Report on engagement and workshops with policy makers

September 2022

Project number: RP 2.1-02

Enhancing acceptance and a social license to operate of future fuel infrastructure through community engagement and deliberative processes

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IMPORTANT DISCLAIMER

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PROJECT INFORMATION	
Project number	RP2.1-02
Project title	A social license and acceptance of future fuels
Research Program	RP2
Milestone Report Number	7
Description	Report on engagement and workshops with policy makers from government and industry. Two workshops were convened, each from participants hailing from the government and industry cohort. Results from a national survey and deliberative engagement process were shared with participants. Participants, considered and responded to the results in interactive activities conducted in an online World Café style
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Project Leader and Team	Peta Ashworth Kathy Witt Belinda Wade Amrita Kambo Bishal Bharadwaj
Industry Proponent and Advisor Team	Brent Davis - Jemena Stephanie Judd/ Kristen Pellew/ Kristin Raman - AGIG Jordan McCollum - APGA Michael Malavazos/ Lynette Day - SA Gov Briony O'Shea – GPA Nives Matosin/ Klaas van Alphen - APA Peter Shaw – ATCO Ashley Kellet – AshleyK Consulting Ross Jamieson – Sitgas/GAMAA
Related Commonwealth Schedule	2.2.3 Situation analysis and policy briefing documents for policy-makers and other key future fuels stakeholders.
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Summary of Report

This report provides an overview of two workshops held in January and February 2022 sponsored by the Future Fuels Cooperative Research Centre (FFCRC). The main aims of the workshops were to:

- Objective 1: Share the results of our national survey and the Citizens' Panels with Australian policy makers and their industry counterparts as part of the commitment to those citizens who had participated in earlier Citizens' Panels to:
- Objective 2: Identify issues relevant to future fuels' policy development and identify potential courses of action that may emerge as a result.
- Objective 3: Understand policy makers' responses to the suggestions from the public on the principles they found important for transitioning to a low carbon future.
- Objective 4: Receive feedback from workshop participants on the potential of deliberative processes in determining Australia's future fuels transition.
- Objective 5: Evaluate participants' experiences with the design and execution of the workshop.

The first workshop included policy makers from the government cohort. Participants hailed from a range of state government departments in NSW, VIC, SA, NT, ACT, and QLD. The second workshop included policy makers and influencers from the industry cohort. Participants were from private sector enterprises with an interest in a hydrogen industry, peak institutional bodies, consumer interest groups and academia. Each workshop was conducted online via Zoom with interactive activities conducted using Miro – a popular online collaborative whiteboarding platform.

The workshops provided insights into how government and industry policy makers and influencers respond to findings from the national survey (Martin et al., 2021) and Citizens' Panels (Peta Ashworth et al., 2021) conducted recently. For example, a key output of the Citizens' Panels was a set of principles, developed by participants, to guide Australia's journey towards decarbonising the energy system, specifically in relation to the role of future fuels in that transition. Both government and industry cohorts valued and appreciated the normative ethics evident in the public's principles. However, both cohorts expressed that they operated within institutional, jurisdictional, temporal as well as financial limits and bounds and anticipated "struggles" in delivering some of the key considerations arising from these principles: "How do we deliver it?" was the key question asked. The next iteration of dialogue, as described in the *next steps and future work* (Chapter 8), can perhaps shed some light on more tangible pathways. Dialogue is projected as a useful tool in ideating problems and solutions within the context of a nascent future fuels industry where policy frameworks continue to be resolved.

Participants identified numerous "tensions to resolve" as the future fuels' agenda continues to emerge. Addressing these tensions is key, not necessarily leading to any 'intervention', but where a continuous process of dialogue and engagement is triggered amongst lay public, government and industry. Deliberative processes rely on information and dialogue to collectively frame and reframe the problem, where resolution is defined and refined and brokered through each successive iteration. Through the deliberative process, deeper understanding and appreciation is built across all issues for all parties involved, if the process remains grounded in patience and commitment.

Some observations from the Citizens' Panels which are relevant for consideration include:

- Australian citizens expressed the need for secure, safe, reliable and affordable future fuels, which are available for all citizens, regardless of personal wealth, urban or regional/remote location. However, policy and regulation to promote such equity, needs to have consistency across geographies and across legislative jurisdictions. Therefore, consistency and collaboration across federal and state and territory levels of government is an essential starting point.
- Australian citizens expressed a need to "see" industry and government working collaboratively together to build and maintain consumer confidence in future fuels. They suggested that government-led generic information about future fuels technology and the associated benefits and risks be made available as well as industry and project-specific information materials. A more collaborative approach to information provision was thought to offer more nuanced information about how gas and other future fuels are

helpful in the transition to low carbon, which help citizens make decisions about their energy choices and behaviours.

- Future fuels communication activities should also include information to improve the general public's understanding of the existing investments in current infrastructure (gas networks and pipelines). Specifically, how these assets are helpful in enabling a future fuels low carbon industry, especially in supporting energy intensive industries to also decarbonise.

It is also important to consider that social dialogue (through deliberative processes) is an effective process to gently lead the public (with its multiple perspectives) into technology innovation and new ways of thinking. It relies on premises of mutual respect, open-mindedness, cognitive dissonance, peer support and congeniality between parties involved. Defensiveness, dismissiveness or frustration by one or more parties can derail the process of trust building and sense-making. It is therefore important that (natural gas and future fuels) industry stakeholders do not appear to be defensive about its role in the current energy landscape. While maintaining legitimacy is a foundation of social licence, appearing overly defensive of the role of gas in future energy systems may trigger mistrust among the public, which in turn impedes effective communication. Being open and honest about the resource requirements of the future fuels industry, along with objective information about the limits and boundaries of safe operation are critical in building social acceptance. Indeed, a key component of building trust for a social licence is showing vulnerability. Making information available to the public in a transparent and accountable way and engaging in criticism are effective ways of showing vulnerability. It also frequently requires bravery and leadership.

In the spirit of leadership, some initiatives within the scope and bounds of social science research are recommended as follows:

- Undertake a follow up Citizens' Panels with a national young persons' group (18 – 29) and Western Australia and compare the findings with the original Citizens' Panels. (Please note: at the time of writing the report, these panels were being considered and are now completed with a report summarising the findings to be published).
- Ensure engagement with local government bodies such as city and regional councils who vest authority over town planning, building approvals and inspections, sewerage, rubbish and recycling is key as each of these aspects interface with the practical realities - of public infrastructure and assets and can help to avoid opportunities for the NIMBY effect.
- Write and publish several articles as part of the work associated with the panels.
- Undertake a national survey to test the relevance of the Gas Substitution Roadmap, preferences towards renewable gas, hydrogen and biomethane and the associated messages that will help inform industry and government communication materials, including liaising with the media analysis work.

1. Introduction

The *RP2.1-02 - A social license and acceptance of future fuels* has been investigating public attitudes towards future fuels and their associated production processes and use. These have included a range of activities including a national survey and initially, three citizens panels conducted with the citizens of Greater Melbourne, Illawarra/Wollongong and South Australia. Based on the information gleaned from the public, and our promise to the citizens' panel participants, it was important to share the citizens' voice with policy and industry representatives. This report details the findings from that engagement.

1.1 AIMS AND OBJECTIVES

With a focus on ongoing engagement, relationship building and co-creating knowledge, two knowledge-sharing workshops were convened in February 2022. One with policy makers from within government - specifically, individuals who play a role in Australia's future fuels policy development. The second group was with policy shapers within industry – individuals who work in policy-oriented roles in private organisations that have a stake in Australia's nascent future fuels industry. Also included in this group were representatives from peak institutional and independent bodies and thought leaders in academia and consultancies. The main objectives for each workshop were to:

- **Objective 1**: Share the results of our national survey and the Citizens' Panels with Australian policy makers and their industry counterparts as part of the commitment to lay citizens who had participated in earlier Citizens' Panels.
- **Objective 2**: Identify issues relevant to future fuels' policy development and identify potential courses of action that may emerge as a result.
- **Objective 3**: Understand policy makers responses to the suggestions from the public on the principles they found important for transitioning to a low carbon future
- **Objective 4**: Receive feedback from participants on the potential of deliberative processes in determining Australia's future fuels transition.
- **Objective 5**: Evaluate participants' experiences with the workshop.

This report is structured as follows. Chapter 2 provides further background on the research context. The workshop rationale and methodology are reported in Chapter 3. Subsequent sections report on results and the analysis of these (Chapter 4) while Chapter 5 provides an overarching discussion of the results. Conclusions are outlined in Chapter 6 and implications and recommendations for industry and government follow in Chapter 7. Chapter 8 concludes with a precis of future steps and new work that may emerge as a result of the workshop exercises.

2. Background

2.1 SCIENCE POLICY AND SOCIAL LICENCE TO OPERATE

While much of the social licence to operate (SLO) literature focuses on the mining industry, there are multiple elements that have emerged within that literature that are highly relevant to the future fuels industry. Researchers such as (Zhang & Moffat, 2015) have identified a range of key driving factors that lead towards a social licence to operate. Two of these are critical to future fuels. The first is confidence in government institutions to manage any associated risks with the industry. The second driving factor is perceptions of benefits and risks, and importantly how they are evaluated at the individual, community and larger societal scales. Perceptions of risks and benefits will vary widely. They are related to an individual's knowledge, values, sources of information and bias, as well as their previous experiences (Huijts et al. 2012). As such, how the positive and negative impacts of the future fuels industry are perceived by the public will ultimately influence their overall acceptance. This is increasingly important in the current business climate of additional scrutiny associated with environmental, social and governance (ESG) reporting alongside multiple industries' legitimacy being challenged by the changing nature of communities' expectations of them (Yongvanich & Guthrie, 2007).

