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The varied history of CCS: Social considerations

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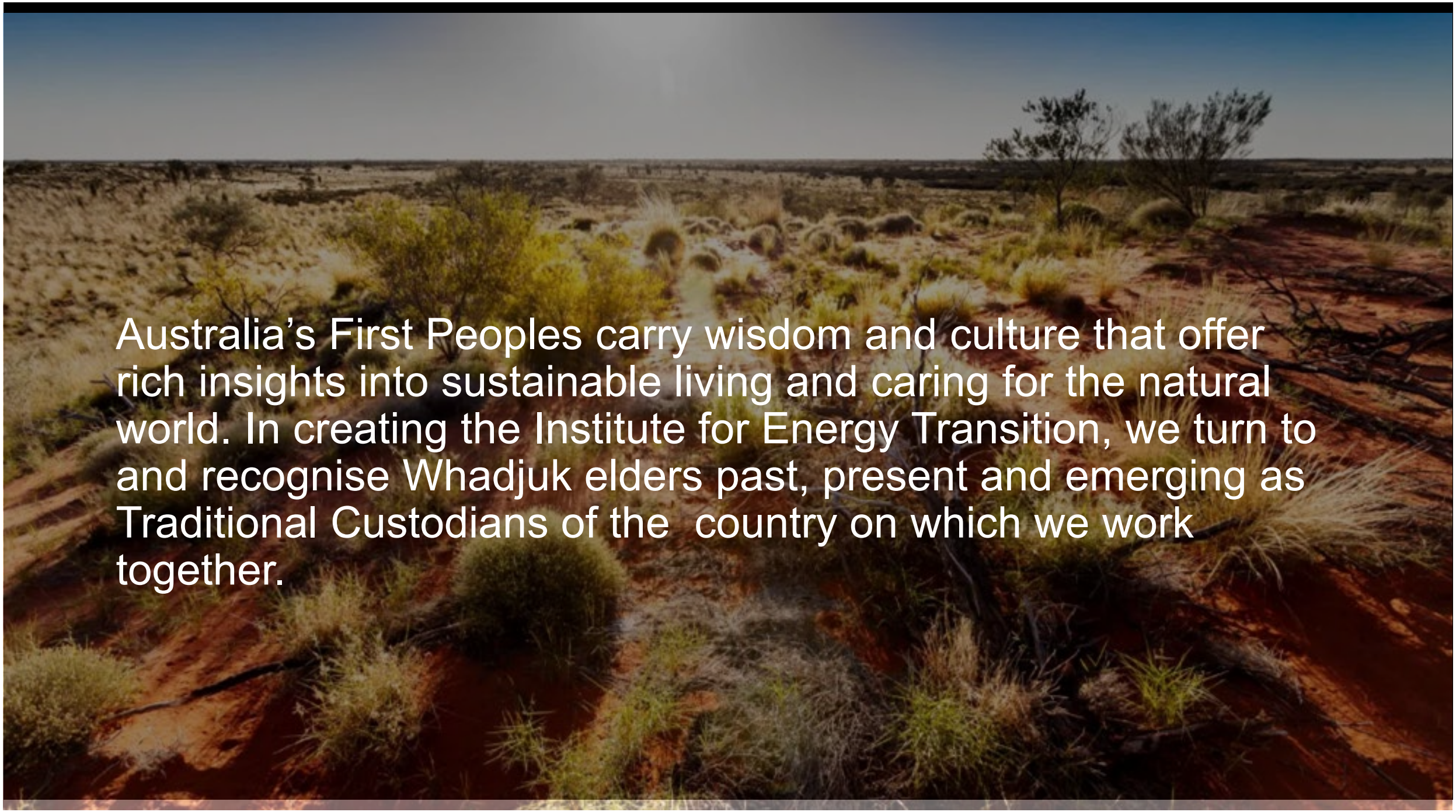
Australia’s First Peoples carry wisdom and culture that offer rich insights into sustainable living and caring for the natural world. In creating the Institute for Energy Transition, we turn to and recognise Whadjuk elders past, present and emerging as Traditional Custodians of the country on which we work together.

