Public Acceptance of Hydrogen Event 2022
Summary Report

DECEMBER 12 2022

A COLLABORATION BETWEEN

QUT  SWINBURNE UNIVERSITY OF TECHNOLOGY  VICTORIAN HYDROGEN HUB  FUTURE ENERGY EXPORTS
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Damian Dwyer, Deputy CEO – APPEA

Gemma Harrison, Business Development Manager – AMPOL

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The organising team, Dr Ellen Tyquin, Prof Amisha Mehta, Prof Cameron Newton, Dr Kim Beasy and Gordon Chakaodza, would like to thank the Queensland University of Technology (QUT), Swinburne University of Technology’s Victorian Hydrogen Hub (VH2) and the Future Energy Exports CRC (FEnEx CRC) for their funding contribution that made this event possible.

We acknowledge and pay our respects to the First Australian Elders past, present and future, of those lands on which we have collaborated in bringing this event together, including Wurunderi, Turrbal and lutruwita. We acknowledge, respect and value First Nation peoples ongoing custodianship of Country and recognize the integral role that First Nation communities do and should have in advancing hydrogen energy in Australia.
General Details
Public acceptance of hydrogen: Evidence, observations, and a pathway forward
29th November 2022
9am - 3.00pm
InterContinental Melbourne Hotel, Collins Street, Melbourne CBD

Event Overview
The event provided an opportunity to reflect on current research and practice related to public acceptance of Australia’s emerging hydrogen industry and to identify a future research agenda to support the industry’s growth and development. Research findings from recent national survey data established the Australian community’s current knowledge, support, and acceptance of hydrogen in both domestic and export contexts and informed discussions alongside a panel session with government and industry representatives. Interactive workshops were held with industry, government, and researchers to discuss important issues and identify core principles to guide future efforts to build and maintain public acceptance and research priorities for FEnEx CRC.

Event Agenda
- Welcome and Acknowledgement of Country
- Keynote Presentations
  - National survey data presentations: A snapshot of current evidence
    - Dr Ellen Tyquin (QUT)
    - Dr James Williams (Swinburne)
- Panel Presentation
- Observations from Government and Industry
  - Victoria State Government - David Oglesby, Assistant Director, Industry Engagement and Development (DELWP)
  - APPEA - Damian Dwyer, Deputy CEO
  - AMPOL – Gemma Harrison, Business Development Manager
- Facilitated Workshop
  - Developing core principles for future engagement on building public awareness and acceptance of hydrogen
- Net Zero Australia Presentation
  - Mr Richard Bolt (Principal Director – NOUS Group) and Emeritus Professor Robin Batterham (Independent Member and Chair – Net Zero Australia)
- Facilitated Strategy Workshop
  - Guiding future research priorities for the FEnEx CRC’s Market and Sector Development research program
Outcomes and Deliverables

As both QUT and Swinburne University researchers have run recent national surveys that explore the Australian public’s perceptions, opinions, and acceptance of hydrogen in domestic and export contexts, this event provided an opportunity to share these findings with industry and government stakeholders and gain exposure for the research being conducted on this topic. It aimed to inform and determine future research collaborations between academia and industry, while also providing current and potential HDR students an option to connect and learn more about the research being conducted in this field. Key deliverables from the event included:

- **Development of core principles for ongoing community engagement.** The facilitated workshop part of the event was used to generate insights from current practice in community engagement and inform principles that can help guide future community engagement and strategic communication to build and maintain public acceptance of Australia’s hydrogen industry.
- **Identification of future research projects.** The discussions throughout the event have been utilized to refine and inform potential research projects within the areas of public acceptance and wider social science space that could ultimately be funded via VH2 and the FEnEx CRC.

Attendees

The event was advertised via LinkedIn, collaborators email distribution lists, as well as relevant newsletters. The event reached capacity after three days, at which point the number of attendees was increased from 50 to 80 people. Of the 80 participants who registered, 39 attended on the day. Over half of those that did not attend sent apologies. The following stakeholders were represented:

**University Institutions**
- Swinburne University
- Queensland University of Technology
- University of Melbourne
- Monash University

**Industry and Associations**
- Ampol
- APPEA
- Australian Pipelines and Gas Association
- BlueGas Technologies Pty Ltd
Keynote Research Presentations

Dr James Williams – Public perception of hydrogen

Dr James Williams presented findings from a national survey that explored the relationships between knowledge, acceptance of myths, political ideology, and support for hydrogen. Key findings from this study included:

• Support for hydrogen is broadly high
• Support is higher for green hydrogen than blue or grey hydrogen
• Knowledge about hydrogen is low
• Knowledge about hydrogen is related to support for hydrogen (with this effect strongest for green hydrogen)
• Acceptance of hydrogen myths did not predict support for hydrogen
• No evidence of a “reverse halo” effect was found when exploring perceptions of a fossil fuel company investing in green hydrogen.
Dr Ellen Tyquin – Public acceptance of the hydrogen export industry: How much does where you live matter?

