THE UNIVERSITY OF QUEENSLAND
AUSTRALIA
CREATE CHANGE

Professor Peta Ashworth

Chair in Sustainable Energy Futures

Renewable Gas in Australia Conference, Sydney

6th June, 2019

Australian Government
Australian Renewable Energy Agency
ARENA
THE UNIVERSITY OF QUEENSLAND
AUSTRALIA
CREATE CHANGE

School of Chemical Engineering
December 2018

The Australian public's perception of hydrogen for energy

Acknowledgements and Thanks:

Dr Vikki Lambert - Co-Author and researcher on the project with me

We would like to acknowledge the participation of the focus group participants in Adelaide, Whyalla, Melbourne and Traralgon as well as those who completed the national survey, without their input the research would not have been possible.

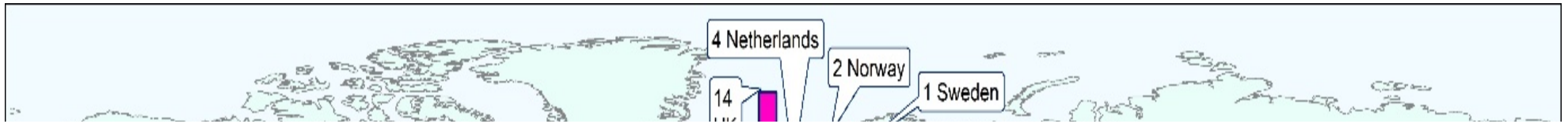
We also thank the valuable insights and support provided by Charlotte Rouse and the team at ARENA.

This research was funded by the Australian Renewable Energy Agency.

Key Messages

- The Australian public are supportive of the opportunities that are emerging from a potential hydrogen industry
- The use and the management of Australia's valuable water resources and any associated land use change were deemed critical for community support.
- Major concerns centred around costs, safety of the environment and people

International studies



49 papers in total

26 assessed the public's perception of hydrogen in the transport sector

Hydrogen powered buses (n=8) and cars (n=8)

Hydrogen fuelled shipping (n=1)

Refuelling stations (n=7).

Research aims

The main objectives were to:

- identify the current knowledge and understanding of hydrogen in the Australian public through a literature review,
- ascertain the potential barriers and enablers for the development of a hydrogen industry in Australia,
- understand how these barriers may be influenced by various demographic factors such as age, gender, location, socio-economic status and cultural background,
- test a number of hydrogen industry scenarios with the Australian general public,
- identify policy and regulatory considerations and outline the potential opportunities and challenges that may arise as a result of the public's response to the hydrogen industry scenarios, and
- make recommendations on potential ways for hydrogen projects to ameliorate challenges and build on the opportunities that emerge from this research.

Focus Group Demographics

Location	Age Group	Age Range	Female	Male	Total
Adelaide, SA	56+	56-72	4	4	8
Adelaide, SA	34-54	35-53	6	4	10
Adelaide, SA	18-34	21-33	6	5	11
Whyalla, SA	45+	50-76	7	3	10
Whyalla, SA	18-45	29-47	5	1	6
Melbourne, VIC	56+	60-74	4	6	10
Melbourne, VIC	34-54	35-44	5	4	9
Melbourne, VIC	18-34	20-33	8	2	10
Traralgon, VIC	45+	47-76	5	4	9
Traralgon, VIC	18-45	20-45	5	4	9
TOTAL		20-76	55	37	92

Focus group questions…

"I want to know more about the environmental impacts and what other offsets or derivatives are going to be left" [FG3]

"What's the actual production facility going to be like? Because I know there's a lot of backlash against some renewable ones – people are like, well, I don't want a wind farm next to my house." [FG8]

"…how many years do you keep using coal as a source and what does that do to the environment?" [FG3]

"…I'd have some concerns about safety issues, both environmental and industrial, because it is still a highly volatile gas, and I would hate to see a spark setting off something, so I'd have concerns both about environmental production and also industrial." [FG6]

Concerns about water

So water might be an issue for South Australia because we have really so little water." [FG1]