With growing public concern about levels of carbon emissions and the associated climate change impacts, any fossil fuel related industries are examples of industries whose legitimacy and social licence to operate is being questioned. While gas has been posited as the *essential transition fuel of the future* and all state and territory governments have a hydrogen strategy in some form, there are many stakeholders from across society – from local communities, to peak bodies, to the highest political levels – who are questioning the role of gas into the future. International organisations, expert panels, scholars, the private sector and community groups, are suggesting that an all-electric future (based on zero emissions and renewable energy technologies) is the only way forward if we are to stay within the required 1.5º or even 2º Celsius target. Rising prices of gas for domestic and industrial consumption since the war in Ukraine has also brought energy security and prices to the forefront of public consideration.

In Australia, the 'molecule vs electron' debate is manifesting itself in multiple ways. It is clearly evidenced in some state government policies and other peak body reports. See for example Australian Energy Market Operator (AEMO) (2022); the Gas Substitution Roadmap (Victoria State Government, 2022) as well as in supporting statements such as the one below.

> *"Governments have a vital role to play in helping households to make the switch to more efficient electric appliances, both through incentives and public education and awareness. We welcome the announcement that the Victorian Government will develop new incentives to help Victorians move away from gas as part of the Victorian Energy Upgrades program. The government should undertake this work as quickly as possible to assist Victorians to cut their energy bills at a time of escalating gas prices."*
>
> Clean Energy Council Policy Director – Electrification & Hydrogen, Anna Freeman.

Movement toward an all-electric energy system presents multiple challenges for many existing gas producers, distributors and consumers with *renewable gas* currently presenting as the only acceptable solution to ensure an ongoing social licence to operate for gas in the future energy mix. Critical to this acceptance will be how the public perceives the trade-offs between the various renewable gas options with early research on public perceptions of hydrogen suggesting safety and affordability are characteristics necessary for public support (Martin et al., 2021).

An examination of how the public, or a community, might understand and trade-off between the risks, costs and benefits of a particular project, has shown that those who perceive more (positive) benefits than (negative) impacts, are more likely to perceive the overall outcomes of the project as positive (Gursoy et al., 2002), which generally results in more positive attitudes towards the project. However, any perceived threats to the environment and associated impacts are usually deemed to be negative. Moffat and Zhang's (2015) research further demonstrates that when regulations and legislations are *perceived to be strong* - to hold (mining) industries to account, particularly in relation to environmental impacts, there is more willingness to accept the industries and their operations. Conversely, weak institutional capacity is perceived to weaken governments' ability to monitor and manage environmental compliance. As such, perceived low environmental impacts coupled with a perception of strong governance arrangements being in place are more likely to lead to gaining and maintain an industry's SLO.

2.2 DELIBERATIVE PROCESSES

The foundations of the three Citizens' Panels conducted on behalf of the FFCRC were based on normative deliberative democracy theory reported earlier (Dryzek, 2002; Mansbridge, 2015; O'Doherty, 2017). With deliberation being at the centre, there was a focus on the communicative processes of opinion forming and shared decision making among demographically representative participants (Chambers, 2003; Hartz-Karp & Marinova, 2011). In deliberative processes such as these, learning about the issues is considered an important part of the overall process to allow for the formation of well-informed opinions that ultimately lead to some form of collective decision (Dryzek, 2007). There are multiple examples of where deliberative processes have been used by government bodies, businesses and other non-government organisations, to help inform their decision-making processes (e.g. Northern Gas Network in the United Kingdom; Citizens Dialogues on Canada's Energy Future; Irish Citizens' Assembly (2016 – 2018) etc.). The promise to the FFCRC citizens' panel participants was that we would share their principles and major findings of the deliberative processes about the perceived role of future fuels in Australia with Australian policy makers.

2.3 INTERPRETIVIST AND PARTICIPATORY APPROACH

Each of the objectives for the workshop, sought to understand phenomena from the point of view of the participants. The focus being not on the 'reality' of the world, but how people *interpret* the reality of the world. Therefore, methods, results and analysis of the data collected follow an Interpretivist approach. Here the human world is seen as a world of meanings in which our interactions take place based on shared understanding (Walter, 2006). Deriving an explanation of the world is therefore not the focus of this research (Green & Thorogood, 2018) where knowledge is seen as constantly changing and evolving following the precepts of an ecological worldview (du Plessis, 2017). In a participatory approach, power is relocated in the research relationship from the researcher to the researched. This is because the research objectives are based on studying current modes of practice in an open and equal relationship with research participants, who each have a role in setting the research agenda and contributing to the research design (Green & Thorogood, 2018).

3. Methodology

3.1 STYLISTIC INFLUENCE – THE WORLD CAFÉ

In the context of Australia's future fuels transition, problems and challenges are expected to be complex and intractable. Therefore, in consultation with members from the Industry Steering Committee (ISC), the research team at UQ sought to fulfill the listed objectives via an interactive and participatory approach. In the context of the pandemic recovery that Australia was experiencing, the methods needed to fulfill three selection criteria. Firstly, the method had to be flexible to cope with sudden, untimely disruptions. Secondly, the method needed to be reflexive in alignment with research objectives such that research team could validate research outcomes in practice. A reflexive approach allows the research team to loop in experience and feedback towards refinement and further development of the method-in-use (Reich, 2017). Lastly, the methods had to allow reflection-in-action – allowing the research team as professionals to discover the problem as much as solving the problem found (Schoen, 1992).

A 'World Café' approach was applied to the workshop proforma as it met the selection criteria outlined above. World Cafe is known to be an effective, well tested tool, sitting at the intersection of participatory research, practice and policy making (Aldred, 2011). The goal in a World Café is to rely on focussed dialogue to foster productive relationships, collaborative learning, and develop collective insight amongst a cohort of participants (Brown & Isaacs, 2005). The World Café has the potential to accelerate data collection whilst ensuring a high level of academic rigor, generate relevant findings for both academics and practitioners (Schiele et al., 2022) and is recognised for its all-inclusive, innovative, creative, scalable approach to participatory knowledge co-creation. The World Café easily becomes a place where new and old ideas may be explored, verified, and validated in a timely and effective manner for all involved (Löhr et al., 2020; Schiele et al., 2022).

To operationalise the World Café as conceived above, Brown and Isaacs (2005) recommend a set of integrated design principles: (1) set the context; (2) create a hospitable space; (3) explore questions that matter; (4) encourage everyone's contribution; (5) cross-pollinate and connect diverse perspectives; (6) listen together for patterns, insights, and deeper questions; and (7) harvest and share collective discovery. This advice was translated into the agenda of the workshop as shown in Table 1.

3.1.1 Process

To set the context and create a hospitable space, all participants were issued with an *Information and Orientation* pack prior to the workshop. These packs contained background material and resources to enhance participants' experience on the day of the workshop. An icebreaker activity invited participants to contribute to a *Topics of Interest* exercise prior to the workshop. It was hoped that together the packs and interactive exercise would acquaint participants with what was to come in the workshop itself.

On the workshop day, a 'Welcome and introduction' session was organised allowing participants to get to know each other. The lead facilitator then led the groups through a reflection on the icebreaker activity and delivered a short presentation on the results of the national survey and Citizens' Panels. Following this, three interactive group activities were organised to align with the research objectives (Section 1.1 and Table 1). Because the workshops were conducted online, we used Zoom breakout room functionality to enable smaller interactive group discussions between facilitators. Each breakout room was led by a research team facilitator who walked the participants through the interactive group activities designed on the online collaborative whiteboard platform -

Miro. Finally, plenary sessions were included in the agenda so that the whole group could listen together for patterns, insights, and deeper questioning. In this manner, the research team was able to harvest participants' shared and collective responses to the information and activities.

Table 1: Workshop Agenda

Item	Platform	Atmosphere	Research Objective
Pre-workshop packs, Icebreaker (Topics of interest)	Email	Personal space	
Welcome and introduction	Zoom	Large group	
Reflection on Icebreaker (Topics of Interest)	Zoom/ Miro	Large group	
Interactive group activity 1	Zoom/ Miro	Small group	Objective 2
Presentation of FFCRC research information	Zoom	Large group	Objective 1
Q&A sessions	Zoom	Large group	Objective 2
Plenary session	Zoom	Large group	Objective 2
Interactive group activity 2	Zoom/ Miro	Small group	Objective 3
Plenary Session	Zoom	Large group	Objective 3
Interactive group activity 3	Zoom/ Miro	Small group	Objective 4
Closing plenary and thank you with a Zoom Poll included	Zoom	Large group	Objective 4, 5

3.1.2 Data collection: Miro – an online collaborative whiteboarding platform

Since co-creation of knowledge and collaborative learning was a focus in the virtual World Café, the data collection instruments had to be designed in such a way that they were interactive and easy to use in an online environment, relevant to the context, secure and easily shareable.

The collaborative online whiteboarding tool Miro was chosen since it contains many easy-to-use features, is easily integrated with Zoom, secure and easily shareable via a uniform resource locator (URL). Moreover it has been voted in as the 'best' online whiteboarding tool following a systematic literature review (Ahmmad et al., 2021). It has also been successfully utilised in a collaborative online teaching environment for co-creation and outreach activities (Brandao et al., 2021).

