation, part of a consortium, partner or subcontractor. However, all applicants must be able to demonstrate a credible and practical route to market for the innovation being proposed. This will be assessed in the application process.

17. Some projects could be ready to enter phase 2 now, is that an option?

Answer: No, this programme is designed so that only projects which successfully complete the Phase 1 feasibility and planning stage are eligible to apply for Phase 2 funding.

18. There is some significant overlap with some BioH₂ BECCS projects under the other BEIS-funded 'Direct Air Capture and other Greenhouse Gas Removal' competition. If potential applicants are already working on some of these, do they need to propose a completely new solution to enter this competition?

Answer: Applicants in this situation would need to demonstrate that they are applying to the Hydrogen BECCS Innovation Programme for funding to carry out different work to the work which has been awarded funding from other sources (not limited to BEIS or NZIP programmes). They would also need to demonstrate that funding for the new work represents value for money to HM Government, and provides adequate additionality of benefit on top of the existing funding received.

19. Any conditions/possible restrictions regarding participation of outside-UK companies (EU) - as a part of consortium with UK leading partner?

Answer: The project lead must be a UK registered company, academic, research, public, third sector or community organisation. Companies based outside the UK can participate as part of a consortium, as a partner or subcontractor. Activities funded in this competition must be conducted largely in the UK, and the majority, over 50%, of the eligible activity (resources and goods) must be incurred in the UK.

20. Are bioenergy producers to submit applications in conjunction with technology developers, or are developers expected to apply individually?

Answer: Bioenergy producers and technology developers collaborating on a particular solution can apply together, although a lead applicant will be required for contracting purposes.

21. Can bioenergy producers submit in conjunction with a partner technology developer?

Answer: Yes, either of those organisations could be the lead applicant, partner, subcontractor or part of a consortium of bidders.

Application Process

22. Can we see more clarity in how applications are graded and how scores are given?

Answer: Full details of the bid assessment criteria, their weightings, and the scoring and moderation processes will be made available in the competition ITT.

23. Innovate UK has a very transparent application process, with clear assessment standards, checks and balances where reviewers disagree and there is feedback for applicants. Is it possible to use that for this competition?

Answer: BEIS will publish guidance notes with the competition ITT, which will include clear and transparent information on the assessment and feedback process, please refer to these rather than Innovate UK guidance.

24. How will assessment be carried out in case of a certain technology containing two different categories, e.g. feedstock pre-treatment and syngas generation/upgrading?

Answer: Applicants will need to select a single category when they make their application, and the application will be assessed in this category. Applicants can only apply to one category per project. BEIS will not reallocate any projects to other categories based on suitability, therefore applicants take full responsibility for which category they are assessed within. Applicants can submit applications for more than one project, see question 51.

Financial Information

25. Does the £250k have to cover staff costs in phase 1, as there would be little left for an engineering consultancy if so?

Answer: Yes, staff costs are considered an eligible cost and therefore must be included in the total project cost. The total of all eligible costs associated with the project must come to £250K or below, and these must be 100% funded by BEIS.

26. Are there any limitations on company overhead values?

Answer: Overheads must not amount to more than 50% of the value of the contract, and as a guide, BEIS would not expect overheads to amount to more than 20% of the value of the contract unless fully justified. All eligible costs, including overheads, must be justified.

27. There's no way of knowing how much Phase 2 would cost before undertaking a feasibility study - how should we comment on price with so many unknowns before a Phase 1 study?

Answer: BEIS only expects an estimation of costs for Phase 2 projects in the Phase 1 application, although it is expected that the Phase 2 cost estimation will not exceed the cap stated in the ITT for Phase 2 projects. Each project's Phase 2 costs are expected to be refined throughout Phase 1.

28. With price volatility of the market at the moment, how can projects realistically assure BEIS that they will be in £5m. What if the project by unforeseen necessity goes over budget in phase 2? Does the project just get shut down? isn't that a waste of public funds?

Answer: The principles of an SBRI project involve both funder (BEIS) and the applicant sharing the risks and benefits of the project. In return for provision of funding and non-financial support during demonstration activities, BEIS require the project team to fund any additional costs that arise during the project. Please also note that the maximum cost per Phase 2 project will be confirmed in the ITT, and this may differ from the £5m presented at the Supplier Engagement Workshop.

29. Accepting the SBRI is a competition, what is the position on an academic applicant using a Full Economic Cost basis for their justification of costs?

Answer: As long as the costs proposed for the project are eligible (details of eligible costs will be published in the ITT), then applicants can justify their costs with their preferred method in their application. Applicants must also show that all eligible costs represent good value for money to HM Government. Please also refer to the answer to question 25 around limits on overhead costs.

30. Can a project be co-funded to best utilize BEIS funds - If a company were able to also contribute X£ to a project would this be acceptable - E.g if a company wanted to invest £2M + BEIS £5M is this acceptable?

