

Clean Hydrogen Mission R&I Workshop: Opportunities, Challenges and Way Ahead

4 August 2022

13:00-14:30 hrs (CET)

The Clean Hydrogen Mission is part of Mission Innovation's commitment to a decade of clean energy innovation, aiming at advancing more competitive end-to-end clean hydrogen value chains and infrastructure. Despite its potential to decarbonise hard-to-abate sectors such as heavy industries, which are responsible for approximately 60% of global emissions¹, clean hydrogen is currently not cost competitive. The cost of clean hydrogen today, depending on specific regions, can be up to three times more expensive than hydrogen produced directly from fossil fuels. The goal of the Clean Hydrogen Mission is to reduce the costs of clean hydrogen to the end user to USD 2/kilogram by 2030. This will be achieved by stimulating innovation in technologies and industrial process; by delivering at least 100 large-scale integrated hydrogen valleys worldwide; and fostering collaboration with other initiatives to identify and overcome deployment barriers, such as standards, regulations and demand-pull.

With its cost target and its overarching ambition to establish a global clean hydrogen economy, the Mission will be actively working with partners and existing initiatives to deliver a range of outcomes that facilitate a shared understanding of the existing landscape, stimulate international cooperation and achieve consensus on funding innovation to grow scale and reduce cost along the value chain. The Mission also seeks to create a collaborative platform for sharing knowledge and disseminating information on targeted research and demonstration that aligns with other hydrogen initiatives such as sharing insights on the cost reduction potential for clean hydrogen, and can integrate innovation with commercialisation of technologies.

Against this context, the Mission is organising a workshop with coalition partners with a specific focus on the identification of needs and barriers facing the rapid deployment of technology and innovation in clean hydrogen across the entire value chain. The workshop offers to accelerate knowledge diffusion among Mission members by providing a platform for learning by sharing on many key issues likely to impact the demonstrations of future uses for hydrogen.

The Mission will also use the workshop to launch its Working Groups on Production and Distribution & Storage to oversee relevant strands of activities within the R&I Pillar.

¹ <https://www.iea.org/articles/the-challenge-of-reaching-zero-emissions-in-heavy-industry>

Time (CET)	Agenda	Details
13:00- 13:10	Welcome and Introduction to Clean Hydrogen Mission	
13:10-13:25	<p>Cost Reduction Potential for clean hydrogen – an overview from IRENA</p> <p>Presenter: Herib Blanco, Analyst – Hydrogen Energy (Power to X), IRENA</p>	<ul style="list-style-type: none"> - The presentation will cover two parts of the value chain: hydrogen production through electrolysis and long-distance transport and it will go through 3 aspects in each part: (1) cost drivers (what the largest cost contributors and levers for cost reduction are); (2) Innovation gaps (areas where research could lead to a significant cost reduction); (3) cost outlook (what long-term costs could be achieved if all the benefits of deployment and innovation are reaped). The presentation will not cover small-scale transport (trucks, railway) or storage.
13:25-13:40	<p>Analysis of main challenges for rapid H2 deployment – Hydrogen TCP</p> <p>Presenter: Paul Lucchese, Chair, Hydrogen Technology Collaboration Programme (Hydrogen TCP)</p>	<ul style="list-style-type: none"> - The presentation will make a quick overview on the main challenges we face for rapid hydrogen deployment worldwide, such as: specific frameworks that incentivize hydrogen, addressing concerns on resources, safety, societal impact, continued R&D towards optimization of mature technologies (scaling up) and upgrading TRL for others, and, of course, reduction of costs in all steps of the value chain. International collaboration will be critical to solve all these challenges, and Hydrogen TCP Tasks will be a key tool in this endeavour.
13:40-13:50	<p>A global overview of Hydrogen RD&D – CSIRO, Australia</p> <p>Presenters: Dan O’Sullivan, Program Manager, Hydrogen RD&D, International collaboration, CSIRO Energy, Australia and Vicky Au, Acting Mission Lead (Engagement & Strategy Lead), CSIRO Hydrogen Industry Mission, Australia</p>	<ul style="list-style-type: none"> - CSIRO, Australia’s national science agency, is pleased to share some of its recent initiatives for strengthening international RD&I connections, engagement and knowledge sharing for the purpose of clean hydrogen industry development alongside the materials it has currently developed to support this work. The presentation and materials may help provide a framework for attendees exploring similar objectives of increasing international engagement and knowledge sharing to accelerate clean hydrogen industry development.
13:50-14:05	<p>Global industry perspective – Hydrogen Council</p> <p>Presenter: Daria Nochevnik, Director Policy & Partnerships, Hydrogen Council</p>	<ul style="list-style-type: none"> - TBC
14:05-14:20	<p>Hydrogen Testing and Production Blueprint: Gap Analysis and Next steps</p> <p>Presenter: Robert Sorrell (FRSC), Independent Technology and Policy Advisor, Henry Royce Institute, UK</p>	<ul style="list-style-type: none"> - An overview of the key materials R&D challenges to enable widescale hydrogen deployment in a 2050 timescale built from engaging a wide cross section of industry and academic stakeholders across hydrogen production, storage & distribution, and end use. This short presentation will focus on the materials challenges in hydrogen production, focusing on electrolysis, and materials testing.
14:20 – 14:30	Discussions, Launch of Working Groups, Announcement of Open Call and End of Meeting	