For each of the interactive group activities, a master whiteboard was designed. Each breakout room received a version of the master board to work on with members of their group. After the workshop concluded, all participants had access for 24 hours to each other's whiteboards. Table 2 shows how task objectives and related questions were worded to participants on each whiteboard and their alignment with the research objectives and workshop agenda.

Bearing in mind the planning intent, **Error! Reference source not found.**the Miro whiteboards for the two workshop cohorts (government and industry) were designed with slight variations. Professionals in each of the targeted cohorts develop diverse experience, differ in priorities, possess varying levels of influence and enabling environments. Therefore, the workshop tasks and wordings required a nuanced approach aligned to each cohort.

Secondly, in the spirit of reflexivity, it was expected that lessons learnt at each workshop would trigger variations in subsequent workshops. Reflexive practice guidelines (Reich, 2017) apply to the research team who as professionals themselves, seek to understand and study conditions under which research outcomes may be continuously improved. Therefore, debriefing sessions were conducted after each event to ascertain how to improve the process.

As a result of the first debriefing session, it was found that participants struggled with the time allocations for each task. With the second task, the facilitators observed that the prompting questions related to the task were not explicitly stated on the Miro whiteboard. With the third activity, facilitators observed that there were too many questions on the whiteboard.

Considering this feedback, the whiteboards were tweaked for the second workshop, to optimise the participants' experience and improve the quality of data collected (Table 2). The total time for the workshop was increased

from two to three hours. A break was also incorporated to give participants and the research team a quick refresher at the mid-way point.

Each of the workshops were recorded using zoom functionality. Recordings were transcribed via the software Otter.ai and the word documents generated through this process were manually scanned for errors. To minimise the scope of error however, two levels of check were placed upon the transcriptions.

3.1.1 Recruitment

Initially, a purposive sampling technique was chosen to identify and recruit participants for the workshop across the two groups of interest. Individuals known to the FFCRC and the research team were approached to gauge their interest in participating in the workshops. A snowballing technique was employed where those approached were asked to nominate another person they thought suitable to participate in the workshops. Sampling decisions were made opportunistically, explicitly selecting available individuals who had relevant knowledge and experience, or could generate 'appropriate data' (Green & Thorogood, 2018) given the complex context of Australia's future fuel transition, social licence and the deliberative process. Approximately 60 invitations were issued via email to prospective participants across all states and territories within Australia. Response rates and final numbers are provided in the following sections.

3.1.2 Participants

The first workshop was held in January 2022 with policy makers in the government cohort. Fifteen participants were recruited. This allowed two breakout room configurations. Participants were from government departments of NSW, VIC, SA, NT, ACT, and QLD.

The second workshop was held in February 2022 with policy shapers in the industry cohort. Twenty-one participants were recruited allowing for three breakout room configurations. Participants were from private sector enterprises, peak institutional bodies, consumer interest groups and academia.

Table 2: Miro whiteboards as data collection instruments

Item	Task Objective	Task Question: Workshop (Government)	Task Question: Workshop (Industry)	Research Objective
Icebreaker (Topics of interest)	To acquaint participants with the technology (as explained in the orientation email).	Q1. What topics interest you the most in relation to social licence and future fuel policy development? Q2. So far, how do you feel about participating in our workshop?		
Interactive group activity 1	This slide is designed to help us understand your requirements in relation to issues arising in future fuel policy development	Q1. What issue does your department struggle to resolve when it comes to future fuel policy development?	Q1. When it comes to shaping future fuels policy, what do you believe are the main issues to resolve to enable a thriving industry for Australia.	Objective 2
Interactive group activity 2	This slide displays the principles developed during the Citizens' Panels. We have classified the principles based on themes.	Not explicitly stated on board. Verbally introduced by facilitators during session	Q2. How do you respond to the principles created by participants in the Citizens' Panels?	Objective 3
Interactive group activity 3	This slide is designed to help us receive your feedback	Q1. Now let us reflect on Group Activity 1 and 2. How could deliberative processes help to further address issues arising in future fuels policy-development? a. Continue: What may help to move us forward? b. Stop: What may hold us back? c. Invent: How could we do things differently? d. Act: What should we do next?	Q1. Now let us reflect on today's experience. Based on what's been discussed, what might help to move the policy considerations forward for future fuels. Where could deliberative processes help? a. What may help to move us forward? b. Where could deliberative processes help?	Objective 4
Zoom poll	Feedback and evaluation	Q1. At the end, how do you feel about attending our workshop? Q2. How would you rate the presentation material? Q3. How would you rate the interactive group activities? Choose the option that best describes how you feel. ○ Great ○ Ok ○ Not so good		Objective 5

4. Results

4.1 ICEBREAKER ACTIVITY

The icebreaker activity was designed to enable participants to become familiar with the Miro whiteboarding technology. Participants were asked to indicate responses to two questions to develop their technical skills on the Miro platform:

Q1. What topics interest you the most in relation to social licence and future fuels policy development?
Q2. So far, how do you feel about participating in our workshop?

Between the government and industry cohorts, twenty-one responses were generated on the icebreaker whiteboards (For a full list, please see Appendix B – Topics of interest. Both cohorts expressed an interest in understanding the concerns, perceptions, awareness, and interest Australian citizens hold in relation to future fuels, decarbonisation, and the emerging transition. One government participant wrote:

> *"Public acceptance for emerging decarbonisation pathways + community education"*

Additionally, participants held topical interest in safety, risks and proactive measures that may be taken in relation to social licence and future fuels. For example, one industry participant wrote:

> *"Understanding what practical proactive measures can be taken to improve social licence and assist timely policy/market development"*

'Community education', 'equitable transitions' and 'social sentiment' were of interest, as another participant wrote:

> *"Understanding how to respect and involve our traditional owners in Future Fuels development"*

Other topics of interest for participants were the 'built environment', 'water-use', 'local jobs and skills development'.

Most participants responded that they were 'ready' or 'excited' (Figure 1).

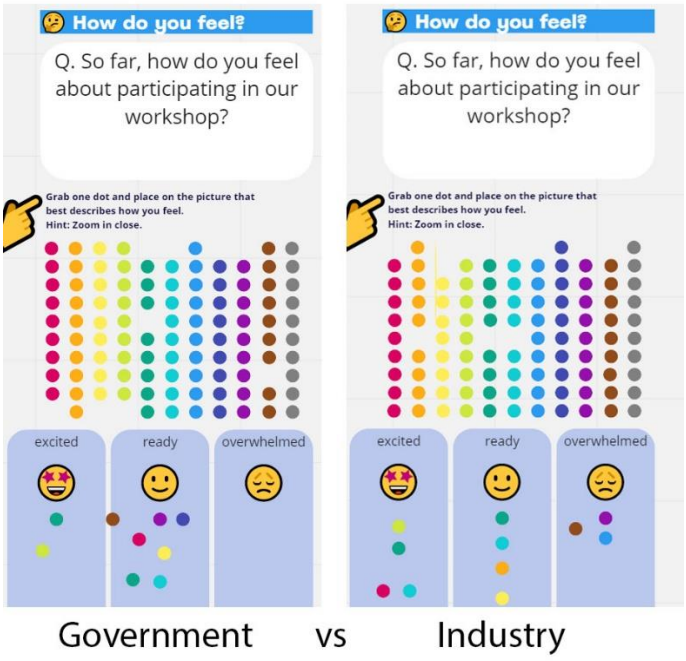

Figure 1: Screenshots from Miro whiteboards indicating participants' readiness to engage at the workshops

4.2 UNDERSTANDING ISSUES AND REQUIREMENTS

The first interactive group activity was designed to understand the issues participants deal with whilst resolving future fuels policy and the impact these issues have on outcomes. The intention was to understand current needs and requirements that arise in the realm of policymaking from the unique perspectives held by those who work in government compared to those who work in industry. Participants in each cohort (government and industry) were tasked to indicate responses to the following questions, respectively:

Q (to government). What issue does your department struggle to resolve when it comes to future fuels policy development?

Q (to industry). When it comes to shaping future fuels policy, what do you believe are the main issues to resolve to enable a thriving industry for Australia?

- Name and describe the issue here
- Describe what impact this issue has

Between the government and industry cohort, 193 responses were generated on the Miro whiteboards towards this activity. These responses were subject to thematic coding to discover matters of importance concerning the development of a thriving future fuels industry in Australia. Based on the terms used by the participants, themes were identified and aggregated as per established methods (Gioia et al., 2012; Pratt et al., 2006; Thomas et al., 2001). Figure 2 shows the emergent themes (in dark blue) as they have been classified into reporting categories (light blue) for the purpose of this report.

4.2.1 Respecting community views

When participants' responses to this task were themed (see Figure 2) it could be seen what issues were perceived in common across the two cohorts. However, each cohort placed a greater or lesser emphasis upon the issues identified as outlined below.

4.2.1.1 Issues

Participants from both cohorts flagged the importance of respecting community views from the outset. Participants discussed issues that arise in relation to and from 'communities', specifically in relation to 'Indigenous communities' and identified numerous 'impacts to customers' that require resolution.