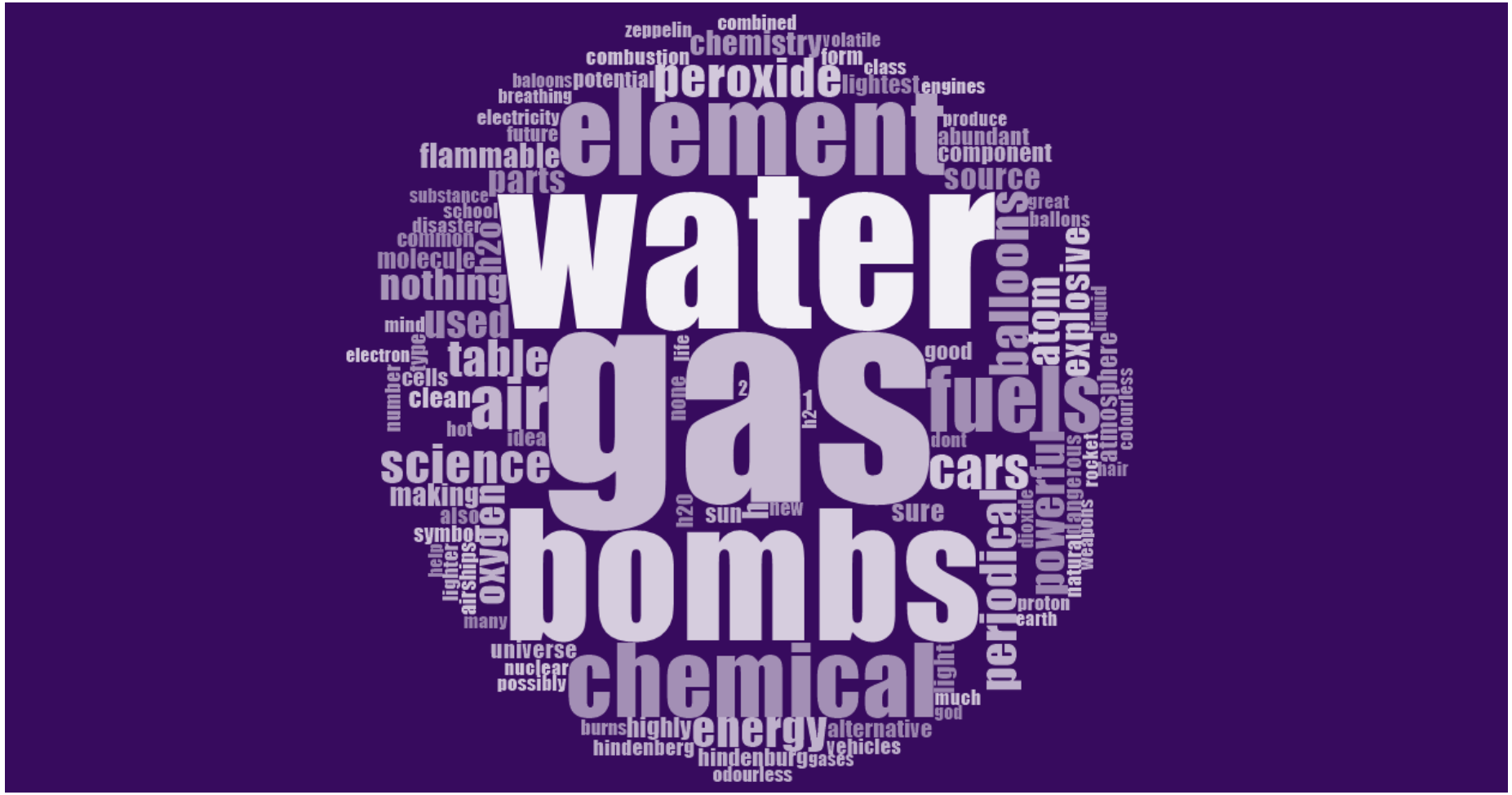
"South Australia is the driest state in the driest continent on Earth" [FG2]

"You are saying renewables with water. Do we currently have a surplus of water in Australia? You ask people in NSW, the farmers, they are fighting over water. If they went down that path, where is that extra water going to come from?" [FG9]

