

PUBLIC PERCEPTIONS AND SOCIAL LICENCE TO OPERATE OFFSHORE WIND ENERGY IN AUSTRALIA



Alaya Spencer-Cotton
UWA Oceans Institute Better Oceans Programme

Abbie Rogers, Michael Burton, Matt Navarro



**OCEANS
INSTITUTE**

Centre for Environmental
Economics & Policy

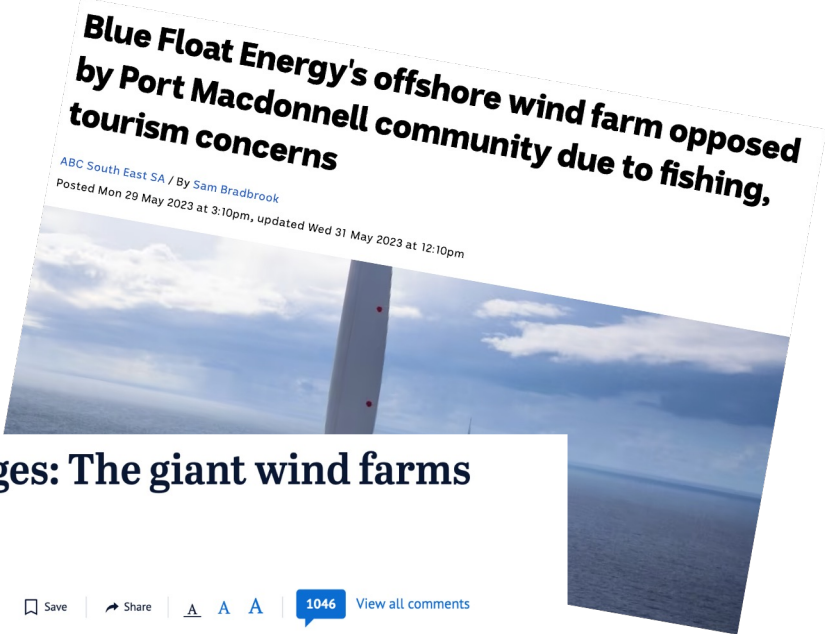
OFFSHORE WIND IN AUSTRALIA

Decarbonisation of the energy sector → renewable energy

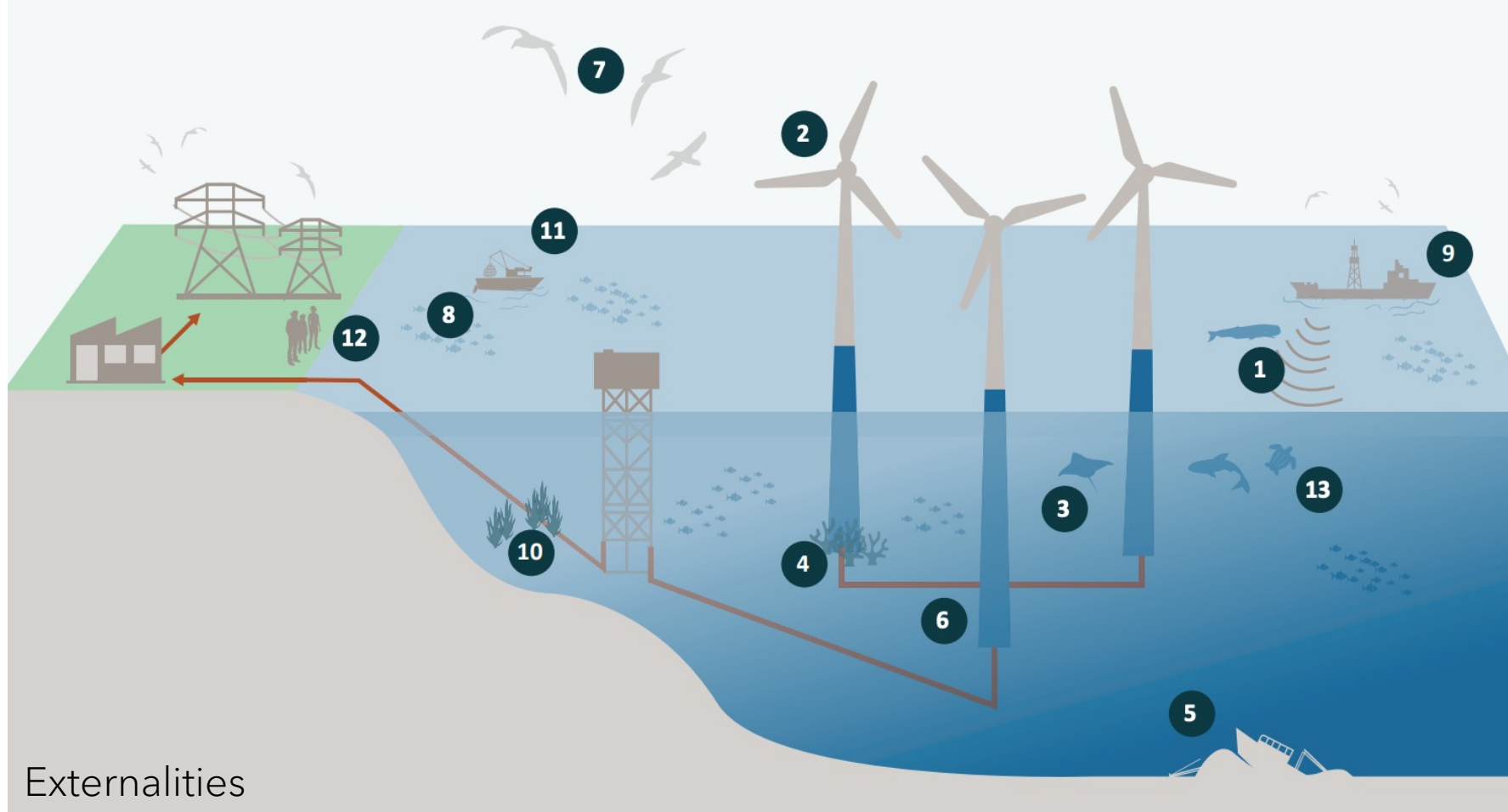
Offshore wind farms have the potential to provide 2,000 GW of energy → regional development