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Media Coverage of Carbon Capture and Storage: An Analysis of Established and Emerging Themes in Dutch National Newspapers

Emma ter Mors, Esther van Leeuwen, Christine Boomsma and Renate Meier

Special Issue
Challenges and Research Trends of Carbon Capture Utilization and Storage (CCUS)

Edited by
Dr. Alberto Maria Gambelli

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Hampering CCS Development

Shifts in political support

Lack of viable business cases

Insufficient legal and governance frameworks

A lack of societal support

Arguments for CCS

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Theme	%	Sub-theme	%
Sustainability	35.5%	CO_2 emission reduction To meet climate agreement targets To prevent further climate change Rapid large scale emission reduction Other	21.3 14.8 3.4 2.8 0.9
Inevitability	21.9%	Technology is needed and running out of time Key technology in mitigation portfolio No current (alternative) available Important bridging technology	12.0 9.0 4.3 2.5
Infrastructure and technology	14.5%	(Innovation) opportunities for companies Proven technology Reuse of existing infrastructure Successful (foreign) projects Other	4.3 4.0 3.7 3.4 1.9
Risk and support	12.0%	Societal/policy/industry support Safe technology	10.8 1.5
Economy and finance	11.7%	Other Cost effective (compared to other technologies) Financial policy instruments enable use Costs will decline	5.9 3.1 2.8 1.9
Other	3.4%	---	--

Arguments against CCS

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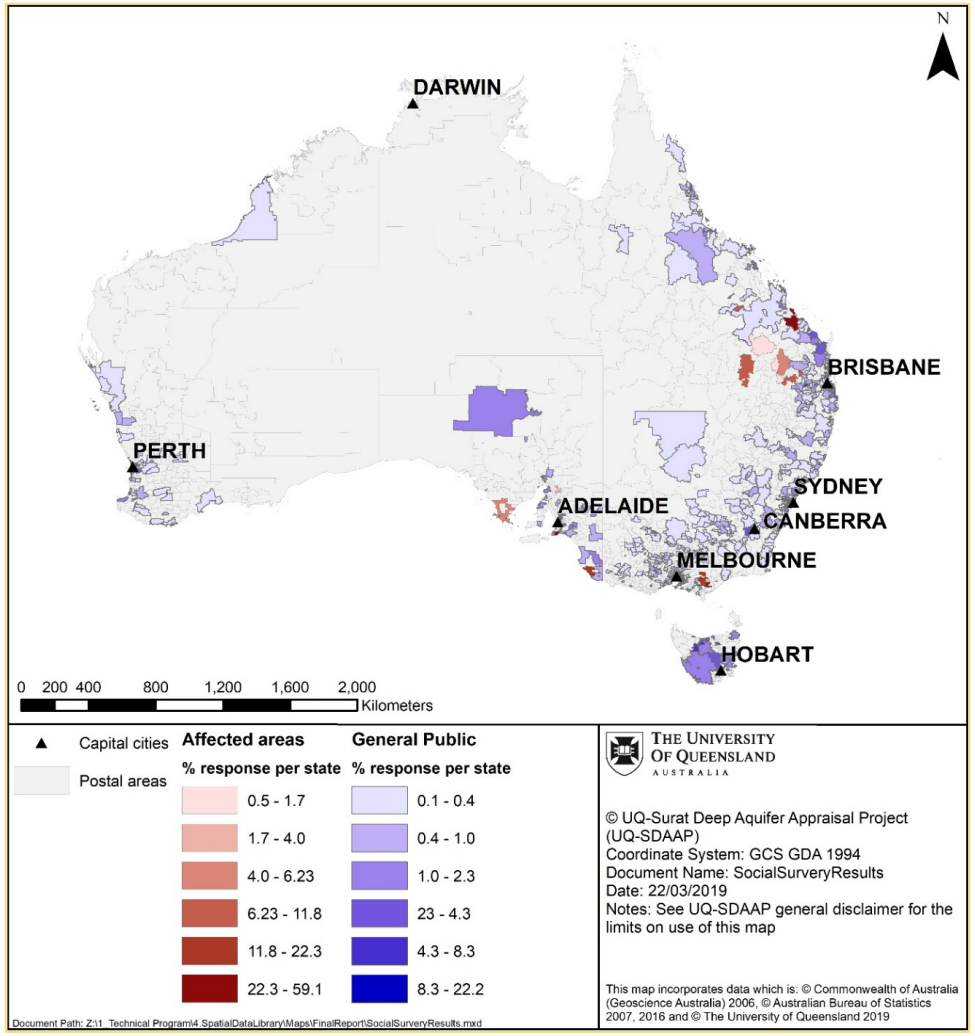
Theme	%	Sub-theme	%
Economy and finance	31.5	High costs Funding unclear/debated Other Little financial return	21.3 12.3 4.3 4.0
Infrastructure and technology	26.9	Unproven technology Unrealistic aims/limited potential Need for new infrastructure Complex technology Lack of suitable storage sites	13.6 10.8 5.6 2.8 1.9
Alternative technologies	22.5	Alternative technologies preferred Alternative technologies available	14.5 6.5
Sustainability	17.0	No climate change solution Delays transition of energy and industry systems Prolongs the use of fossil fuels Uses additional energy Leaves/creates problems for future generations	9.3 9.0 6.5 1.9 1.9
Risk and support	16.7	Lack of societal/policy/industry support Risks: earthquakes, leaks, unspecified	12.0 6.2
Other	9.6	---	--