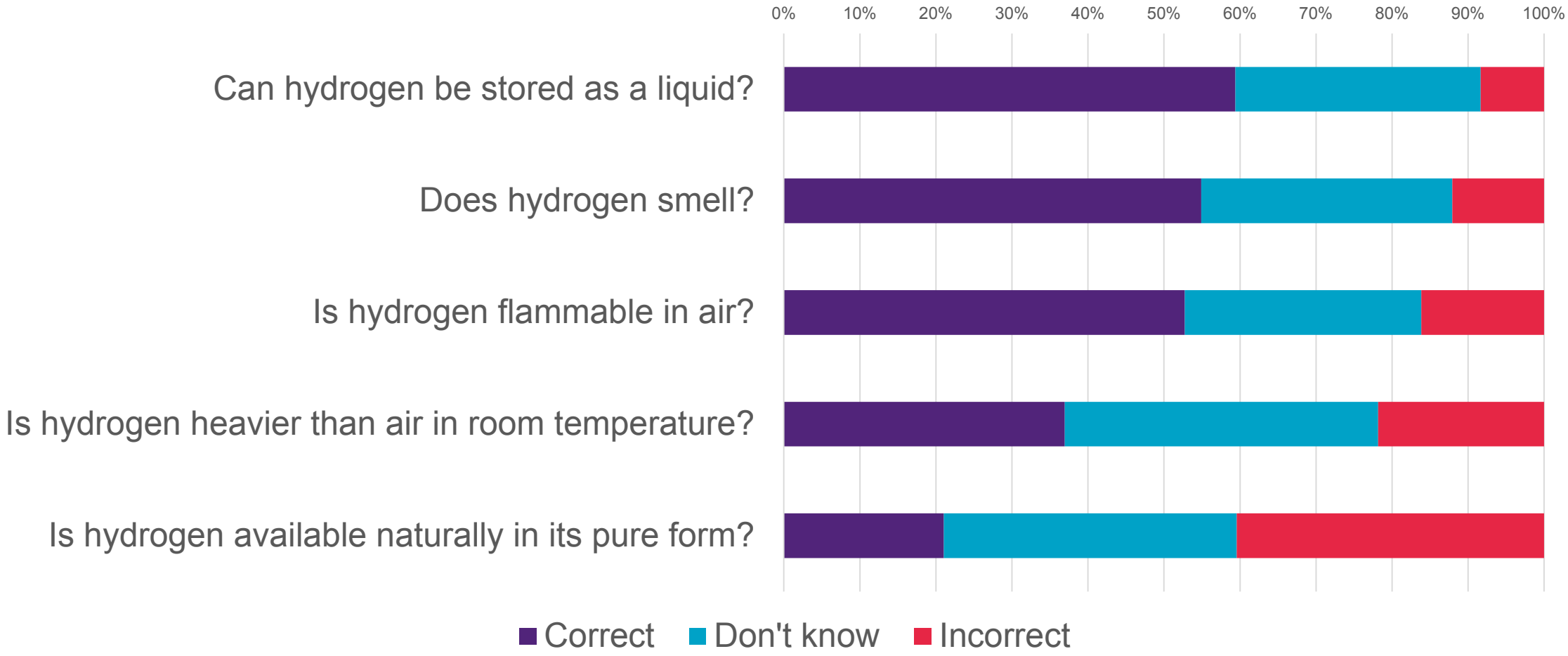
Survey demographics

Demographic	Category	Stream A: Transport	Stream B: Domestic Use	Stream C: Export	Total
Gender	Male	463	435	487	1385
		48.8%	47.2%	53.2%	49.7%
	Female	482	484	427	1393
		50.8%	52.6%	46.6%	50.0%
	Other	3	2	2	7
		0.3%	0.2%	0.2%	0.3%
	TOTAL	948	921	916	2785
		34.0%	33.0%	33.0%	100.0%
Age	18 to 34	274	266	232	772
		28.9%	28.9%	25.3%	27.7%
	35 to 54	333	333	356	1022
		35.1%	36.2%	38.9%	36.7%
	55+	341	322	328	991
		36.0%	35.0%	35.8%	35.6%