Windfarm critics claim projects will harm marine life. Scientists say that's not backed by credible evidence
Follow our Australia news live blog for latest updates



As big as two Harbour bridges: The giant wind farms you'll see from the coast



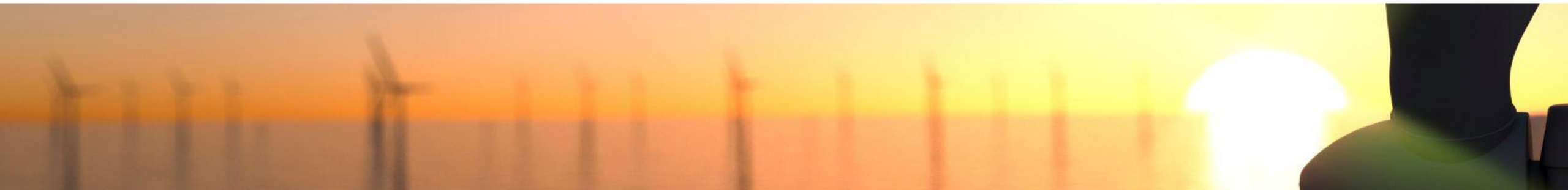
Externalities

1. Underwater noise - Mortality, injury and behavioural effects
2. Turbine interactions – Injury and mortality to birds and bats
3. Electromagnetic fields
4. Seabed disturbance – Loss of/harm to benthic habitats
5. Disturbance of underwater cultural heritage *
6. Physical presence – Effects on hydrodynamics and sediment transport processes
7. Physical presence – Barrier effects and displacement of marine fauna
8. Light emissions
9. Vessel interactions – Injury and mortality to marine fauna
10. Invasive marine species
11. Physical presence – Socioeconomic: interference/displacement of existing uses
12. Physical presence – Socioeconomic: seascapes and visual amenity
13. Multiple impact pathways – Australian marine parks and their values

RISK → for a smooth renewable energy transition is the ongoing social acceptance of projects ~ *the social license to operate*

GAP → in understanding of the attitudes and preferences toward offshore renewable energy in Australia ~ *e.g., place attachment and marine conservation*

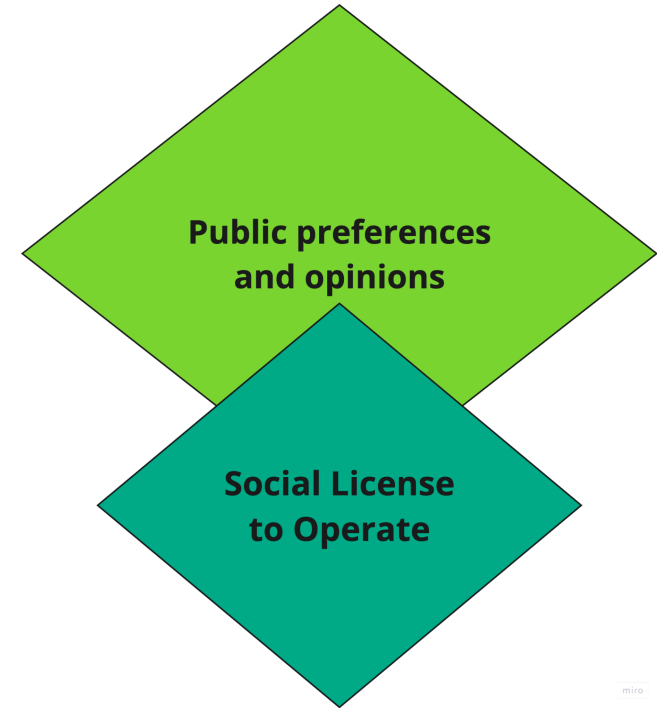
PUBLIC/Consumers → broader social license to operate



SOCIAL LICENSE TO OPERATE

Dynamic set of social preferences and expectations
Social acceptance - mining

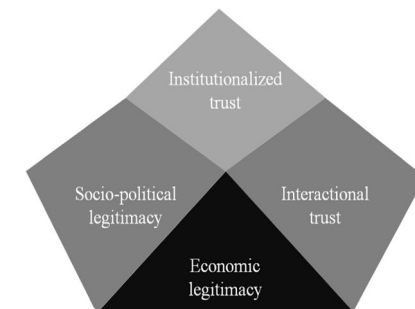
*Legitimacy, Trust, Corporate Social Responsibility,
Sustainable development, Stakeholder engagement
processes* (Dumbrell, Adamson, and Wheeler 2020; Thomson and Boutilier 2011)