Public attitudes to CCS 2017

CCS in the context of other energy choices



June - August 2017: Nationally representative survey of individuals aged 18+ years (n=2933)

- General public (n=2,383)
  - 51% female
  - Mean age 48 years
  - 69% in urban areas
  - 33% Bachelor degree or above
  - Median household income AU$60-$90K p.a.
- Communities of interest (COIs) (n=550):
  - Queensland (n=186)
  - South Australia (n=176)
  - Victoria (n=188)

Support for Energy Technologies

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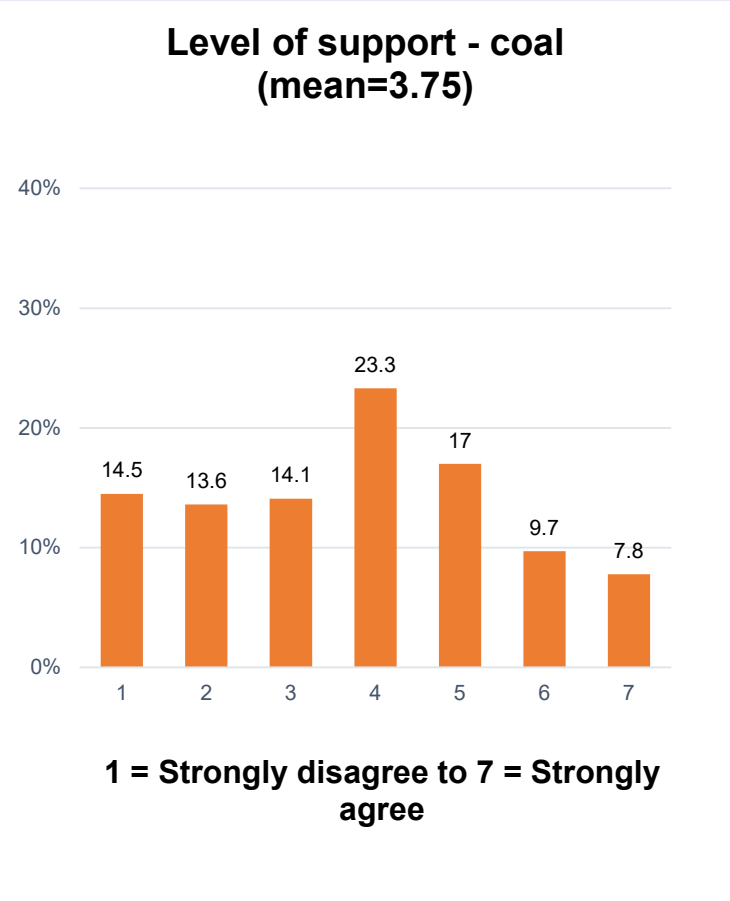