For example, a participant from the government cohort stated their interest in (debating*) "actual value to small and remote communities"* whilst another stated their concern about *"cost to consumers compared to renewable electricity".*

From the industry cohort, comments such as in the quote below made it clear that the industry recognises the importance of managing community expectations, particularly in relation to the scale required for the growth in renewable energy They highlighted the importance of "staying realistic", given that there is a:

> *"Huge investment in renewable energy and the impact on the community amenity of large areas of land under solar and wind projects"*

The industry cohort was specifically concerned about impacts on customers. Issues were raised in relation to changes in household appliances and changes to householders' behaviours and practice, as a result. A question was posed "*What practices do households need to change*"?

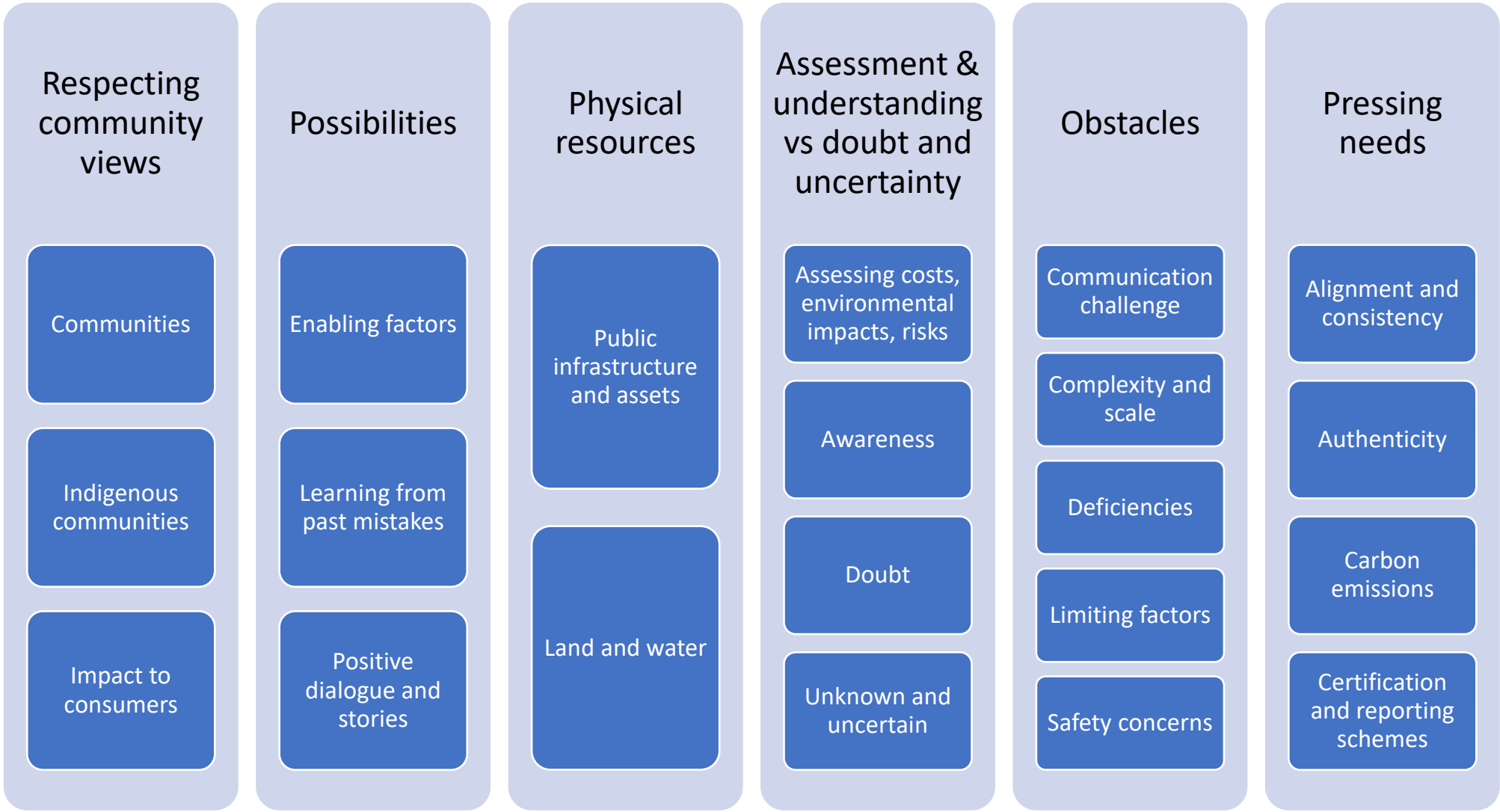

Figure 2: Themes classified into reporting categories based on issues and impacts identified by participants in government and industry cohorts

4.2.1.1 Impacts

As a result of the issues recognised above, there was a concern expressed by both government and industry cohorts that community acceptance may be negatively impacted if community expectations are not progressively respected. A government participant was concerned about impacts arising from the belief that there may be:

> *"Increased demands for taxpayers' subsidies - i.e., it won't be a user pays systems - we'll all have to pay even if we don't use it."*

Industry participants were particularly concerned about the impact of community opposition:

> *"Social impacts arise later in project development if they aren't forefront in scoping."*
>
> *"Community resentment around perpetuating the export of raw materials and the "buying back" of high value products such as batteries, electrolysers etc."*
>
> *"All communities including Indigenous communities may oppose individual projects if not engaged and have expectations met by whole industry representation."*
>
> *"Need to aim for local economic benefit for local community from ongoing jobs (not achieved during LNG boom)."*

4.2.2 Possibilities

4.2.2.1 Issues

Despite such concerns, some participants from the industry cohort identified issues that once resolved could become 'enabling factors'. There was a desire for funding and long-term support from governments. Some participants acknowledged the role that federal and state governments could play in promoting local and international demand but reiterated the need for *"clear pathways to Major Hazard Facilities approvals."*

Two participants from the industry cohort identified other possibilities that may arise if we 'learn from past mistakes'. Participants recalled the *"legacy from past development sentiment (e.g. hangover from CSG/LNG)",* expressing a desire to learn from *"east coast LNG gas export, retain % onshore to fuel local economy".*

One participant expressed a desire for 'positive stories and dialogue'. They acknowledged that there were opportunities on offer for Australia, justifying the need for a *"positive & constructive conversation, not one based on fear."*

4.2.2.2 Impacts

Despite concerns raised in preceding sections, two participants from the industry cohort reiterated the possibilities that may arise if we do not 'learn from past mistakes', particularly recalling episodes of 'boom and bust'. A hope was flagged that *"current energy-intensive lifestyles and quality of life could continue, but with emissions diminishing to zero and perhaps negative."*

4.2.3 Physical resources

4.2.3.1 Issues

Participants from both cohorts identified several issues in relation to physical resources such as public infrastructure and assets, land and water. Participants from the government cohort wondered how infrastructure costs would be covered:

> *"Roads are paid for from petroleum taxes, people won't expect the same for renewables."*

Issues around water sustainability were raised several times specifically in relation to water availability during drought, competing water uses and how facts in relation to these issues may be communicated:

> *"WATER SUSTAINABILITY: Misconceptions about water usage for hydrogen production."*
>
> *"Water use - availability during drought."*
>
> *"Water use - communicating facts and competing uses."*

"Understanding public perceptions around sustainable water use and hydrogen."

The industry participants concurred that water security was a currently understated issue. In addition, the industry cohort raised several concerns in relation to infrastructure – land use, footprints, locations and *"how publicly funded assets (inc. subsidy) get equally shared".*

4.2.4 Assessment and understanding versus doubt and uncertainty

4.2.4.1 Issues

Despite a sliver of optimism, participants from both government and industry cohorts identified several factors that may confound assessments and understanding given the current immaturity of the hydrogen industry. From the government cohort, participants shared how difficult they find it to estimate environmental impacts, resource availability, costs and risks. Difficulties in assessments and gaps in understanding, led towards exacerbating doubts and "s*cepticism around the feasibility of hydrogen"*. One participant argued that "*so much assumption about what groups think without actually asking them"* feeds into "p*olicy and regulatory uncertainty"*.

From an industry perspective, participants acknowledged that the uncertainty in regulatory definitions and coverage was of particular concern:

> *"Most facilities being considered trigger more than 10% Major Hazard Facility Levels - there is a barrier for people to understand the level of risk these facilities pose".*

On a positive note, many participants acknowledged the value of awareness, information, and education to counteract the uncertainty. Awareness amongst the population in relation to the 'colours' of hydrogen and *"how future fuels might be made and used"* was perceived as a panacea by many participants:

> *"Awareness raising and balanced perspective of issues relative to existing fuels (e.g., safety, regulatory etc)".*

4.2.4.2 Impacts

Following on from issues relating to low levels of awareness and understanding, participants from both cohorts identified impacts in relation to costs, risks, scepticism and uncertainty. For example, participants from the government cohort noted:

> *"Hesitancy for regional communities to support/adopt new technologies that may jeopardise existing employment opportunities"*

> *"People dismiss other options and don't want to engage"*

Such apathy was felt to potentially lead to, and contribute towards, exacerbating several risks for government. These included that policy solutions were not considered relevant to industry; that they did not develop best value solutions; there could be a major public opposition once the industry tries to scale; and the risk of an accident or other major incident that might erode public confidence.

From an industry perspective the uncertain policy regime in the context of change and transition was felt to expose the progress of projects to high levels of risk and uncertainty.

