

01 Technical experience in the TCP area

01a – Understanding of the sector in the UK and internationally 20%

I am an expert in hydrogen generation and use, [REDACTED]
[REDACTED] In addition to my technical understanding of the material, process and system requirements of hydrogen technologies, I have expertise in their policy and market challenges through leading a UK-based network for knowledge exchange between academia, industry and government specifically around hydrogen [REDACTED] This consortium has a strong national and international presence and reach through, e.g., UK-based government bodies as well as several global companies.

Markets, standards and regulations

I am highly knowledgeable about hydrogen's national and international role in the transportation, energy and chemical industry landscapes [REDACTED]

Standards and regulations are particularly important in the context of hydrogen, both for clear information and safety indicators for the public to ease adoption as well as in metrics such as standard accelerated stress tests (ASTs) for the development of improved, longer lasting technologies. [REDACTED]

Technologies, innovations and research areas

[REDACTED]

[REDACTED]

Knowledge gaps, barrier and issues

[REDACTED]

References

[REDACTED]

Two Research Topics for Hydrogen TCP Tasks


Tasks are a critical component of TCP endeavours and facilitating crystallisation of knowledge and effort along a particular research direction. They are global in nature, requiring four countries to participate, and thus adept at revealing international best practices.

Research Topic 1: Precision Hydrogen Deployment. Hydrogen technologies will be an essential part of our future energy portfolio. However, they are numerous and usually suited to some, but not all sectors needing decarbonisation. This is further complicated by fact that given the scale of proposed activities, their application is more appropriate in certain geographical locations than others. This complex relationship complicates future planning of new or repurposed infrastructure. Therefore, research into underlying factors, complemented by international case studies would provide much needed guidance for industry and government bodies to pinpoint opportunities and enable the hydrogen economy.

One such exemplar of this approach is the development of a “Hydrogen Corridor” along the Thames Estuary. Here, significant hydrogen production facilities are planned along this body of water that acts as a conduit between the UK via East London to the EU. The main users of this hydrogen would be maritime shipping – a sector well suited decarbonisation via this route. Opportunities exist between UCL East (based in East London) and this development to form a national hub for hydrogen research. A catalogue of such developments nationally and internationally would facilitate new synergistic developments in a similar vein.

Research Topic 2: Standardised Metrology for Hydrogen Technologies. The coming decades will demand next generation electrolyzers and fuel cells with improved efficiency and lifetime. However, research and development, both in academia and industry, is hindered by non-standard measurement practices and reporting. These issues prevent the rapid technological process required by ambitious Net Zero goals.

A key area for standardisation is in accelerated stress tests (ASTs). These prescribe short, intense testing protocols which should mimic long term (>10 years) operation and the corresponding degradation. Some ASTs have been published, but there is little consistency between tests or explanation given for protocols, especially if they are published by companies. Additionally, how well they represent the aged systems of interest is often controversial or, in the case of newer state-of-the-art technologies, completely unknown. Approaches that couple multiscale characterisation on realistic, stack-level systems would greatly aid in the rational design of next generation ASTs. This represents an opportunity to establish the UK as a leader in a critical area



Capability to Chair at a level commensurate with the role

[REDACTED]

[REDACTED]

Expertise: Hydrogen Technologies, Materials for Energy, Electrochemistry

PROFESSIONAL POSTS

[REDACTED]

[REDACTED]

[REDACTED]

5.

[REDACTED]

4.

3.

2.

1.

ORGANISATION OF MEETINGS

[REDACTED]

TEACHING ACTIVITIES

[REDACTED]

[REDACTED]

AWARDS

[REDACTED]

INVITED SEMINARS/TALKS

[REDACTED]

SERVICE AND AFFILIATIONS

[REDACTED]

02 Links with community in the technology area 20%

My broad interests in the technical and commercial aspects of hydrogen mean I have diverse links spanning industry, government and academia.