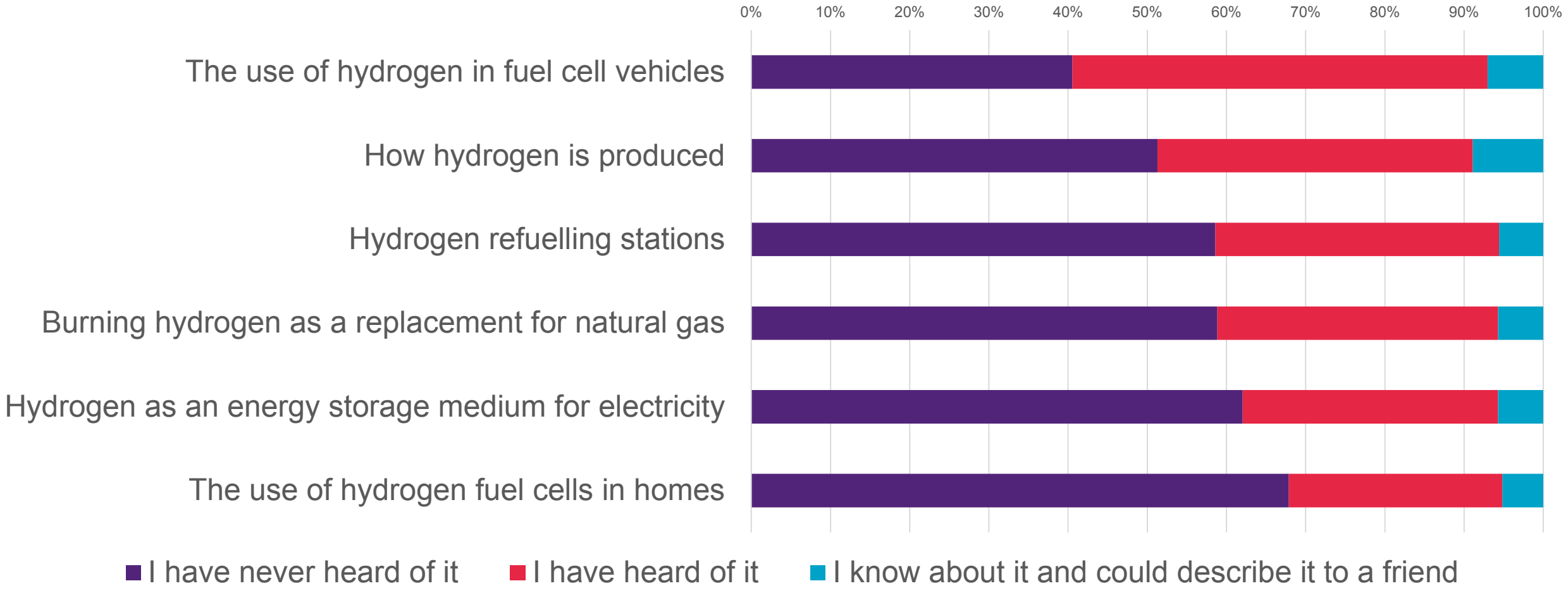
First thing that comes to mind



Objective knowledge about hydrogen

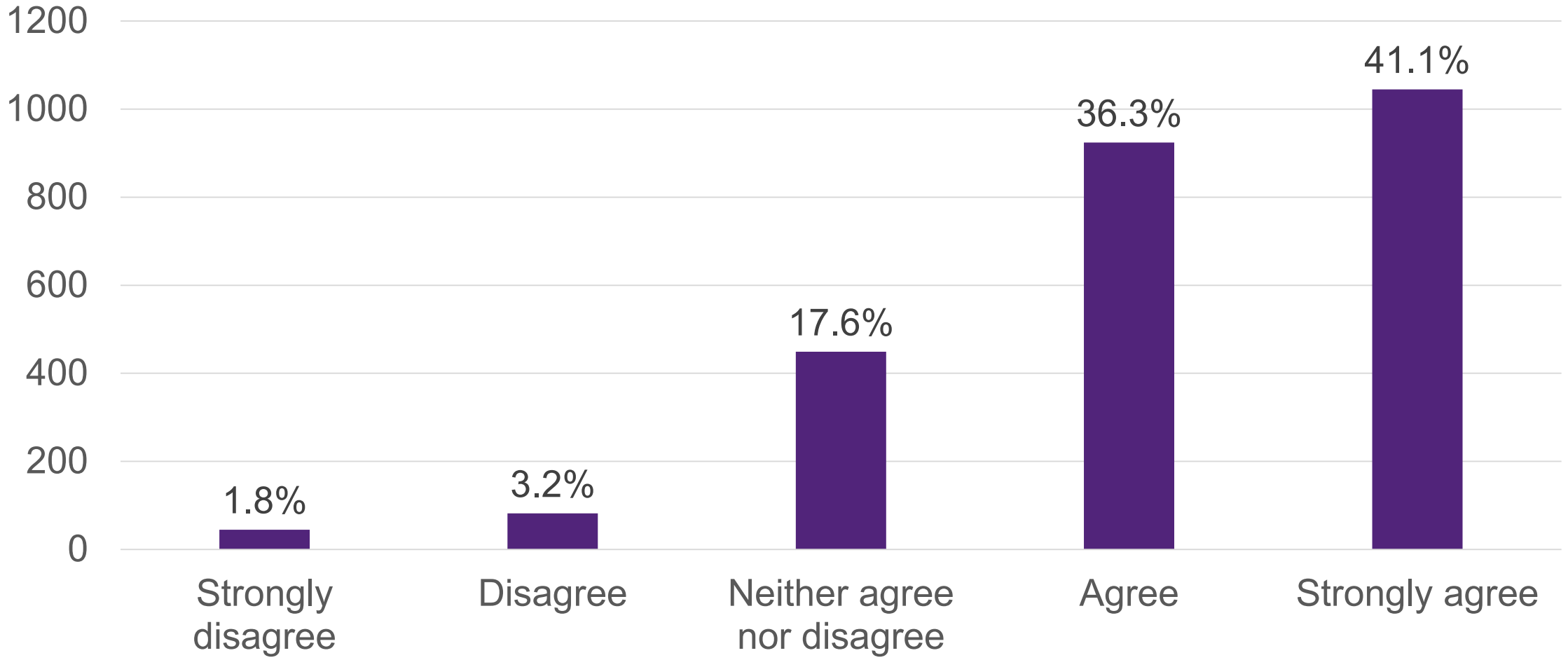


Familiarity with hydrogen production and its uses

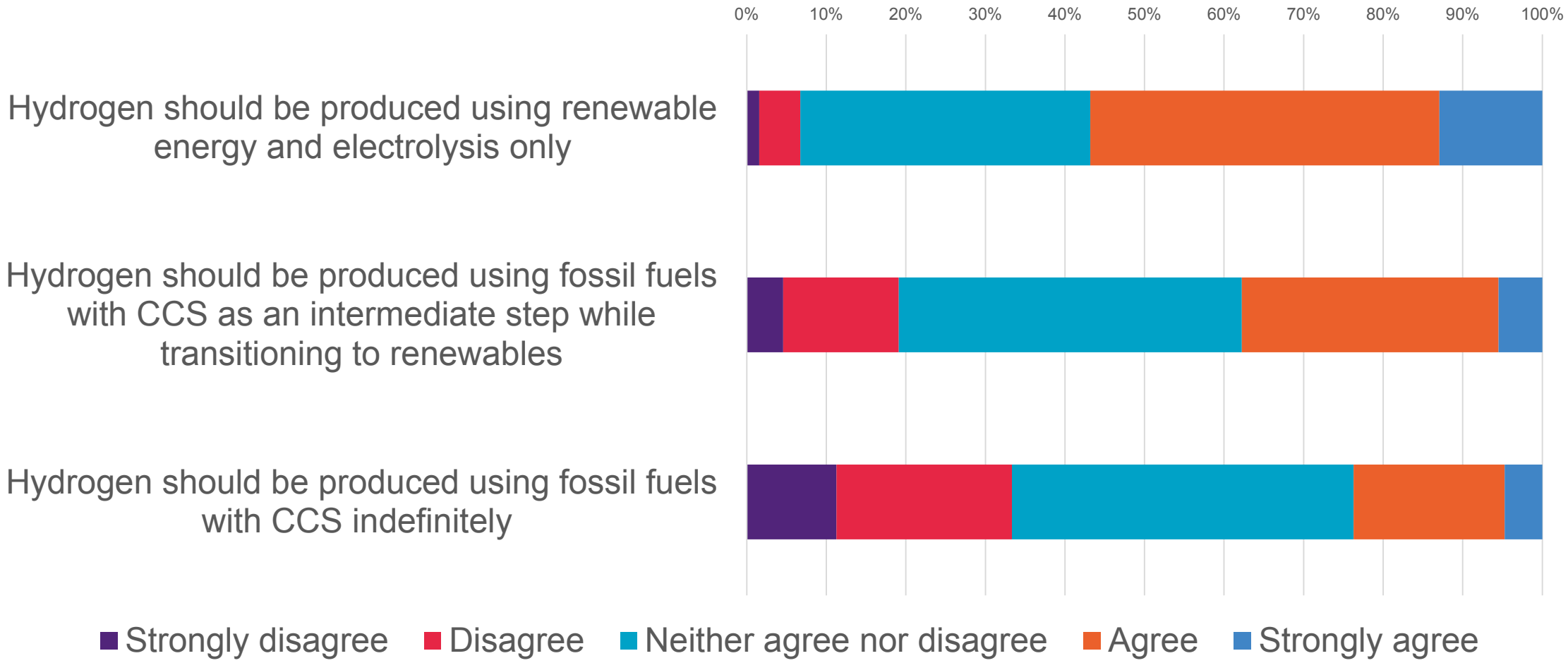


Safety as major concern