> *"Regulators are changing policy to account for these new MHF facilities in QLD - this may lead to other policies being changed. Change leads to uncertainty"*

> *"If no certainty, then investments less likely."*

However, participants expressed the hope that *"relevant regulation and education will help increase confidence/advocacy".* The importance of education was stressed by multiple participants clearly recognising that:

> *"If the population is not educated on a topic, it is easier to have misconceptions about it"*

4.2.5 Obstacles

4.2.5.1 Issues

Despite acknowledging the need for awareness, several factors in relation to 'communication challenges' were recognised by both cohorts. Discussions ranged from how local benefits, including the social, economic and environmental benefits be conveyed if a lack of trust is evident? One government participant wrote:

> *"TICK TOCK BOOM: How to communicate and regulate the safe-handling of Hydrogen?"*

The sense of scepticism observed in preceding section was seen to be exacerbated by the 'complexity and scale' of the *"problem that we face – it is a massive change".* Participants from the government cohort recognised that there is "*a breadth of issues and actors involved"*, all interacting within a "*complex stakeholder landscape* and *energy market"*, struggling to "*time interventions at the right stage".*

Participants from the industry cohort also acknowledged this complexity and scale of the issues at hand identifying:

> *"The range of scale of facilities that need to be covered from cylinder to export scale".*

They also highlighted the importance of leadership for this emergent industry as well as practical considerations around skill shortages. For example:

> *"Lack of government leadership on clear pathway for development and community engagement needed"*
>
> *"Lack of trained gasfitters to convert appliances"*

Participants from government and industry alike acknowledged that the 'lack of' available data and understanding, limited existing standards and test cases, constituting serious obstacles for projects. This included what happens to carbon exposed workforces, a lack of skills, training and expertise, a lack of confirmed purchasing agreements including for domestic use, and a lack of local manufacturing capability for key equipment and resultant supply chain issues.

4.2.5.2 Impacts

Addressing issues around communication challenges, complexity and scale, government and industry participants reported that they were concerned that the *"industry could be delayed while governments deliberate":*

> *"By ignoring some of the policy levers (C Tax, Fuel Quality Standards) we are making it hard to drive change in the way consumers behave".*
>
> *"Takes time to train staff, hard to find staff, complex policy considerations spanning economic, safety and technical areas, hard to translate initiatives into community-focused messaging, stakeholder groups within industry with very different views."*

The industry participants also acknowledged their limitations towards communication. The trade-off between who is responsible for communication of new projects is something that has emerged in other energy industries and will need to be resolved. Trust plays an important part in credibility of the message as highlighted by the quote:

> *"Private sector not adequately supported to communicate risks. Lack of trust from stakeholders"*

In the breakout rooms, participants debated *what happens if we don't communicate* and whose responsibility it would be to broker communication activities. Industry too acknowledged that there may be delays in action towards decarbonisation raising practical considerations such as skills shortage, conflicts over land-use and feedstocks:

> *"Potential lack of competent trades people to support residential transmission"*

Clearly these perspectives on shortages and missing links are followed by the identification of several needs that must be fulfilled to move the hydrogen agenda forward.

4.2.6 Pressing needs

4.2.6.1 Issues

Both government and industry identified numerous pressing needs for the future fuels industry to gain traction. From a government perspective, the most pressing need identified was for 'alignment and consistency' across the various levels of government. Participants wrote that *"aligning timing of production and demand projects"* is key as is *"developing a coordinated plan (between state and commonwealth govts)."*

> *"The space has many players, so coordinating consistent info is critical to not undermining public confidence"*

This need for 'alignment and consistency' was felt even more strongly by the industry. This is clearly highlighted in the notes from the participants below:

> *"Clarity of responsibility between local and state government and other regulators for new fuels development"*

> *"Regulatory certainty (and consistency across jurisdictions) to support long-term investment horizons"*

Other pressing needs identified by the industry cohort was around certification. This included 'authenticity' such that the *"provenance of the "greenness" of the fuel"* is balanced against a *"real representation on jobs".* From an industry perspective the stance on 'carbon emissions' must be such that consideration for low carbon fuels is included in national 'certification and reporting schemes'.

4.2.6.2 Impacts

From a government perspective participants identified the importance of the financial rewards a successful future fuels industry could bring and that without this investor confidence would be eroded. This view was linked to an industry perspective that there is a lack of coordinated planning. One participant suggesting this is evident as "*governments are not on the same page":*

> *"Without clear policy and collaborative activity actions of individual projects will impact whole industry (positive and negative)."*

4.3 UNDERSTANDING PRINCIPLES

In this activity participants were tasked with reading the principles that had been formulated by each of the citizens' panel groups. These principles had been identified as important considerations by government to drive the transition to a low carbon future. To assist the workshop participants in this task, the research team used the summary of themes of the citizens' principles, as shown in Figure 3. The themes that arose from the workshop participant responses are detailed below (please see Appendix A – Citizens' principles collated theme-wise for the full list of principles devised during the 2021 Citizens' Panels).

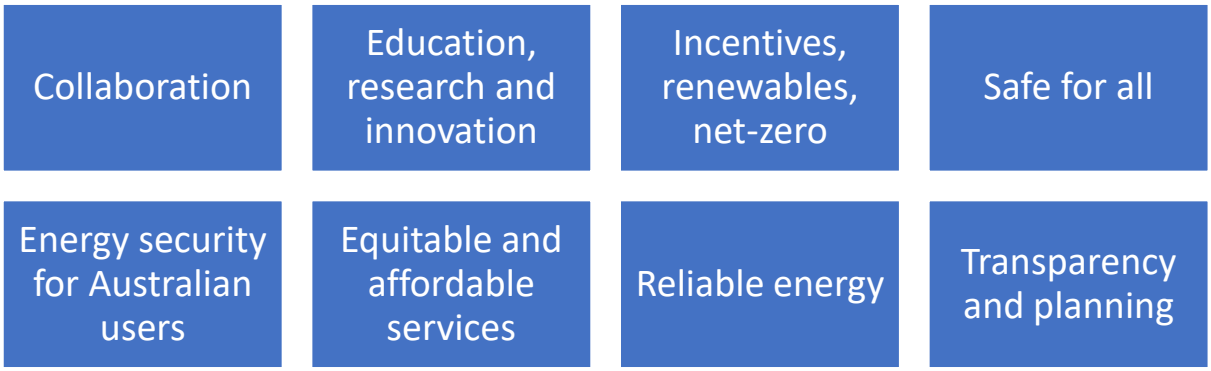

Figure 3: Thematic categorisation of citizens' principles as presented to workshop participants

4.3.1 Normative ethics

Some statements from both the government and industry cohort returned positive feedback (n=4) towards the principles, acknowledging that *"It's refreshing to see there's no apparent reticence about the prospect of transformative change".* However, there were a number of statements (n=12) that alluded to the normative ethics underlying the principles. The statements acknowledged that the values underlying the principles appeared sound, but that each principle was too 'general' and/or altruistic in its nature. Participants argued that it was hard to disagree with any of the principles as they conveyed the heart of the nation. Some participants expressed that they themselves were aligned to similar values, so the principles resonated with them. However, there were several challenges towards their implementation, as one participant observed:

> *"Many of these principles seem like platitudes, they're difficult to disagree with. Universal access to safe energy is a terrific goal - but how would we deliver it?"*

4.3.2 Overlapping themes

Thematic analysis of participants' statements in response to the principles showed conformity with the themes identified in the first activity. Specifically, in relation to the need to guarantee safety; alignment of government to ensure coordination across states and territories, including consistency in regulations; the need for education and awareness raising; and authenticity in communication.

> *"The problem with seeking out community views will be ensuring understanding. The community should be engaged but there should also be a robust education imperative that is based on scientific, research and evidence."*

Numerous statements validated the need to respect community views. Some statements identified the risks associated with leaving communities behind while others identified the challenges related to bringing communities along. Others expressed positive sentiment towards the role the communities may play in the industry development. There were some statements specifically directed towards both remote and/or disadvantaged communities.

> *"Agree very much so with the Illawarra sentiments - we need to bring communities along the journey of planning decarbonisation pathways."* (Government participant)

> *"Preventing community opposition and garnering enthusiasm needs to be done more holistically and not just at industry level, or project by project. As a community we need to get 'onboard' with net zero and why we need it."* (Industry participant)

4.3.3 Tensions to resolve

While enthusiasm was expressed towards the principles by both cohorts, there were several statements that identified the difficulties that may be faced when attempting to translate the principles into reality. Some statements continued to validate the principles, others were neutral, whilst others subtly identified many tensions that prevail towards a positive resolution of the principles in question. All statements that were classified in this category of 'tensions to resolve', raised practical considerations that persist and plague both the government and/or industry. For example, many difficulties prevail in balancing local and global decarbonisation. Many difficulties prevail in meeting community's need for transparency. Often industry cites its need to protect Intellectual Property and identifies impediments that make it hard for them to address community concerns, and so clear communication becomes a point of contention:

> *"Challenge: Lots of focus on hydrogen export projects, need to communicate local (sustainability and economic) benefits and ensure domestic reserve."* (Government participant)

> *"A green energy transition should not happen at any cost. We need further maturity in this conversation to reflect the sentiments captured by citizens. Collaboration at every level of government will provide policy certainty for sustainable investment which there is more appetite than project available."* (Industry participant)

4.3.4 A defensive stance

The statements classified in this category where critical towards the principles put forth by the citizens and reflected a somewhat defensive stance. However, the factors identified herein highlight gnarly issues which may take considerable motivation, time and effort to resolve. For example, regarding the citizens' need for education, research and innovation, a participant from the government cohort conveyed some apathy:

> *"People often ask for education but really don't have the time to engage, but government will fund research and education material"*

In relation to those principles seeking equitable and affordable energy services, a participant from the government cohort noted:

> *"Disagree with this, zero carbon energy has historically been more costly, because it has greater value to our society. Customers should be willing to pay for this, and there will be great long-term benefit, and now due to economy of scale, is more affordable than energy source from hydrocarbons".*

Whilst participants from the industry cohort questioned the equity/affordability principles on grounds that misinformation may have clouded citizens' views towards formulating these principles.