MEASURE? OUTSIDE FORMAL PROCESSES - REGULATION

HAVING IT VERSUS NOT HAVING IT

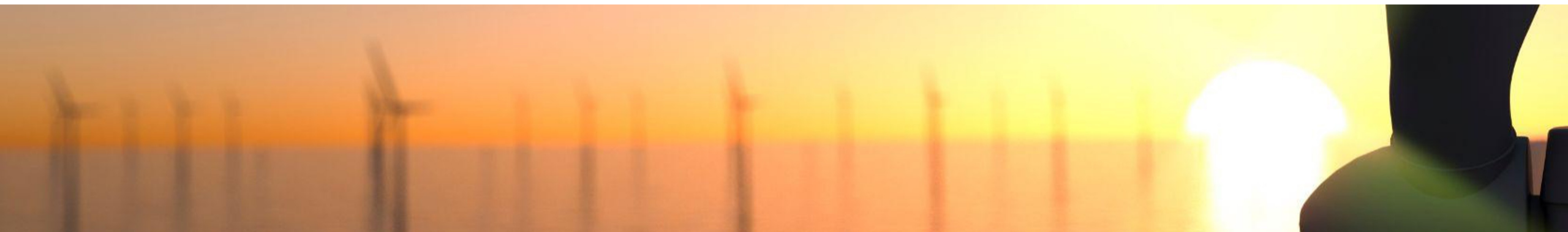
Well-established qualitative methods
SLO framework- Likert scale 15-18
statements (Boutilier and Thomson 2011)



Why is a social license to operate framework useful for offshore wind energy?

- (1) Concern about real or perceived negative externalities,
- (1) Concern regarding a real or perceived undersupply on public goods; and/or
- (1) Concern regarding the use of (and impact to) socially valuable assets to generate private profits.

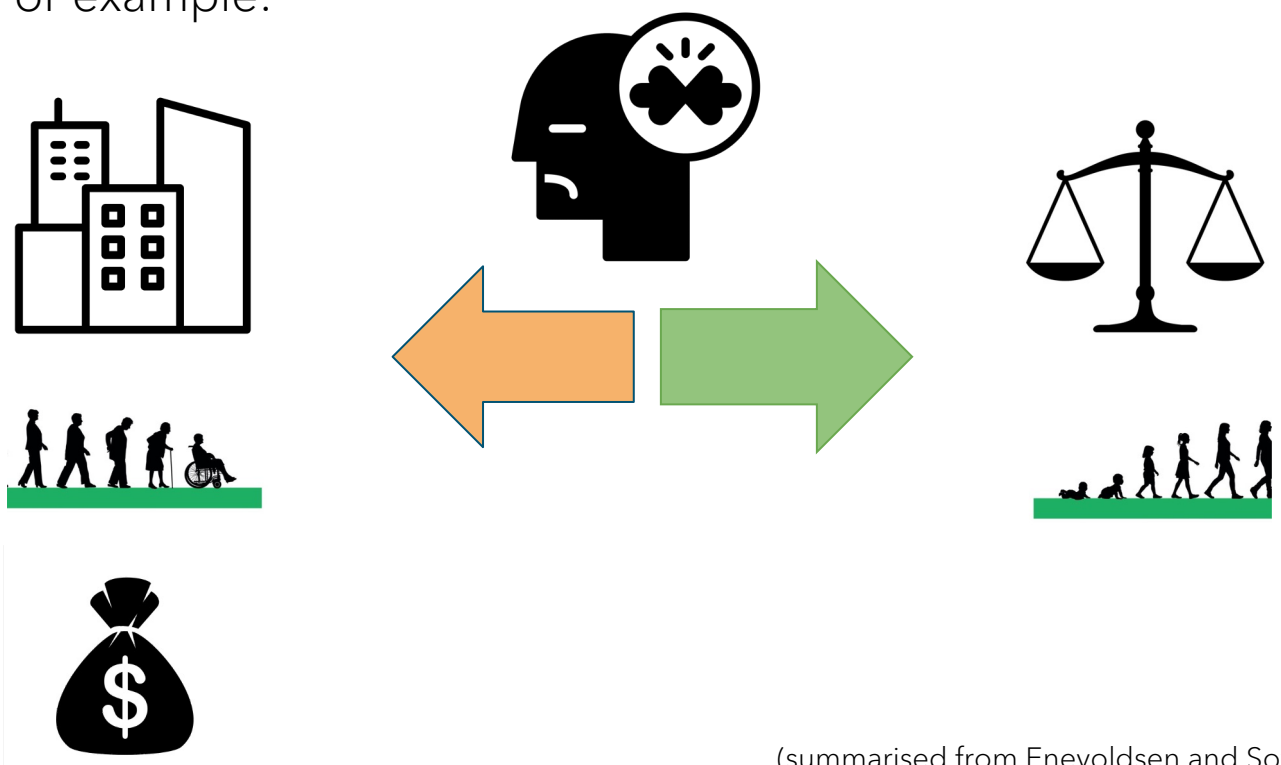
Dumbrell, Adamson and Wheeler 2020



LITERATURE OF PREFERENCES FOR RENEWABLE ENERGY ~ EUROPE AND AMERICA

SOCIAL ACCEPTANCE FOR WIND IN EUROPE AND AMERICA

For example:



(summarised from Enevoldsen and Sovacool 2016)



OUR RESEARCH APPROACH

Focus groups and interviews - Scoping

Understand issues and perspectives

Inform design of the survey

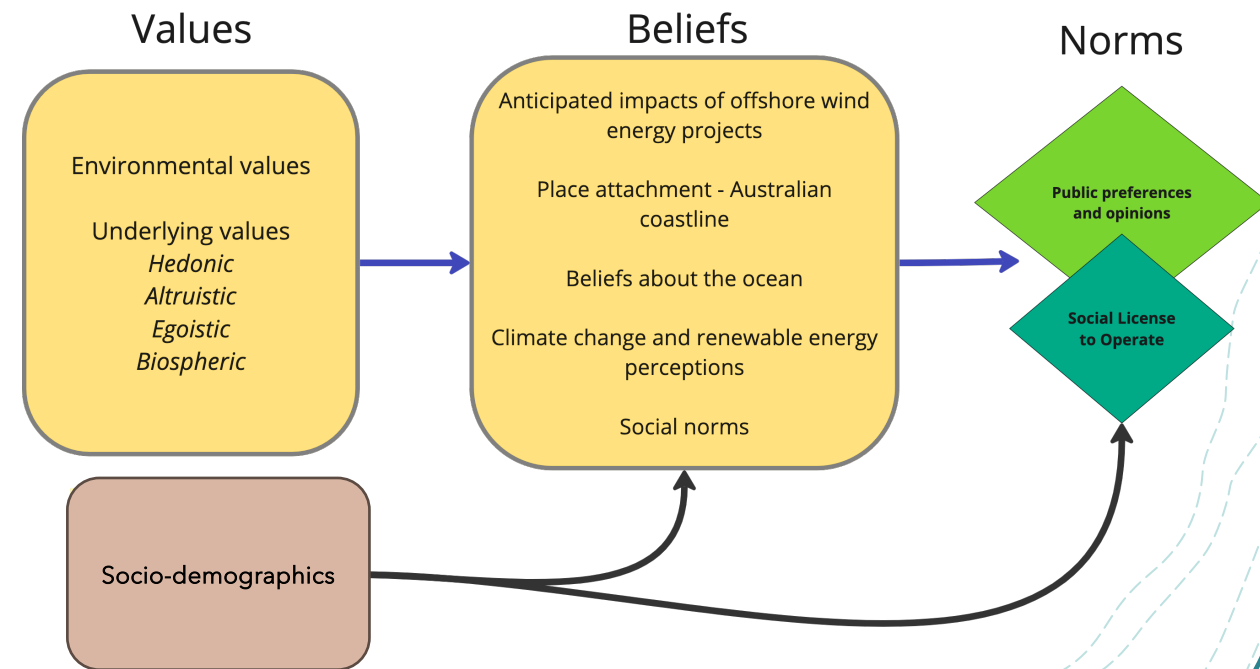
National benchmark survey

Current understanding and perceptions

Current social license to operate

Stated preferences (choice experiment)

THEORETICAL FRAMEWORK



OBSERVATIONS FROM FOCUS GROUPS

Generally supportive

- > Distributional justice - costs and benefits for local communities
- > Impacts to the marine environment

Focus group participants wanted like to know more about the trade-offs between the options for all available renewable energy projects in Australia

What is the best way to transition to a net-zero economy?

What are the advantages of offshore wind vs onshore wind?

Urban Australians appear to accept the visual amenity impacts as trade-offs - different for local communities?