Dr Ellen Tyquin presented findings from a national quasi-experimental study that investigated the Australian public’s acceptance of hydrogen exports based on their location and tested the impact of different message framing techniques. Key findings from this study included:

- There are common trends across Australian States and Territories regarding acceptance of hydrogen exports and when Australia is expected to develop a viable hydrogen export industry.
- Regional community members responded more positively to two-sided or balanced messages about the hydrogen export industry, compared to metropolitan based community members.
- For regional community members, negative messages about hydrogen are best counteracted by messages that focus on the environmental benefits of a hydrogen export industry, compared to the economic benefits.

Panel Presentation

An industry panel presentation was convened with representatives from industry, government, and commercial partners. The panel comprised:

David Oglesby, Assistant Director, Victoria State Government - Industry Engagement and Development (DELWP)
Damian Dwyer, Deputy CEO – APPEA
Gemma Harrison, Business Development Manager – AMPOL

Session Discussion and Highlights

The panel session provided participants with an opportunity to ask questions of panelists relating to their experiences and thoughts about advancing hydrogen technologies. Key points from the panel session are identified below:
• Question themes included lessons learnt; relevance of other industry’s experiences; Chevron Gorgon; and, community perceptions of hydrogen safety including the Hindenburg and gas blending.
• Participants were particularly keen to hear about the ways in which Chevron Gorgon has influenced community perceptions and further advancement of CCS. Damien was able to provide some insights into the dangers of high community expectations and the difficulties in managing these once they are set.
• A discussion relating to community perceptions of hydrogen blending ensued, in particular, community perceptions of hydrogen safety. David referred to the HySA project and noted that any community anxiety had been appropriately managed and that this project is a successful demonstration of hydrogen blending in community.
• While the Hindenburg incident was raised by participants, panelists suggested that it seems to be older generations that have this (mis-informed) event as a reference point, while younger generations do not seem to have the same knowledge and associations.

Facilitated Workshop - Developing core principles for future engagement on building public awareness and acceptance of hydrogen

The facilitated session encouraged participants to talk in small groups using the following three prompts:
• Insights and Experiences of Community Engagement
• Practices in support of Community Engagement
• Opportunities for Community Engagement.

Summary of Highlights

Insights and Experiences
• Blending hydrogen into the gas network was initially something that people needed to be reassured about given perceived safety concerns.
• In other projects, safety concerns related to construction (e.g., trucks reversing and heavy vehicles) rather than the project, or specifically about hydrogen.
• There is always nuance when it comes to each community and the questions/concerns/benefits that exist which need to be acknowledged.

Practices
• Learnings from industry representatives included 'engaging early, engaging often' and that environmental benefits seem to be the hook.
• Ensuring that engagement should not be undertaken too hard too early on. This ensures that expectations within community are managed in relation to what can be delivered.
• Utilising external organisations who are seen to be independent from organisations have proven valuable.
Opportunities

• Engaging with First Nations people.
• Viewing and experiencing engagement including demonstration facilities as a positive for community, that can contribute toward building a positive community identity around hydrogen - something community 'can be proud of'.
• Engaging community in and about hydrogen is needed to create momentum for the industry.
• Bringing divergent views together to discuss specific projects as a way to generate understanding and reflect upon different perspectives.
• Sharing project case studies/research is preferred over generalized understanding of community perceptions
• Training and engagement of first responders is needed.
• Defining who and what makes a community as current practice may prioritise commercial or business communities but later work will need to engage general public.
• Exploring the potential of hydrogen's contribution to energy security and how this framing may further community support.

Net Zero Australia Presentation – Mr Richard Bolt and Emeritus Professor Robin Batterham

Launched in 2021, the Net Zero Australia study provides a rigorous and independent analysis of the pathways by which Australia can achieve net zero in both domestic and export emissions. Mr Richard Bolt and Emeritus Professor Robin Batterham presented a summary of findings, showcasing the role that hydrogen is projected to have in supporting a net-zero by 2050 target. The study suggests that under no scenario is it possible to achieve net-zero without carbon capture and storage technology. The discussion included a consideration of the agriculture/land sector and that this is projected to be unable to act as a carbon sink, rather, it will struggle to achieve net-zero based on the land-use projections.

Facilitated Strategy Workshop - Guiding future research priorities for the FEnEx CRC’s Market and Sector Development Research Program

Led by Professor Eric May and Jon Lorraine, participants split into four research themes (i.e., Workforce & Training Requirements; Public Acceptance & Perceptions; Policy & Regulation Guidance; Market Opportunities & Incentives) and were guided to discuss the following prompts:

• Would these project ideas (Appendix 1) provide value for your organisation?
• What pain points or opportunities need further investigation?
• What evidence do you need to support your organisation’s decision-making?

A summary of highlights from the session are shown below.
Public Acceptance & Perceptions

- Discussions highlighted that there is a need for industry and governments to communicate the complexity and scale of the energy transition process to the Australian public. It was noted that while the Australian community may want the energy transition to happen rapidly, they may be unaware of what is required to achieve this process. Accordingly, there is opportunity for research to identify the best ways to demonstrate, visualise and articulate the steps required in the energy transition process to create a shared understanding.
- It was also recognised that hydrogen currently has a high level of support within the Australian community, which should be protected where possible. Potential risks to this support were identified in relation to other energy sources. Specifically, it was noted that the hydrogen industry should learn from the LNG sector to ensure public perceptions about export and domestic markets are managed. In addition, there is also a risk that hydrogen could be blamed in the future for energy reliability issues as the phasing out of fossil fuels is occurring, and as such is there a way to create a buffer or de-couple hydrogen from our traditional energy sources.