> *"Interesting that they don't see future energy as having a positive impact, but purely want to ensure no negative impact, suggests they are heavily influenced by current conversations."*

> *"Risk that some anti-renewable gas sentiment claims to be on these grounds (Misinformation)."*

> *"There are lots of themes around equity - is this a perception of rich people driving expensive H_2 cars?"*

Principles seeking transparency drew the most flak from the industry cohort. Although one participant in the government cohort also noted:

> *"While the systems are driven by competition, IP and the need for shareholder profit, absolute transparency will be difficult to attain" (Government participant)*

> *"Modern slavery is a very difficult and potentially fatal issue for future fuels - look at the solar panel manufacturing industry as a precedent. it's incredibly opaque in supply chains"* (Industry participant)

Participants from industry cohorts were also concerned about principles highlighting citizens' need for reliability:

> *"Interested about how much people understand their own impact – e.g., they want energy as and when they need it 24/7 but are not prepared to change their own behaviour e.g., peak electricity"*

> *"Ensuring reliability is often not economic because it may involve a decision that relates to a pathway like fossil fuels with CCS that is not understood or widely supported but nevertheless important for stability and keeping cost down"*

In conclusion it was evident that although participants from both cohorts aligned in many parts with the citizens' views, government participants were challenged in some ways to cater to the citizens' need for education, energy security, equitable and affordable services and foresee challenges in remaining transparent.

Industry on the other hand felt hampered by its own limitation in meeting the citizens' need for energy security, equitable and affordable services, incentives, reliable energy, safety and transparency.

4.3.5 Synopsis

To conclude Figure 4 provides a representation of the thematic categories of the citizens' principles, colour coded to show how the workshop participants responded to the each of the principles within these categories. For example, the category of 'collaboration' (shown in blue) contains all the principles that resonated well with participants from both cohorts. The principles in these categories, reinforced ideas that the participants had themselves identified in the first activity and therefore, it seemed there was, by and large agreement across citizens', government, and industry in relation to the principles contained in this category. To refresh the readers memory, the two principles contained in the category were:

"The Government should seek out community views on how Australia should transition to reduce its carbon footprint (from Illawara/Wollongong citizens)."

"The implementation of new low-carbon energy technologies should be based on scientific research, education, and supported by government and industry funding (from Greater Melbourne citizens)."

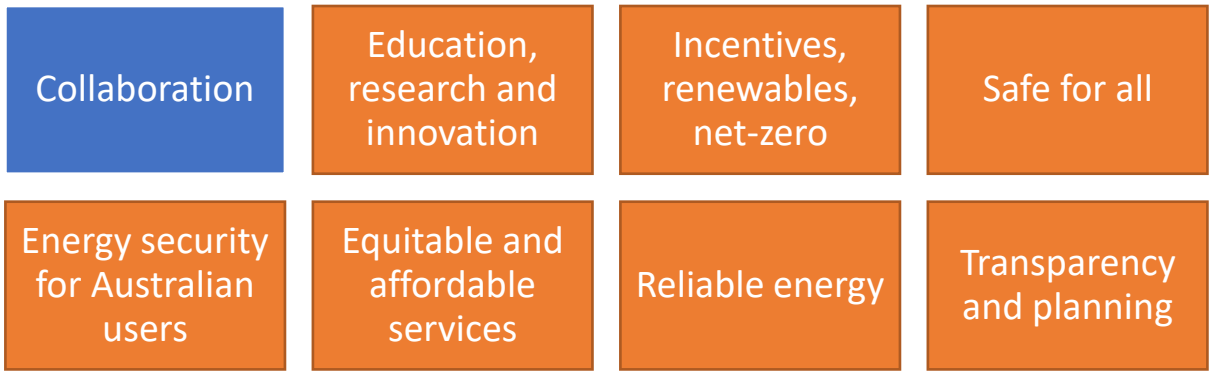

Figure 4: Participant's perception of principles: Alignment (blue), tensions to resolve and defensive stance (orange)

The other thematic categories drew responses that identified tensions to resolve (Section 4.3.3) These categories also drew out a defensive stance in some participants (Section 4.3.4). Participants' responses categorised in these sections allowed the research team to identify that both government and industry may value more nuanced outcomes in relation to specific circumstances around projects – their footprints, their locations, their impact on scenic amenity, local communities, local business and so on. Secondly, the importance of engaging with local governments (i.e., city and regional councils) is necessary to further the development of future fuels policy.

Local governments often vest authority over town planning, building approvals and inspections, sewerage, rubbish and recycling. Each of these services and utilities interface with the practical realities of developing, maintaining and operating public infrastructure and assets. In the 1970s, the term 'not-in-my-backyard' or NIMBY emerged to explain public opposition to new developments near homes and communities (Dear, 1992; Driscoll, 2013). NIMBY explained how the physical manifestation of projects in close proximity to local citizens would evoke negative feelings thereby triggering opposition as trust weakened over time between the public and the developers. Specifically, in the context of wind energy and turbines, it was observed that many environmentalists who may have supported wind energy in principle were opposed to specific projects when confronted with the reality of the actual structures that needed to be inserted into their landscapes (Gipe, 1995).

Recognising this fact, the public, government and industry have each called for greater collaboration, placing value on coordination and consistency. However, there are 564 local government areas in Australia considering, boroughs, cities, councils, district councils, municipalities, regional councils, rural cities, shires, towns, Aboriginal councils, Aboriginal shires, regions and unincorporated areas. To envision 'one dream - one team' for future fuels policy development is a grand yet improbable proposition. If this vision were to be actualised, again it would be asked: 'How do we deliver it?' Collaboration across this multitude of players is a mammoth task, requiring finesse, subtlety, patience, determination and finally, leadership.

4.4 UNDERSTANDING PATHWAYS FOR PROGRESS

In this activity participants were asked what steps may be taken to help us move the agenda for future fuels forward. The government and industry cohorts responded to the following questions respectively:

Q Government: Now let's reflect on Group Activity 1 and 2. How could deliberative processes help to further address issues arising in future fuels policy-development?

Q Industry: Now let's reflect on today's experience. Based on what's been discussed, what might help to move the policy considerations forward for future fuels. Where could deliberative processes help?

4.4.1 What may help us move forward?

In response to the question, what may help us move forward, the government cohort expressed a desire for a more nuanced approach allowing for the diversity present in Australian communities and varying levels at which governments operate in Australia. Once again participants reinforced their desire to respect community views:

> *"What involvement would the community like? How would they like to be involved by industry/Gov?"*

> *"Further research into different regional communities to build up a more diverse representation."*

Government participants were also interested in exploring nuances across jurisdictions and acknowledging differences as a holistic approach may be too challenging:

> *"Recognition that there won't be a single solution across all jurisdictions."*

> *"Acknowledging states & territories will have different challenges to overcome."*

They also reiterated the need to explore nuances in relation to specific contexts. That is in relation to where, how and when projects are being developed:

> *"Deeper understanding of community - 1. communities that are close to proposed projects. Hubs - how do they feel about the development? 2. views about water - in ag/rural communities. test some of the assumptions. What are the issues in rural/regional communities? is it welcome or is it contentious?"*

Government participants proffered their views on what may prove effective in driving the transition forward:

> *"Working out the fastest, cheapest, least disruptive ways to drive the transition."*

> *"Test, pilot, demonstrate, reform, scale."*

> *"Treat issues as a risk assessment, what is likelihood of an issue become significant and what is the seriousness of that issue."*

The industry cohort highlighted their need for a bipartisan approach and multilateral support from government, seeking agreement at all levels:

> *"Developing policies and strategies in consultation with key cross-sector stakeholders that are supported by all levels of government regardless of political preference."*

> *"Local government is a key and underrated advocate - these projects will be in local communities, and many will be in regional council areas - thinking roads, water infrastructure - local govt doesn't often have this sort of technical skill set."*

The industry proffered their view on what may be helpful resources in communicating to the public and sharing information. This included the suggestion for *a government fact checker on energy*, as was done for COVID and the need for consistent information both nationally and globally. Apart from the general public, there is room here to consider policies that empower local governments. There are some good examples where local governments have taken the lead and been very proactive in getting themselves ready, well informed and well positioned in relation to new energy projects (e.g. the Western Downs Regional Council in Queensland.) There is prospect for workshopping with proactive local governments/councils to elucidate best practice guidelines; and/or running peer-learning forums with other local governments/councils who are struggling with the new wave of industry.

4.4.2 What may hold us back?

This question was asked only to the government cohort. Participants reiterated the need for honest and clear lines of communication between stakeholders across various levels of government and the public. They identified that vested interests and red tape were two aspects that could hold back the development of future fuels policy.

"Be careful of too much focus on benefits 'polyanna' view. Be honest about the challenges that accompany the major benefits of the energy transition."