Costs

Impacts



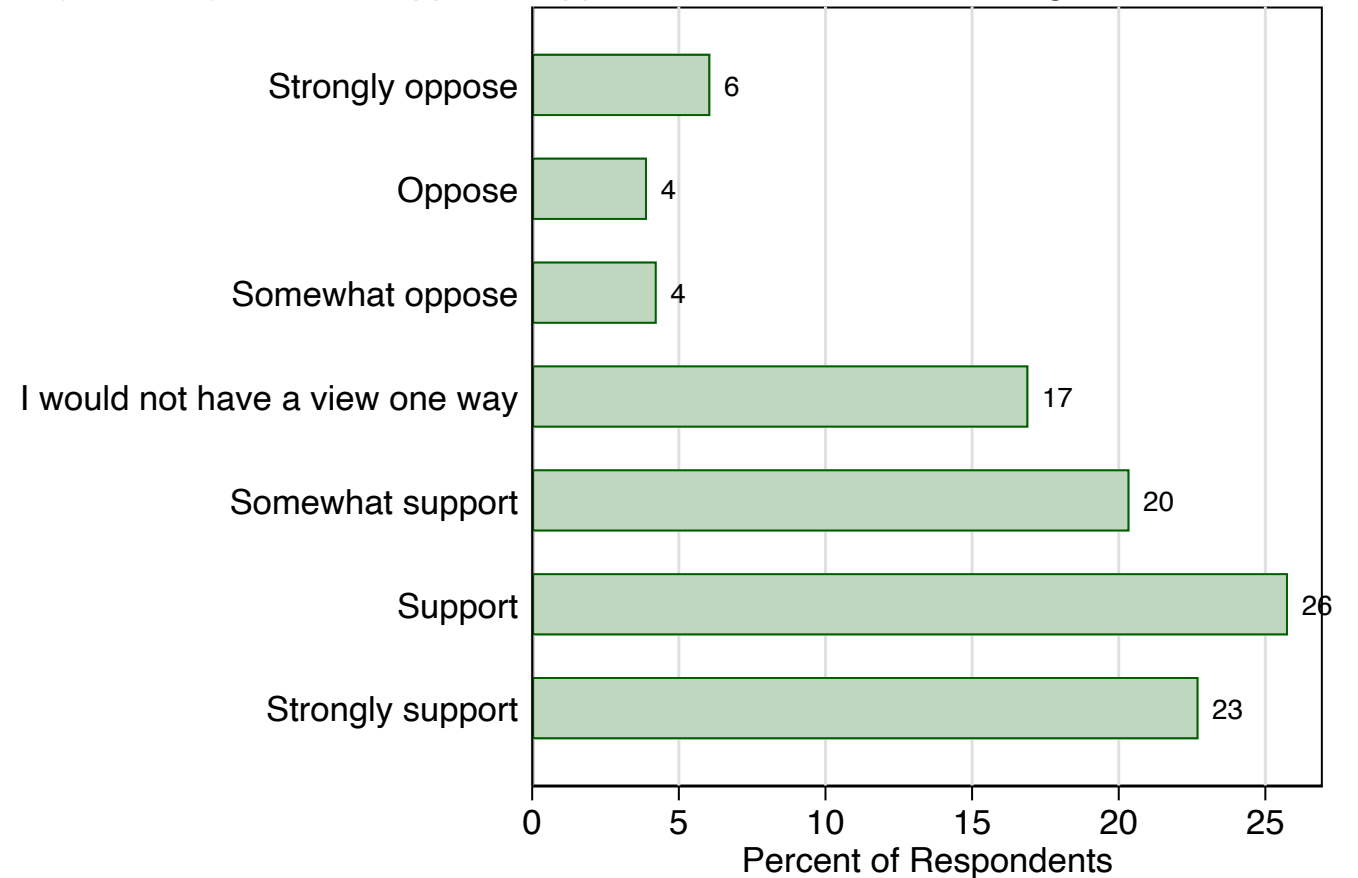
RESULTS

National Australian survey

3,009 respondents -representative by age and gender in each state - metro/non-metro

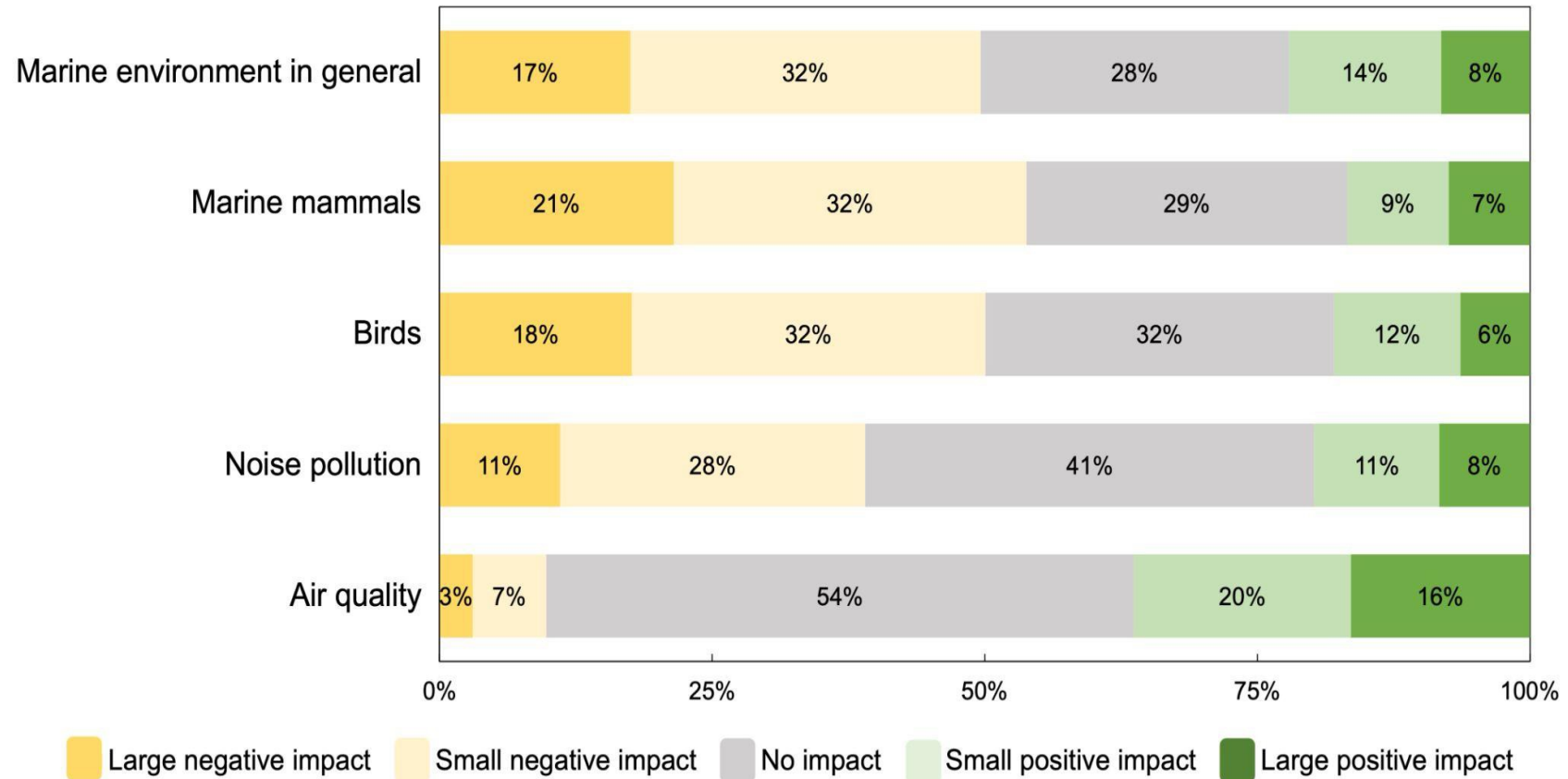
75% are worried about climate change (*similar to other national surveys)