Workforce & Training Requirements

- Discussions centred on the need for a granular exploration of the jobs that are and will be needed, both trades and professional roles. There was recognition that the jobs likely to be needed will be different to those that are currently in the workforce, including combined electrical and plumbing expertise. This raised questions as to how existing degrees and training needs to change in order to adequately support future workforce needs.
- The lack of current standards and surety over the policy landscape and discrepancies between states was seen to be a barriers to advancing workforce development.
- Micro-credentialing and the integral role that this is and will play in the provision of knowledge and skills quickly. Through this, it was discussed that a national approach to micro-credentialing is needed; research into the policy and legislative landscape to support this is needed.

Policy & Regulation Guidance

- Much discussion focussed on the need to standardise regimes across states and territories. Ideas were put forward regarding H2 Zones as a policy initiative that would be suggest to consistent and streamlined standards and regulations, as opposed to state or territory and
National mandates. Research that investigated the feasibility of this approach would be useful.

• Discussions included possibilities of hydrogen in the marine sector, notably, a green shipping corridor from Melbourne to Singapore. The question was raised, what are the possibilities for marine fuel in other places?

• There was some discussion relating to the ways in which Government could be engaged in policy conversations and the challenges of having State/Federal Governments, all with their own hydrogen targets and priorities.

• It was discussed that an international policy comparison would be beneficial for advancing hydrogen in Australia. How do other places manage different government level approval processes, standards and regulations?

Market Opportunities & Incentives

• Discussions included a desire for synergy between policy (e.g., market incentives) and commercial and community stakeholders to advance a hydrogen economy.

• Additionally, discussions raised the importance of considering risk and associated with new technologies integrated to support to the sector. For example, future projects could examine how new technologies can be ‘de-risked’ in order to enable their uptake in new projects and thus assure the industry sector and support achievement of hydrogen at scale.

• Among the discussion, it was noted that an LOHC feasibility study would provide useful information and guidance in moving market opportunities forward.

Participant Feedback

A post-event survey was distributed to participants to evaluate the value and impact of the workshop. While the response rate could not be regarded as representative, those that did respond, indicated that the event was informative and had a positive impact on their approach to public acceptance of hydrogen. Respondents suggested they would be very likely to attend a similar event in the future, indicating the need for future activities that bring researchers and industry together to share and discuss impactful hydrogen-related research. Specifically, respondents indicated they gained knowledge on the “current trends on CCS” and the ways that acceptance varies according to the mode of hydrogen production. Participants suggested that the event provided a space to network and collaborate with others working to advance hydrogen technologies.

“The event was an excellent opportunity to meet a variety of stakeholders at the cutting edge of the hydrogen economy.”

Suggestions for future events included:

• Having some more structured activity parts where academics and industry sit down and discuss things together. The tables tended to be full of people who already know each other, and perhaps not enough mix of academic and industry people on each table.

• More discussion around how we need to educate with knowledge for our industry before we can move on to developing skills.
# Appendix 1

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<thead>
<tr>
<th>Public Acceptance &amp; Perceptions</th>
<th>Workforce &amp; Training Requirements</th>
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<tbody>
<tr>
<td>1. Bringing the Australian community on Australia’s energy transition</td>
<td>1. Supporting a ‘just transition’ in Australia’s energy sector</td>
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<td>2. Mitigating the effects of near-miss and crisis events on community acceptance of energy technologies</td>
<td>2. Developing a “Pathway to Net Zero” Director Professional Development (DPD) module</td>
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<tr>
<td>3. Engaging with Australia’s first nations peoples to create opportunities for equity from the energy transition</td>
<td>3. Preparing Australia's higher education sector for the energy transition</td>
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<th>Policy &amp; Regulation Guidance</th>
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<tbody>
<tr>
<td>1. Supporting collaborative and effective policy decision-making across government levels</td>
<td>1. Examining trade barriers and enablers for CCUS</td>
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<tr>
<td>2. Analysing global best practice and learnings for hydrogen policy, incentives, and frameworks</td>
<td>2. Exploring potential linkages between hydrogen production and Australian Carbon Credit Units (ACCU)</td>
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<td>3. Exploring the economics of future hydrogen reservation policy options for Australia</td>
<td>3. Conducting a feasibility analysis of Liquid Organic Hydrogen Carriers for export (LOHC)</td>
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<td>4. Investigating alternative energy use and manufacturing models</td>
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For further information, please contact:

Dr Ellen Tyquin
Queensland University of Technology
E: e.tyquin@qut.edu.au

The Victorian Hydrogen Hub
Swinburne University of Technology
E: vichydrogenhub@swin.edu.au

FEnEx CRC
E: admin@fenex.org.au