"Cumbersome legislative approvals procedures and too much red tape - we really need to look at streamlining without reducing on quality or diminishing public confidence."

4.4.3 How could we do things differently?

This question was also only asked of the government cohort. When asked how things may be done differently, participants expressed the desire for a more entrepreneurial spirit and reiterated previously held views on the need for collaboration and consistency.

"Prepare to fail and be okay with failure."

"Acknowledge that the govt alone doesn't have all the answers and the roles of industry + research are crucial for success."

4.4.4 What should we do next?

This question too was asked only to the government cohort. Participants reiterated the need to learn from past transitions and raised the need for broader public awareness campaigns.

"Community education on a micro and macro scale - e.g., how will hydrogen be used? Vs. why do we need to decarbonise rapidly?"

"Create public information campaigns and hold community forums to openly engage with the public."

The research team discovered that by inserting three closely linked questions (Sections 4.4.2, 4.4.3 and 4.4.4), stretched the time available for the workshop too far. Keeping in mind this lesson learned, as a practical consideration, three questions were reduced to one in the subsequent workshop with industry participants.

4.4.5 Where could deliberative processes help

This question was asked only to the industry cohort to gauge whether the deliberative process methodology could be used to assist industry. Could they, for example, be useful to resolve any pertinent issues that they have encountered when engaging with communities? Or are there any topics that industry would like to explore so as to find greater clarity on any matters?

Participants recognised that deliberative processes are an important change management technique. Participants felt that deliberative processes could be designed to settle several debates that are currently raging on topics including "*electrification versus renewable gases".* Another area could be to explore and explain the *"realities of infrastructure change".* Another suggestion was to focus on the different types of facilities that are required for hydrogen production so that a more in-depth discussion could follow. Recognising and explaining the differences between these facilities could result in greater awareness, with positive results.

5. Discussion

Based on the analysis arising from the two workshops there are many similarities between policy makers' and policy shapers' responses to the results from the Citizens' Panels. Collaboration was seen to be critical, however, there were definite tensions between the different roles required of government and industry. For example, the development of adequate regulations and guidelines for future fuels was not only valued by citizens' panel participants but was also seen as a way of diminishing the chicken and egg situation so often talked about within an emerging industry.

Clearly there was a requirement to ensure productive relationships exist between industry and government representatives, but more importantly with the communities that will become project hosts. Engaging with communities, including Indigenous and other remote communities was seen to be essential to ensure transparency and to meet individual community needs around specific projects. Consistent with the SLO literature, ensuring that negative environmental impacts would be minimised through regulation was seen as important to not only garner community support but also build investor certainty that the industry has long term potential through a well-regulated approach to risk.

Consistent with the need for investor certainty, across both workshops there was a recognition that while affordability was a key expectation for citizens' panel participants, in the early projects it would not be easy to achieve without some government support through funding or subsidies. While this was not so much an expectation, it was clear there will be a need for innovative financial models, such as new public private partnerships to drive the industry forward. Similarly, participants were concerned about the scale and complexity of change required for such an industry. This included the need for the development of new infrastructure, competing use of physical resources such as water and land, and the need to ensure safety. While not new to the discussion, these issues remain front and centre in the public eye. Addressing said issues, therefore, is a matter that requires ongoing attention, if the industry is to be successful. This also included actively balancing the share of domestic versus export projects. There are some who believe development of domestic demand will be critical for enabling scale up and ultimately make hydrogen more affordable. On both fronts this should help to improve the SLO for the industry.

Across the different elements of the two workshops there was continual reference to the need for national consistency and alignment across jurisdictions which is also in keeping with the early work of the National Hydrogen Strategy. These policy workshops are a useful step in that process along with the work that is being undertaken by different work packages managed through the federal government with state and territory contributions. Local governments were referred to often and understanding how best to support them and ensure coordination as the need for large scale renewable energy projects grows was seen to be something that requires greater attention.

Both cohorts recognised there was an opportunity to learn from the past successes and mistakes of other industries, such as the CSG industry in Queensland and to avoid the chance of cumulative impacts of renewable projects ensuing. There was also mention of the opportunity to draw from other case study examples to help promote positive dialogue about projects in communities. The need for well-designed, engaging project information and education materials was considered essential for communicating about specific projects and garnering support for them. Similarly, communicating the complexity and scale of projects was also highlighted as a challenge that must be addressed. There was some discussion about who would be best placed to deliver such information. It was mainly thought that there would be a greater role for government as they would be perceived to be more trusted than an industry communication campaign. Noting that this did not discount the obligations of industry to engage on their projects.

Finally, while the principles were seen to be laudable in their intent, several participants from across both workshops commented on their aspirational nature which may be hard to deliver on. However, overall, there was support for the broad themes that arose across the different citizens' panel principles. Affordable, clean (low carbon) and reliable safe energy are non-negotiables for the Australian public with an additional need for transparency in any activities associated with existing gas industries.

6. Conclusions

The overarching principles of the Citizens' Panels were very similar between regional panels and clearly outlined the aspirations of the Australian public when it comes to the energy transition – energy that is affordable, low carbon, secure, safe and reliable. Surrounding the production and distribution (and storage) of energy, was the need for clear and objective information, transparent processes and the need to invest in research and development. It was also a clear message from the Citizens' Panels that individuals strongly valued having choice about their energy sources, and they were not wholly aligned with either gas or electricity. With increasing geopolitical uncertainty, high and volatile gas prices, global supply chain and labour market issues during a period of general uncertainty, maintaining an SLO for the status quo role of gas in the energy system is questionable. This means that both policy makers in government and industry policy shapers have important roles to play in facilitating an orderly transition to lower carbon fuels such as hydrogen and biomethane. Without such sincere, consistent and disciplined effort (as facilitators of change) the ongoing future for gas industry players may begin to dwindle – albeit over some years to come.

While the views and responses of participants from both policy workshops largely aligned with the citizens' views, government participants expressed feeling a sense of responsibility, having heard the messages from the Citizens' Panels. They expressed feeling challenged and perplexed about how they could design and deliver effective policies that would deliver on the principles, particularly on some of the more aspirational principles, within existing policy frameworks and institutional environment. Pricing for example, is a matter of great concern

for the ordinary citizen – where the lay public hold an aspiration that secure, reliable and affordable energy will be made available to all Australians. Participants from governments and industry cohorts find themselves hard-pressed to deliver this aspiration. Concerted deliberative processes can engender further understanding and possible resolution on this topic, where a creative and innovative solution can emerge from the people who are directly affected, acknowledging that government and industry participants claim to have limited resources in addressing this problem.

Information being made available at the right time for the right stakeholder groups will be essential. As will be the need to engage proactively with communities who will either host projects, become end users of future fuels, or be generally impacted by the transition. In each case, on a project-by-project basis, appropriate stakeholder engagement exercises need to be conducted, such that engagement strategies can be tailor-made to identify and meet the specific and diverse needs of affected stakeholders. For example, development applications can often be bogged down by contention over siting and operation of facilities (like refuelling stations). Proactive communication with locals can be useful in assuring local communities to address their concerns in relation to safety, amenity and disturbance. Often communities can even offer innovative solutions and assist the 'experts' in designing solutions which are far more amenable, practical and acceptable. As long as the 'experts' are willing to remain open minded, deeply engaging with local communities can add to the collective knowledge base, often leading to a more rewarding and satisfactory outcome.

Consistent regulations will help to enable a future fuels industry by creating regulatory certainty, uniform standards and expectations across jurisdictions, ensuring environmental impacts are minimised and safety considerations are also attended to. This in turn will help to build both investor and proponent confidence to deliver projects. Achieving this consistency however, in a country as large as Australia, with very different geographies and socio-political contexts, was identified as a challenge by government policy makers. Another challenge is in developing relevant policy, with the appropriate levels of community engagement that can stay ahead of the pace that is required to enable a future fuels industry as part of the energy transition. That is, will the push to an all-electric future move more quickly thereby reducing the reliance on existing infrastructure assets, such as gas pipelines and network assets, ultimately reducing the opportunities for domestic gas use because of its apparent carbon intensity compared to renewable energy?

There is no doubt that both governments and industry will need to work together in educating and informing the public of why any renewable gas, including blended gas will still be an essential part of the transition, particularly for heavy industry. Policy and regulations can help to enable this or effectively shut it out depending on the decisions made over the next few years.

7. Implications and Recommendations for Industry

- There is a need to ensure that consistent regulations are established to ensure safe, reliable and affordable future fuels become available for all citizens. The collaboration across federal and state levels of government augers well for this.
- Industry and government need to work collaboratively to develop the necessary project and more generic information materials to build consumer confidence. In particular, more nuanced information about where the need for gas and other future fuels will be most helpful in the transition to low carbon.
- Communication activities should also include improving understanding of the existing investment in current infrastructure (gas networks and pipelines) and how this will be helpful in enabling a future fuels low carbon industry. Not to mention supporting energy intensive industries to also decarbonise.
- It will be important industry does not appear to be defensive about its role in the current energy landscape as this will only serve to marginalise it further among a population that is looking for a speedy transition to affordable and reliable low carbon energy.