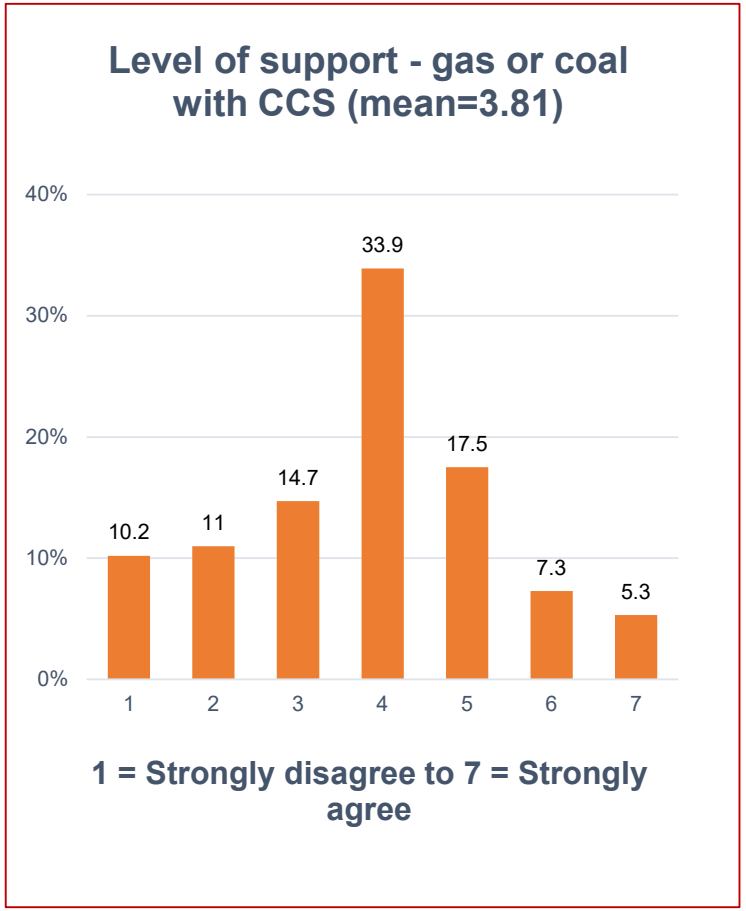

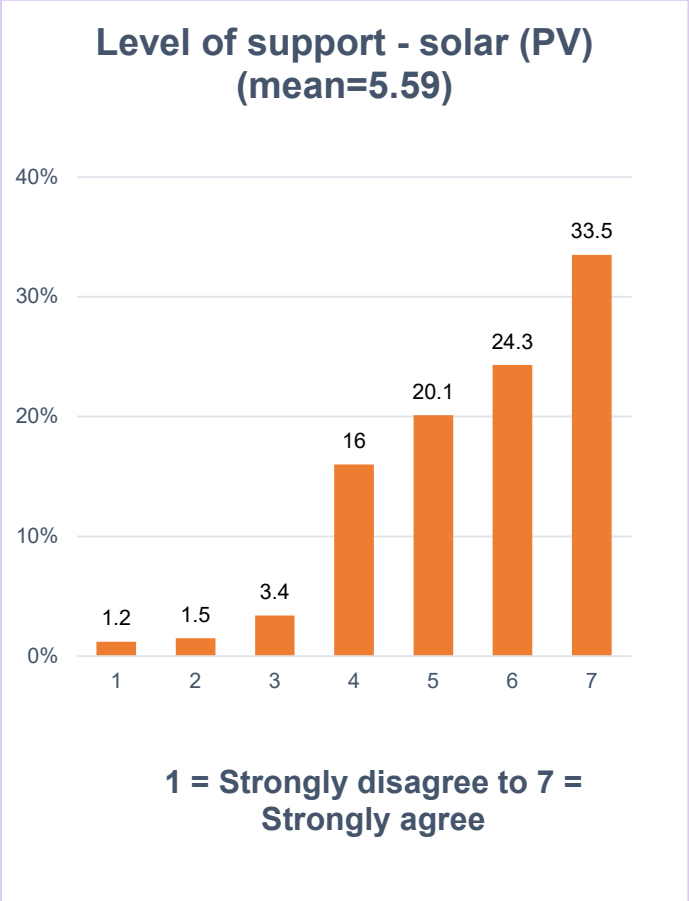

Support for Energy Technologies