Speaker Bios	
<p>Dan O’Sullivan Program Manager, Hydrogen RD&D, International collaboration, CSIRO Energy, Australia</p> <p>Vicky Au, Acting Mission Lead (Engagement & Strategy Lead), CSIRO Hydrogen Industry Mission, Australia</p>	<ul style="list-style-type: none"> - Dan has been with CSIRO since 2016 setting up and managing collaborative industrial research. He was Deputy Director for the GISERA onshore gas environmental and social science research program for five years turning an \$11m research program in Queensland to a \$36m national program connecting industry, policy, and local communities across six states and territories. In 2021 he took up the International Hydrogen Research Collaboration Program Manager role to help address the considerable uncertainties related to cost, efficiency, and technology development. Prior to CSIRO, Dan held various roles in clean energy development across industry and government including sustainability manager for Origin energy, energy trading at Tullett Prebon, and the NSW and Queensland governments at the director level. He holds a Master of Environmental Law, Bachelor of Science, and Bachelor of Economics. - Vicky Au co-developed CSIRO’s Hydrogen Industry Mission which has the goal of enabling Australia’s hydrogen industry development through major collaborative research partnerships between industry, government, CSIRO and the broader research community. Vicky has previous experience at a senior executive level leading the strategy development and expansion of business advisory practices in innovation, R&D and technology in diverse markets. More recently, she project managed CSIRO’s research informing the Federal Government’s First Low Emissions Technology Statement of clean hydrogen under \$2/kg, the State of Hydrogen 2021 report and the launching of CSIRO’s Hydrogen Knowledge Centre. Vicky has a PhD in Physics from the ANU, is a graduate of Harvard Business School’s accelerated eMBA and qualified as a CPA.
<p>Daria Nochevnik, Director for Policy & Partnerships, Hydrogen Council</p>	<p>Daria Nochevnik has spent the last decade working in energy and climate policy and regulatory affairs presently as Director for Policy and Partnerships with the Hydrogen Council.</p> <p>Prior to joining the Council, Daria has held strategic advisory roles in the sector working with policymakers and industry on the enabling policy frameworks for hydrogen, energy market regulation, as well as carbon pricing mechanisms and certification systems.</p>
<p>Herib Blanco, Analyst – Hydrogen Energy (Power to X), IRENA</p>	<ul style="list-style-type: none"> - Herib Blanco works at the International Renewable Energy Agency focusing on hydrogen and Power-to-X. He helps coordinating the Collaborative Framework on Green Hydrogen which is a platform for public-private dialogue to advance the deployment of green hydrogen and performing cutting-edge analysis at a global level. He has worked on hydrogen for the last 6 years including tenures at the European Commission and the International Energy Agency covering the entire value chain from production to infrastructure and end use from a technical, economic and policy perspectives. Before that, he worked for 7 years in oil and gas in various countries and roles covering research, project management and execution, operational support, and feasibility studies.

<p>Paul Lucchese, Chair, Hydrogen TCP</p>	<ul style="list-style-type: none"> - Paul Lucchese, Hydrogen TCP Chair and Head of the New Energy R&D programme at CEA (French Public Research Institute). Mr Lucchese has been in the hydrogen and fuel cells field since 2001, actively involved in national (Vice-chair of the French Hydrogen Association), European (Chair of Hydrogen Europe Research for 8 years, member of the FCH JU Governing Board) and international (Chair of the Hydrogen TCP since 2017) organizations. <p>His background includes a Nuclear Engineering Degree at the <i>École Centrale de Paris</i> (1983) with a specialty in two-phase flow thermohydraulic, followed by a Master’s in Applied Chemistry. Among the activities he currently carries out are the intervention in conferences and events, the review of reports, strategies and roadmaps, and the participation in diverse scientific committees.</p>
<p>Robert Sorrell (FRSC), Independent Technology and Policy Advisor, Henry Royce Institute</p>	<ul style="list-style-type: none"> - Bob Sorrell is the Hydrogen Challenge Lead for the Henry Royce Institute. Prior to that he was BP’s Vice President for Research & Innovation for BP’s global Formulated Products (Fuels and Lubricants) Technology, and also BP’s technology policy advisor for the UK and EU. Robert joined BP in 1987 from Durham University having earlier completed his PhD at Cambridge University.