In the next section, we conclude with a list of next steps and future work that could possibly ensue:

8. Next Steps and Future Work

- Undertake follow up Citizens' Panels with a national young persons' group (18 – 29) and Western Australia and compare the findings with the original Citizens' Panels (Please note: this exercise is now complete and a report is forthcoming).
- Engage with local government bodies such as city and regional councils who vest authority over town planning, building approvals and inspections, sewerage, rubbish and recycling is key as each of these aspects interface with the practical realities - of public infrastructure and assets and can help to avoid opportunities for the NIMBY effect.
- Write and publish several articles as part of the work associated with the panels.
- Undertake a national survey to test the relevance of the Gas Substitution Roadmap, preferences towards renewable gas, hydrogen and biomethane and the associated messages that will help inform industry and government communication materials, including liaising with the media analysis work.

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10. Appendix A – Citizens' principles collated theme-wise

Theme	Citizens' principles	Location/ Cohort
Collaboration	The implementation of new low-carbon energy technologies should be based on scientific research, education, and supported by government and industry funding.	Greater Melbourne
Collaboration	The Government should seek out community views on how Australia should transition to reduce its carbon footprint.	Illawarra/ Wollongong
Education, research and innovation	Government and private support for education and research with a purpose to encourage innovative and progressive technology with an objective to produce financially viable renewable sources of safe, environmentally friendly and reliable energy.	Greater Melbourne
Education, research and innovation	The Government should seek to transition our society by providing multicultural, reliable and transparent information/education to improve understanding that will lead to positive change.	Illawarra/ Wollongong
Education, research and innovation	Transition to net-zero carbon emission and future energy usage in general requires early investment in ground-breaking scientific research and innovation - including more directional research into non-renewable and low-carbon energy. That research should be future focused, drive sustainable power, ensure new technology is safe for all Australians and the environment and inform industries and Government decision processes.	Illawarra/ Wollongong
Education, research and innovation	Develop community and public education for Australians to understand energy production, usage and disposal to increase overall efficiency/efficacy in the transition to cleaner energy while reducing waste/misuse	South Australia
Education, research and innovation	Access to updated information and simple reports produced by energy providers, which show the method of generation, will support people to make informed choices and to become aware of the long-term impact of various different technologies.	South Australia
Energy security for Australian users	There should be an obligation to provide energy to the citizens of Australia first before exporting to other countries. The energy transition throughout the years needs to have system redundancies to ensure energy security.	Greater Melbourne
Energy security for Australian users	Resources and new technologies relating to renewable energy that originate from Australia should be owned by Australians instead of capitalising on them through overseas ownership. Therefore, Australia should be operating and building infrastructures that are within Australia's operation capabilities.	South Australia
Equitable and affordable energy services	Energy is an essential service. Big companies and government should act in the public interest, so that energy services are equitable. Energy providers should put human and environmental impacts alongside profit.	Greater Melbourne
Equitable and affordable energy services	Green energy should be economically viable for producers and consumers of any economic status and residential location.	Illawarra/ Wollongong
Equitable and affordable energy services	Equitable and sustainable community-based decisions surrounding energy consumption, production and employment for current and future generations.	Illawarra/ Wollongong

Equitable and affordable energy services	The transition to a low-carbon future should not negatively affect the reliability and affordability of Australia's energy supply of Australia.	South Australia
Fair incentives for renewables	Governments' decisions should be apolitical and instil fair incentives for moving towards renewables and penalties for non-compliance. They should allow free enterprise to develop alternative energies at a cost-effective rate for the consumer, through tax incentives.	Greater Melbourne
Prioritise renewables	Future fuels and energy usage should be prioritised along with environmental concerns. The creation of sustainable renewable resources should be underpinned by legislation.	Illawarra/ Wollongong
Net-zero	Australia should participate in global efforts to reduce CO2 emissions. It should prioritise the development of renewable energy, introduce targets to approach zero net carbon emissions and a code of conduct informing Australians about all energy choices.	Greater Melbourne
Net-zero	Successfully achieve net-zero by 2050 without needing to radically change infrastructure, with clear rules and guidelines to build sustainable future living.	Illawarra/ Wollongong
Reliable energy	Every person has the right to safe, reliable, and affordable energy supplies that are supported by fair tariffs and rebates. Therefore, all Australians should have reliable, guaranteed energy when they need it and at a price they can afford.	Greater Melbourne
Reliable energy	Governments, in consultation with the corporate sector should create policies that support private infrastructures to ensure ongoing reliability while not compromising on quality.	Illawarra/ Wollongong
Safe for all	The new energy technologies should be safe to produce, consume, and dispose of in comparison to the current technology.	Greater Melbourne
Safe for all	Build sustainable energy supply chains by recycling and considering product life-cycle with lowest possible environmental contamination.	Illawarra/ Wollongong
Safe for all	Future fuel sources should have safety as the highest priority.	Illawarra/ Wollongong
Sustainable planning	Planning and development play a central role to ensure sustainability and minimal impact on communities, people, livelihoods and the environment. This could be achieved by selecting infrastructure which reduces the impact of urbanisation.	South Australia
Transparency	(Energy) companies need to be transparent with their supply chains and dealings.	Illawarra/ Wollongong
Transparency	Establish an independent Government authority to use scientific evidence and provide evidence-based solutions to consult transparently with the community to make final decisions to reduce our carbon footprint and preserve our environment for the future.	South Australia
Transparency	Public policy should be adjusted to keep electricity providers honest and transparent seeking to meet clean energy usage targets as well as assisting and incentivising consumers and businesses to move towards renewable energy to achieve a carbon neutral home and businesses by 2050. This should be done by exploring alternative options including emerging technologies.	South Australia

11. Appendix B – Topics of interest

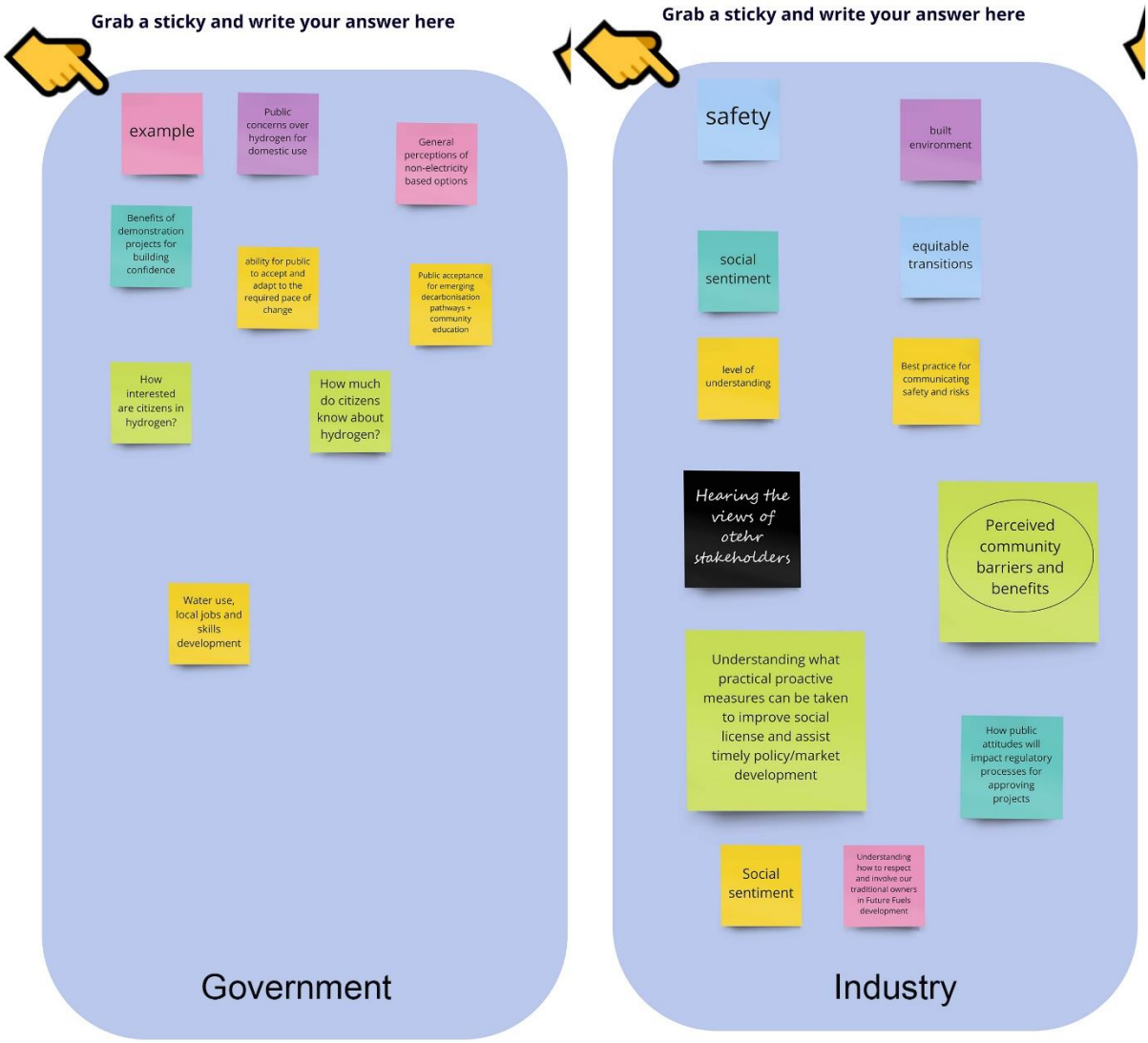

Figure 5: Screenshots from online whiteboards created on the Miro platform to collect participants' topics of interest

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