Do you think you would support or oppose offshore wind farms being built in Australia?



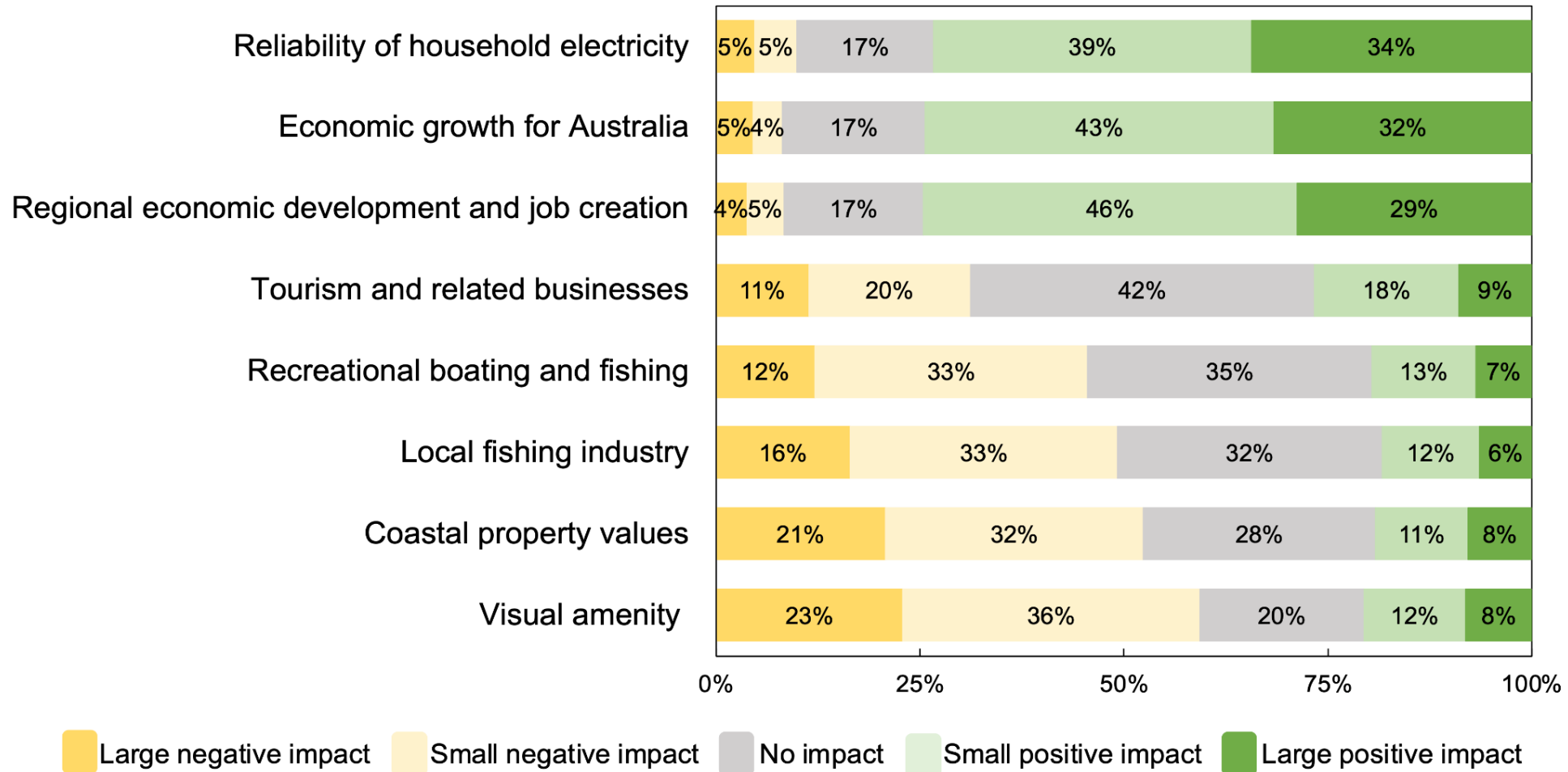
RESULTS – PERCEIVED IMPACTS

'How do you think **offshore wind farms** in Australia might impact the following things?'