Industry, Government and Regulators

[REDACTED]

[REDACTED]

03 Knowledge transfer plan 10%

The feedback loop central [REDACTED], i.e., input from experts to inform tasks and wide dissemination/use of outputs, relies on a dynamic and far-reaching underlying network populated from academia, industry and government. [REDACTED]

[REDACTED] We will host 40 to 50 industry/government/university representatives with the initial purpose of wide dissemination, with iteration and fine-tuning of collaborative directions occurring in the normal schedule of planned network workshops (~4 planned per year). During these activities, working papers of the Annual Report for the IEA and the TCP Annual Report for BEIS could be provided to attendees. Feedback from participants, along with key insights from the annual workshops could be incorporated before final submission of the reports. Discussion of which conferences to attend is a common topic during these sessions and this alignment would imitate new and strengthen existing relationships.

Additionally, [REDACTED] will be heavily utilised to grow and maintain a group of interested parties. Expansion will include [REDACTED] as well as others in academia, industry, and government in the UK and beyond with an interest in the role of hydrogen in the future energy landscape. [REDACTED] used to manage and develop a broader pool of interested experts from which to draw expertise into new Tasks and findings can be disseminated.

In summary, knowledge transfer from [REDACTED] to BEIS through the Primary Delegate will accomplished through participation in workshops and the [REDACTED] account in addition to regular informal communication and ExCo meetings. Alignment meetings between the Primary and Alternate Delegates will be held after circulation of the ExCo pre-meeting documentation and prior to each ExCo meeting to ensure clarity and efficiency. Additionally, meetings will be held between each ExCo on issues of broader interest to BEIS [REDACTED]

[REDACTED] Through these activities impact will be realised far beyond the scope of the 5-year AD term.

Plan for integrating the role with existing responsibilities

[REDACTED]

Planned communication style with the BEIS delegate

In addition to the structured communication outlined in the Knowledge Transfer plan above, I plan to organise introductory meetings (in-person if possible) and maintain regular informal email and phone communication with the BEIS Primary Delegate.

Plan for participating in IEA TCP annexes and working groups

Achieving maximum impact through the Hydrogen TCP will require cooperation with other TCPs. I will actively seek out opportunities to do this with the Users, Energy Storage and Energy in Buildings and Communities TCPs for example. I will reach out via email, TCP LinkedIn pages and invitations to H₂ Innovation Network events.

Plan for delivering the suggested tasks (all stated durations are per year)

General tasks (11 days)

- Attending Executive Committee (ExCo) Meetings: **4 days**. I expect at least 1 days' worth of preparation to be required before each meeting: to scrutinise the previous agenda, synthesise updates on assigned tasks, produce required reports/presentations and coordinate with the Primary Delegate. [REDACTED]
- Gathering information for an annual report: **2 days**. This task will begin with contacting UK-based members of my network to distil a UK perspective. This will be integrated with insights from appropriate strategy documents from BEIS, UKRI, National Grid, major industry bodies such as Energy UK and consortia such as the UK HFCA and the Scottish HFCA.
- TCP administration, meeting minutes, invoicing: **1 day**. Through discussions with Primary Delegate and in accordance with BEIS requirements.
- Coordinating a National Team and relevant ad hoc meetings: **3 days**. 02 See Knowledge Transfer Plan. These may be held online and organised ad hoc. Their frequency will be evaluated based on BEIS needs.
- Producing a report of TCP activities for BEIS: **1 day**. This will require This will need to be augmented with additional material on UK participation in each of the Tasks, and a section reflecting on the continued alignment of the Tasks outputs with broader UK activity and BEIS interests.

Additional tasks (13 days)

- [REDACTED] **4 days**. From discussions with

previous [REDACTED], responsibilities will include preparation of papers and meetings to attend to properly represent the interests of [REDACTED]

- Developing a Programme of Work for new research project: **5 days**. First, I will solicit advice from leaders of successful research projects and seek to employ it, if appropriate, in projects based on the topics identified in Section 01b. Substantial time will be dedicated to recruiting national and international experts and designing a logical Programme of Work.
- Active participation in a sub-task led by another country: **4 days**. Early on I will identify several sub-tasks of interest and discuss them with the General Delegate. 2-3 options will be chosen and approached for involvement. Generally, I will look to encourage current member countries to join Tasks, as well as working with Task leaders to encourage non-member countries and organisations to become involved as full members or as Task sponsors.

Example high level timetable showing periods of unavailability

I have a large degree of control in how my time is allocated [REDACTED]
[REDACTED]