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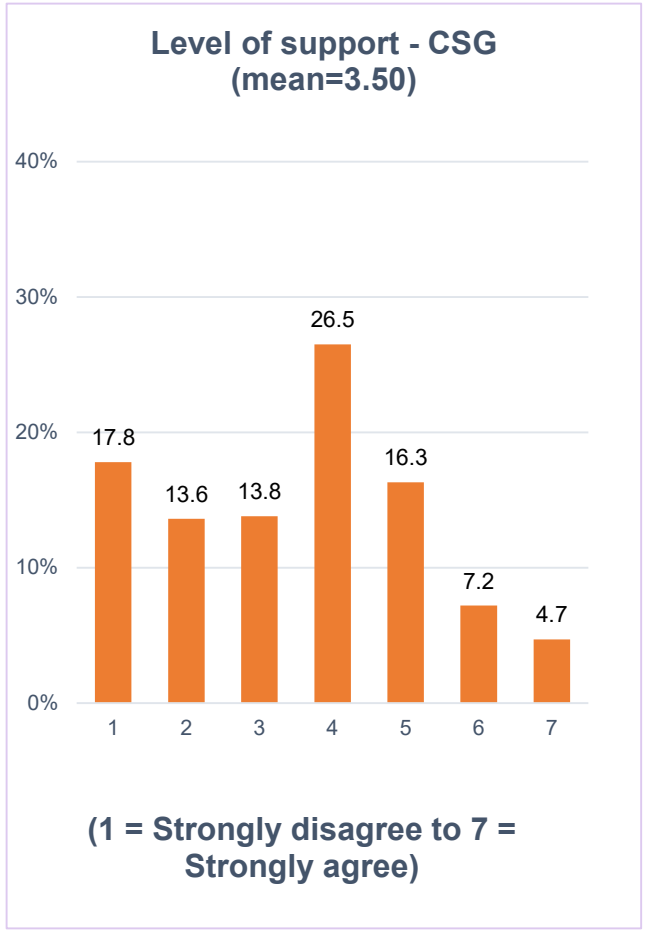