Trust in adequate safety concerns



Source of production matters



Source of production matters

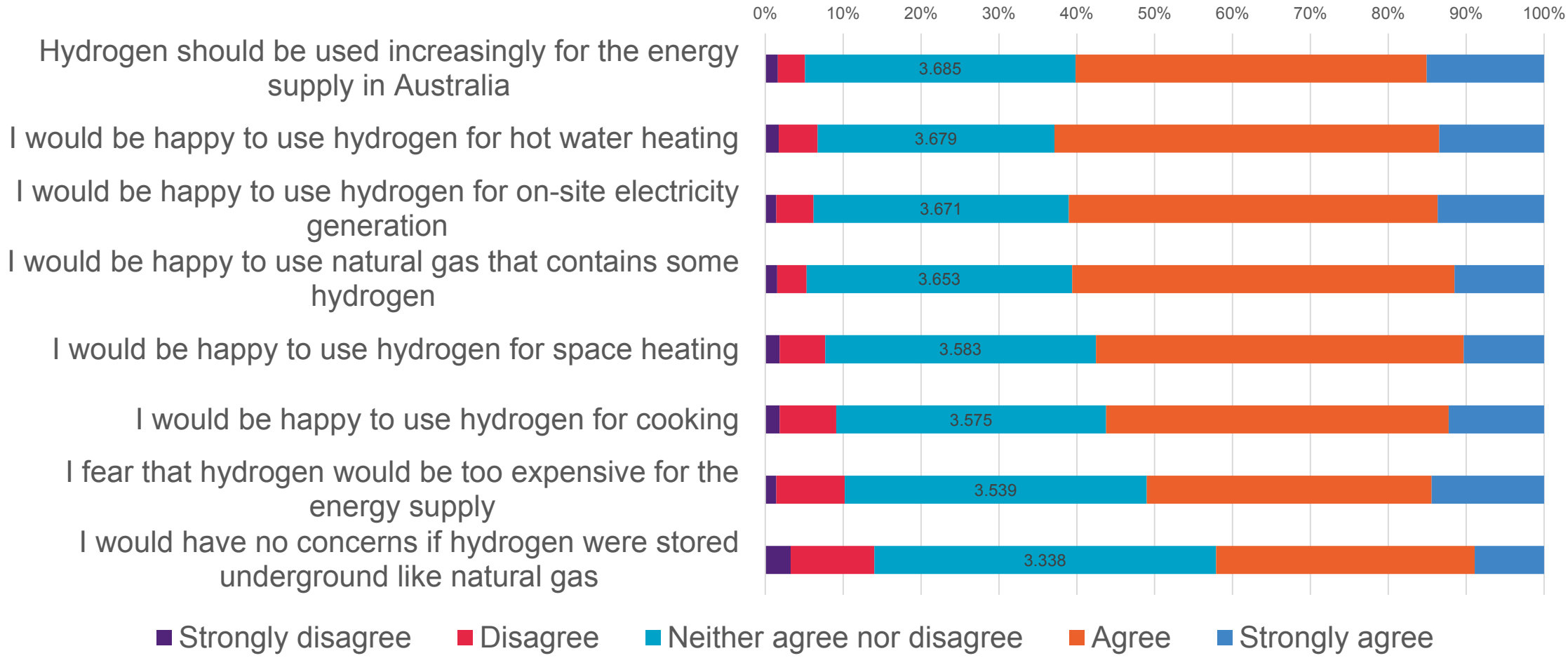
"…regardless of climate change, we should be trying to do renewables anyway." [FG3]

"When you think of brown coal, you think dirty...and if they are trying to use brown coal to actually then extract things, then why would you use something that is actually dangerous to the environment, and then possibly causing more emissions and more harm to the environment?" [FG7]