Answer: No, eligible costs for projects in this competition must be 100% funded by BEIS, and be within the maximum value stated in the ITT.

31. Do the program payment terms align with the project proposal timings agreed with suppliers and project partners, or are the payment timings expecting to be governed by BEIS?

Answer: BEIS will not make payments in advance of need and typically makes contract payments in arrears on satisfactory completion of agreed milestones and deliverables. BEIS understands, however, the difficulties which small businesses may face when financing this type of project. BEIS will explore cash flow issues with the applicant as part of developing the financial and milestone profile during the Contract Award process. BEIS will offer flexibility in terms of profiles and payments, within the confines of the requirements for use of public money within which it operates.

32. Is there a roughly even split between the categories, or is this subject to the applications received?

Answer: Yes in the Phase 1 competition the budget will be allocated equally between the three categories, assuming there are enough high quality applications (above 60% score) to use up the budget in each category. Otherwise, any remaining budget will be reallocated to other categories. For Phase 2, the maximum project costs and budget allocations may differ between categories to encourage a balanced portfolio of innovations progressing to demonstration. This will be outlined in the ITT.

TRL

33. Is TRL 1-3 relevant to this innovation programme?

Answer: It is unlikely that innovations at TRL 1-3 will be included in this competition. The aim of the programme is to promote commercialisation and subsequent deployment of technologies which will contribute to UK government targets for hydrogen production and negative emissions within the next 10-15 years, therefore we deem TRL-4 as an appropriate minimum starting point. The eligible TRL range will be confirmed in the ITT when it is published.

Commercial

34. With respect to funding & retaining IP; How is BEIS defining commercialisation. Please clarify including examples.

Answer: With respect to retention of IP as a term in the conditions of contracts awarded in this competition (as presented at the Supplier Workshop: Slide 30, bullet 3), BEIS defines 'commercial exploitation' as any activity carried out with the aim of progressing the technology towards commercial deployment.

35. Please also clarify if the IP, for non-funded projects, is also adopted for commercialisation by BEIS if the participant hasn't also commercialised its own IP after 5 years.

Answer: We assume you are referring to the term in the conditions of contracts awarded in this competition (as presented at the Supplier Workshop: Slide 30, bullet 3). The contract T&Cs state: “ *If, within five years of its creation, any Arising Intellectual Property has not been commercially exploited by the Contractor the Contractor shall **if requested** by the Authority assign the Arising Intellectual Property to the Authority.*” This term applies equally to all projects funded within this competition, however it is unlikely that BEIS would request to take up the IP of projects which do not progress from Phase 1 into Phase 2.

36. There is some concern about IP disclosures by technology developers/providers. For example, see attached a sample contract from the Welsh Government for a Hybrid competition, where similar obligation may apply... Article 16.3 states “ The Contractor hereby grants to the Welsh Ministers and, where appropriate, the Crown, a UK wide, irrevocable, royalty-free, non-exclusive licence, together with the right to grant sub-licences, to use or publish any Intellectual Property rights in the Results in any medium for such purposes as the Welsh Ministers shall in its absolute discretion deem fit.” Will such a clause exist in the H2 BECCS competition contract? If yes, could it be modified to minimise public disclosures around IP?

Answer: The terms and conditions contain these comparable clauses regarding rights around IP under **27 Intellectual Property Rights:**

(3) The Contractor hereby grants to the Authority a worldwide, irrevocable, royalty-free, non-exclusive licence at no cost to the Authority, together with the right to grant sublicences, to use or publish any Arising Intellectual Property, Data, results, outcomes or conclusions which are created as part of the Services, for its non-commercial purposes.

(4) The Contractor hereby grants to the Authority a worldwide, irrevocable, royalty-free, non-exclusive licence at no cost to the Authority, to use any Background Intellectual Property used in the performance of the Services, that is essential to the functioning and use of the Arising Intellectual Property for its non-commercial purposes.

There will be no modification to minimise public disclosures around IP.

37. Slide 30 references liability limits for Phases 1 and 2. Can you explain what the ‘liability’ is?

Answer: The full terms and conditions will be supplied with the competition guidance, but the liability could include for example (amongst other things) liability for fraudulent misrepresentations upon which the other party has relied.

Policy

38. Has the panel considered the cost of CO2 disposal & long-term underground storage from the perspective of taxation?

Answer: Transport and storage costs are being considered, however the details of taxation haven't been ironed out yet. It may depend on the type of energy being produced alongside BECCS, but we are at an early stage of determining that.

39. In relation to biomass for hydrogen production, has the panel considered the overlapping contentious issue of food crops vs fuel crops? Similar parallels can be made to the issues that biodiesel faced.

Answer: A focus of the Biomass Strategy and related work is around sustainability criteria which will include issues such as food crops. This is an important strategic issue.