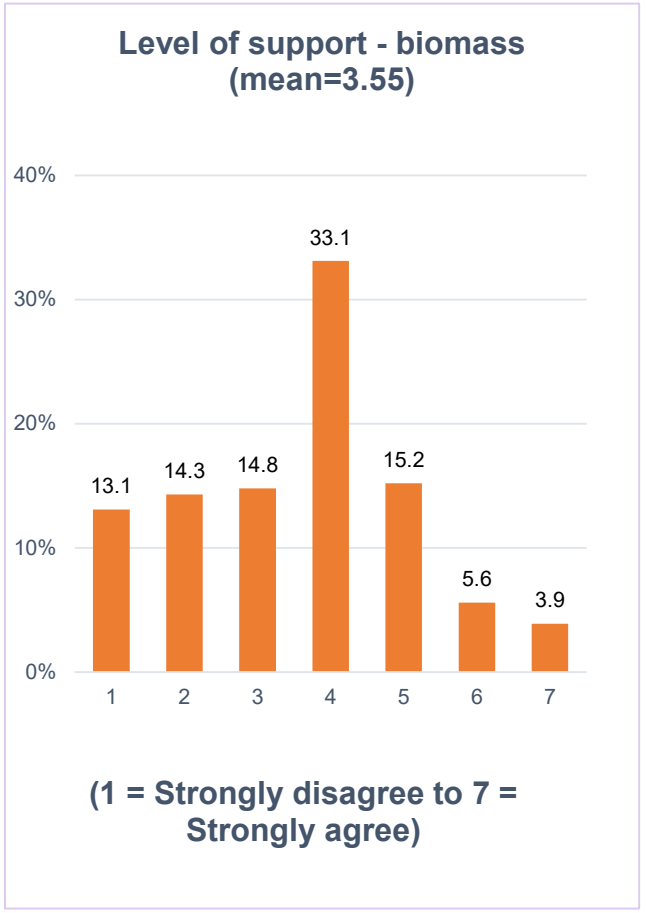
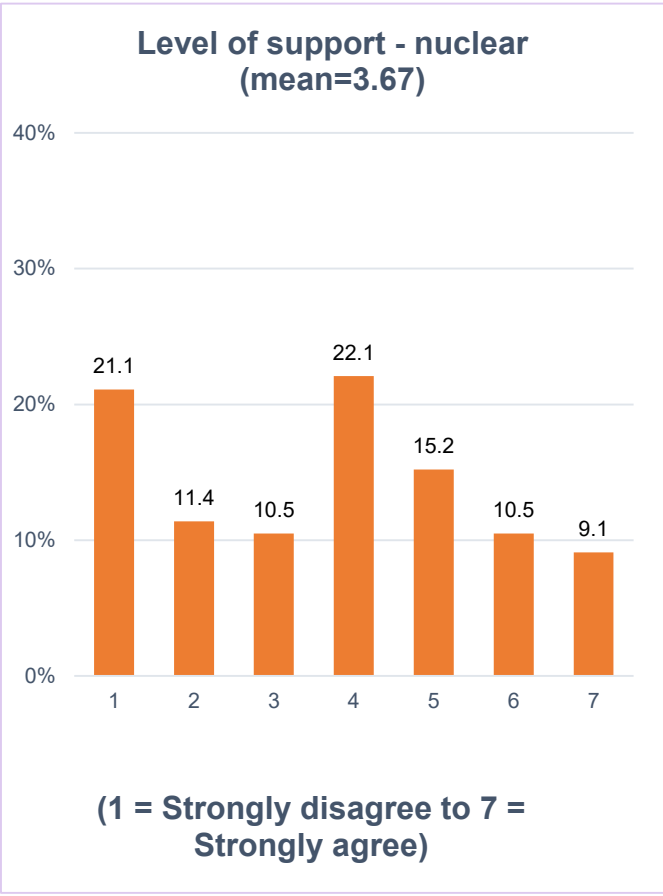
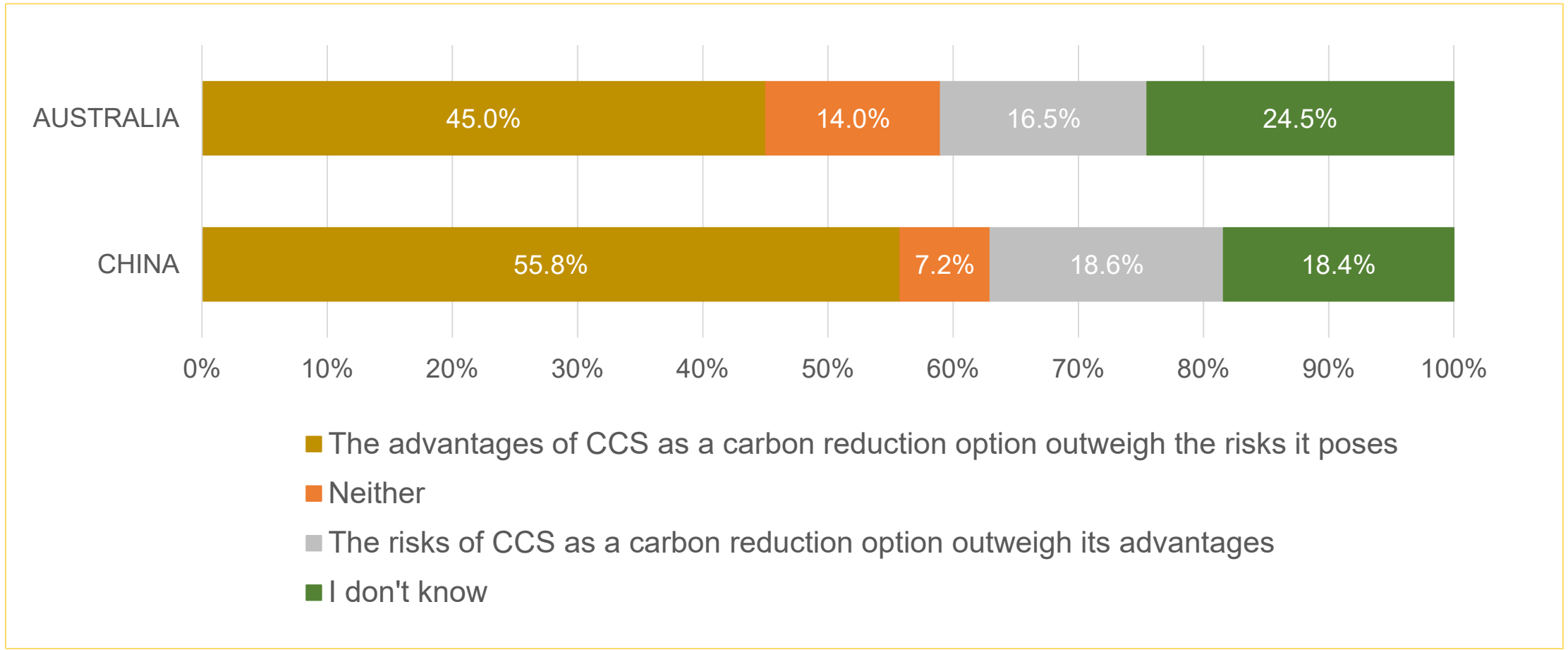