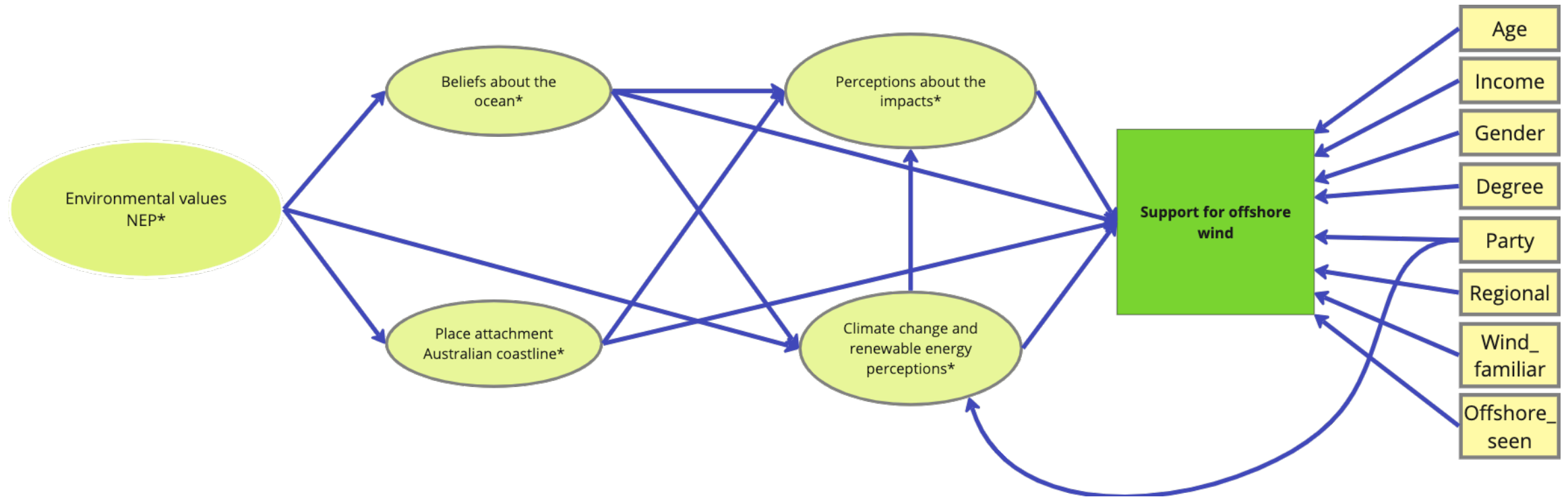


RESULTS – PERCEIVED IMPACTS

'How do you think **offshore wind farms** in Australia might impact the following things?'