40. Has the biomass strategy been published / is available for review?

Answer: The biomass policy statement has been published and is available [here](#). The biomass strategy will be published in 2022.

41. Does the biomass policy statement consider the use of PAS110 compliant digestate, for example from anaerobic digestion over synthetic ammonium nitrate?

Answer: It does touch upon the use of digestate but it is not that specific.

42. Will the outputs be published at the same time as the biomass strategy?

Answer: The biomass strategy will be published in 2022. If by outputs you are referring to outputs from phase 1 of the programme, phase 1 will be complete by the end of 2022. Non-confidential information from Phase 1 project reports will be published.

43. Regarding biomass feedstocks, will BEIS be carrying out any supply chain mapping of available volumes in the UK or will it broadly refer to potential and types of feedstocks?

Answer: BEIS is funding an update to the UK and Global Bioenergy Resource Model to feed into the Biomass Strategy. The model update will deliver an improved understanding of the spatial potential of feedstock supply within the UK at a regional level.

General

44. Is this competition being run and supported under Lot 3 of the Net Zero Innovation Portfolio Third Party Technical Support program (which includes bioenergy with carbon capture and storage (BECCS) and CCUS) or under Lot 5 (which includes bioenergy and hydrogen)?

Answer: This programme is being run with internal resource by BEIS, with some additional support from the Technical Third-Party Support (TTPS) contract procured by BEIS to assist with the delivery of the Net Zero Innovation Portfolio (NZIP). For this programme TTPS will provide support in the development of the competition guidance, assessing bids and monitoring funded projects. Lot 3 of TTPS has been used for developing the competition guidance, and it has not yet been determined which of the TTPS Lots will support bid assessment and project monitoring. TTPS consists of five contracts (Lots) to provide a breadth of technical expertise, with services provided by:

- Lot 1: Pricewaterhouse Coopers LLP (technical coordination)

- Lot 2: Technopolis (social research and evaluation)
- Lot 3: Mott MacDonald (carbon control and storage)
- Lot 4: AECOM (energy consumption)
- Lot 5: Frazer-Nash Consultancy (energy generation and distribution)

45. Is the competition being run internally by BEIS throughout the 4 years, or will BEIS be tendering for any support via external delivery partners?

Answer: See answer to question 43.

46. You mentioned “supporting regional economies”. Are additional points given for work done outside of London / SE?

Answer: In the application process, bidders will be expected to outline the potential for the proposed project to generate social value. The scoring of this criterion will not be weighted in favour of particular UK regions, but bidders will have the opportunity to explain how the location of the project could enhance the social value gained. The full assessment criteria for the competition will be published with the ITT.

47. I work for a commercial Anaerobic Digestion operator. If I were approached by a technology provider who wanted to use one of our commercial plants for a pilot study - would this be eligible?

Answer: Yes, the testing of technologies is a key component of this programme, so using an appropriate existing facility (whether it is a commercial plant or not) to test the innovation being developed would be an eligible component of a project, as long as the innovation itself has not yet been operated widely or commercially. Please note that a single application would need to be submitted that combines the design, development and testing of the innovation.

48. Will applicants be made aware of third-party consultancy such as DNV GL or another?

Answer: Use of any third parties by BEIS will be communicated transparently in the ITT. Please also refer to the answer to question 43.

49. Can vertical farming be used as a measure for food crops within the farming industry when using biomass to produce renewable energy fuel?

Answer: Projects must demonstrate that they are within the scope of one of the three categories outlined on slide 17. The fuel produced by projects in categories 2 and 3 must be hydrogen.

50. Can you confirm that the slides and recording of this session will be made available?

Answer: The slides will be made available, but not the recording.

51. Can you have a company working on all three categories?

Answer: Lead organisations may enter only one application into each Category as the project lead. Companies other than the lead organisation are permitted to be involved in multiple applications within each category.

A technology provider/OEM is limited to one application for a particular technology/solution requiring development per Category.

If project consortium member(s) are part of multiple applications they must be able to demonstrate that they can deliver on them if they were all successful in receiving funding, and they must not have applied for funding for the same piece of work more than once.

52. *[For the demonstrator timeframe, it is likely a Regulatory Position Statement (RPS) may be required if “pilot” plant kit expecting to be built RPS can take months to acquire from the Environment Agency – will BEIS assist with RPS applications if/where required?]* Will BEIS assist with Regulatory Position Statements (RPS) applications if required?

Answer: BEIS is in contact with the Environment Agency to understand any potential implications of the RPS timeframes on this programme. Any guidance on this subject will be made available either in the ITT or to funded projects in Phase 1.

53. Can a demonstration be run over multiple sites where different stages of an identified process cannot be co-located?

Answer: Yes, providing that the different stages are integral to the Hydrogen BECCS process, and in Categories 1 and 2, the steps being demonstrated must be within the technology scope of the category.