Perceptions of risks and benefits



Pearson chi2(3) = 68.2904 Pr = 0.000

Public attitudes to CCS 2021

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Technology/Energy source	2021 Mean[a]	2021 SD
Solar PV	5.89	1.22
Wind	5.84	1.30
Hydrogen	5.80	1.15
Gas	4.53	1.55
Gas or coal with CCS	4.19	1.64
Nuclear (for power)	3.95	1.98
Coal	3.58	1.86

[a]Measured on a 7-point rating scale, where 1 = strongly disagree, 4 = neither agree nor disagree, 7 = strongly agree; *n* = 1,513.

Perception of hydrogen use & CCS

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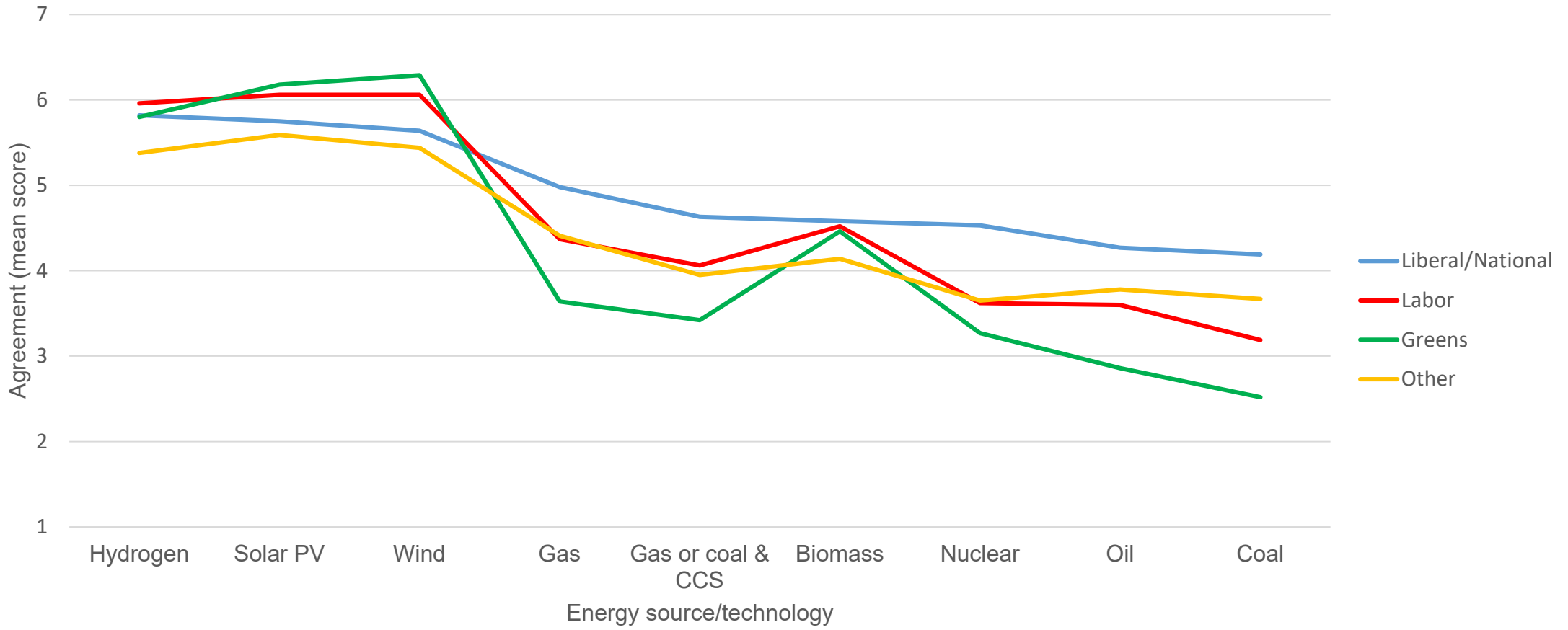
Statement	2021 Mean[a]	2021 SD	2018 Mean[b]	2018 SD
The use of hydrogen contributes to climate protection	5.55	1.30	4.76*	1.28
Hydrogen should be produced using renewable energy and electrolysis only	5.31	1.37	4.94*	1.24
Hydrogen should be produced using fossil fuels with CCS as an intermediate step while transitioning to renewables	4.69	1.57	4.27*	1.36
Hydrogen should be produced using fossil fuels with carbon capture and storage indefinitely	4.16	1.77	3.70*	1.52

[a] Measured on a 7-point rating scale, where 1 = strongly disagree, 4 = neither agree nor disagree, 7 = strongly agree; *N* = 3,020.

[b] Scale was expanded to 7 points for this analysis - original scale used 5 points.

Support by political party



Other stakeholder perceptions

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Dr Hare *says if there's a leak down the track, it's taxpayers that will foot the bill.*
"If you look at the new, much-touted methodology for CCS, it's very weak for monitoring of storage and long-term security, and these issues are essentially put back onto the government," he says.
"The major proponents of CCS in Australia don't want that liability. It tells you they're not stupid, and it makes you wonder about the wisdom of the government accepting liability."

But Mr Ogge *says focusing on the technology is a distraction from the bigger picture.*
"It's a 50-year-old oil and gas industry practice of pumping CO2 into the ground to force out more oil from depleted fields, which increases emissions," he said.
"It's been re-branded as carbon capture and storage to basically greenwash it and allow the oil and gas industry to get taxpayer subsidies by presenting it as a climate abatement measure.
"It really is just a complete scam."

https://www.abc.net.au/news/science/2021-11-06/carbon-capture-storage-coal-gas-fossil-fuels/100585034

What is in it for me? Local Benefits

Many of the **benefits** are very **global** in nature

- Emissions reduction
- Transitioning to low carbon economy
- Energy security
- Continued use of resources – economic return

Most of the **risks** are very **local**

- Risk of contamination
- Potential leaks – will it stay there?
- Effects on house prices and land values
- Competing land use

How do we define local benefits?

- Decisions are made collectively **NOT** responding to decisions made by others
- Dialogue with a range of stakeholders across all levels – experts and non-experts
- What is important – pros and cons
- What does each community value?
- Not a done deal – takes time

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