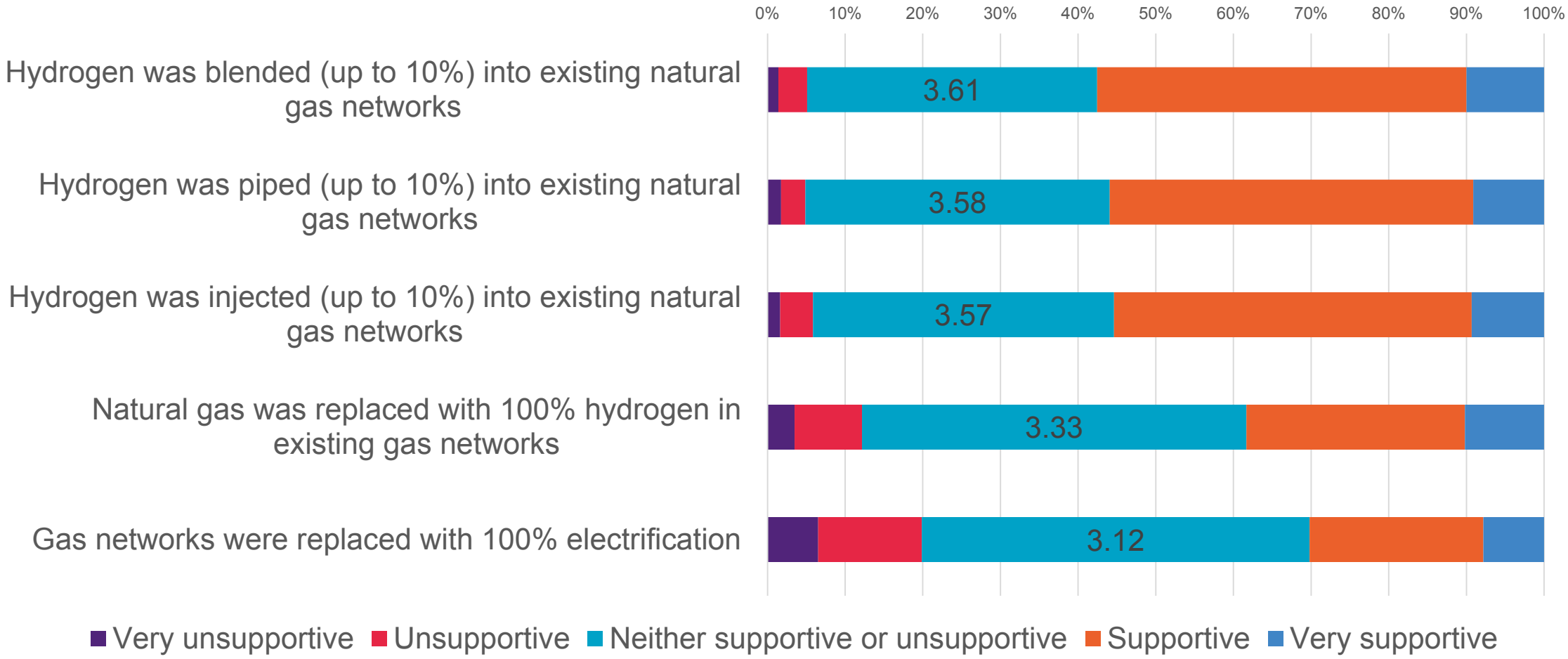
"If this is the way forward then that's great, and if we use coal as a means of getting there then I don't have a problem with that either." [FG1]

"It is important to transition obviously from fossil fuels, but in terms of managing risk, it would make sense to do both concurrently until whatever process is appropriate and successful." [FG8]

Potential domestic uses



Terminology



Recommendations

In addition to the development of a long term strategy for hydrogen in Australia we recommend:

- Ongoing engagement with all stakeholders around emerging hydrogen trials and new projects
- Ensuring communication materials do not assume any prior knowledge of hydrogen
- Proactively sharing safety considerations in public engagement activities and communication materials
- A coordinated approach between government, industry and academia which aims to bring the public along with the developments occurring in the hydrogen space
- Raising awareness of the benefits and opportunities presented to Australia by developing a hydrogen industry.

Key Messages

- The Australian public are supportive of the opportunities that are emerging from a potential hydrogen industry
- The use and the management of Australia's valuable water resources and any associated land use change were deemed critical for community support.
- Major concerns centred around costs, safety of the environment and people

Thank you

Prof Peta Ashworth | Chair, Sustainable Energy Futures
School of Chemical Engineering
p.ashworth@uq.edu.au
+61 409 929 981

facebook.com/uniofqld

Instagram.com/uniofqld

@PetaAshworth_

https://au.linkedin.com/in/peta-ashworth-5502002