PRELIMINARY RESULTS – STRUCTURAL EQUATION MODELLING PREFERENCES

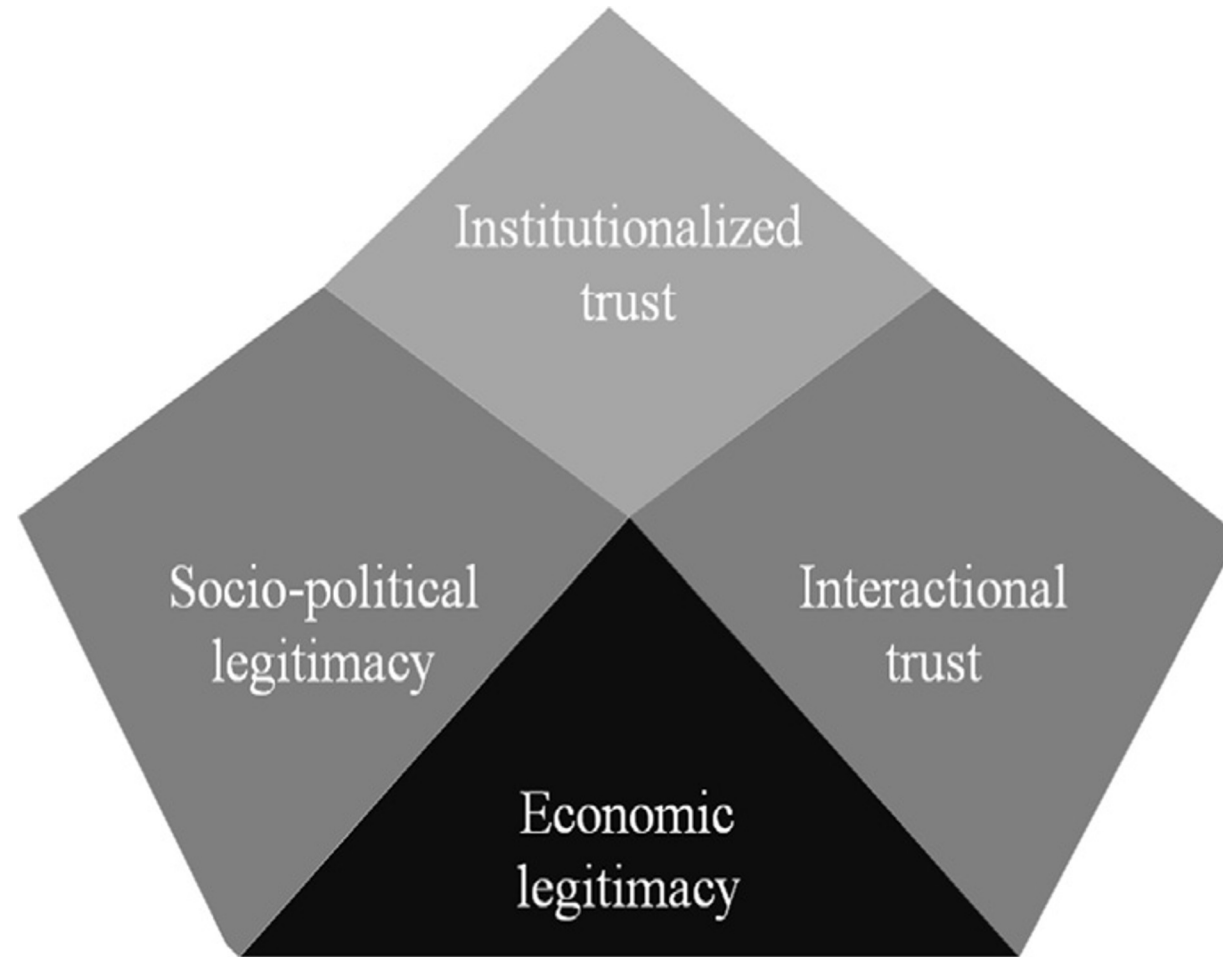


PRELIMINARY STRUCTURAL EQUATION MODELLING

PARTIAL RESULTS SHOWN – PREFERENCES

Direct effects Standardized	L_Ocean Beliefs - Non-use values	L_Ocean Beliefs - Use values	L_Aust coastal attachment	L_Impacts_ EnviroSocial	L_Impacts_ Economic	L_Climate action & renewable energy	Support OWE
L_NEP_New Ecological Paradigm	0.57***	0.40***	0.58***			0.68***	
L_NEP_Dominant Social Paradigm	0.23***	0.49***	0.21***			0.07**	
L_Ocean Beliefs_Non-use values				-0.36***	-0.17***	-0.25***	-0.09***
L_Ocean beliefs_Use values				0.37***	0.16***	0.14***	0.06**
L_Australian coastal attachment				-0.09***	-0.05**		ns
L_Climate action & renewable energy				0.37***	0.69***		0.24***
L_Impacts_EnviroSocial							0.14***
L_Impacts_Economic							0.45***
Political party - 'right'						-0.28***	ns
Degree							ns
Familiar with wind farms							ns
Seen an offshore wind farm							ns
Higher income							0.06***
Male							0.07***
Regional Australia							-0.03*
Age							ns

SOCIAL LICENSE TO OPERATE (SLO) MEASURE



SOCIAL LICENSE TO OPERATE (SLO) MEASURE

SLO Social and Institutional



SLO MEASURES

Factor 1 : SLO Economic

Economic legitimacy

1. Australia can economically benefit from having an offshore wind sector in Australia
2. With the cooperation of the offshore wind sector Australia can achieve its goals for economic growth
3. With the cooperation of the offshore wind sector Australia can achieve its goals for regional development
4. With the cooperation of the offshore wind sector Australia can achieve its goals for reducing carbon emissions
5. With the cooperation of the offshore wind sector Australia can achieve its goals for environmental protection

Socio-political legitimacy

6. In the long run, offshore wind makes a contribution to the well-being of all Australians
7. The offshore wind sector in Australia will treat everyone fairly
8. The offshore wind companies will respect our way of doing things in Australia
9. The offshore wind sector and the Australian public have a similar vision for the future of Australia

Interactional trust

10. Offshore wind companies will do what they say they will do
11. Offshore wind companies will have a good relationship with the Australian public
12. Having an offshore wind sector in Australia will provide more benefits than problems
13. The offshore wind sector will listen to the Australian public

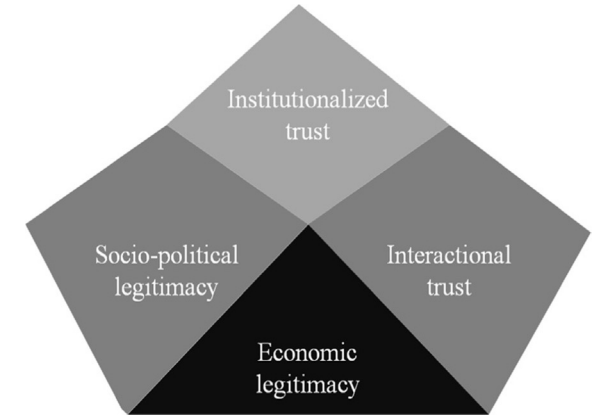
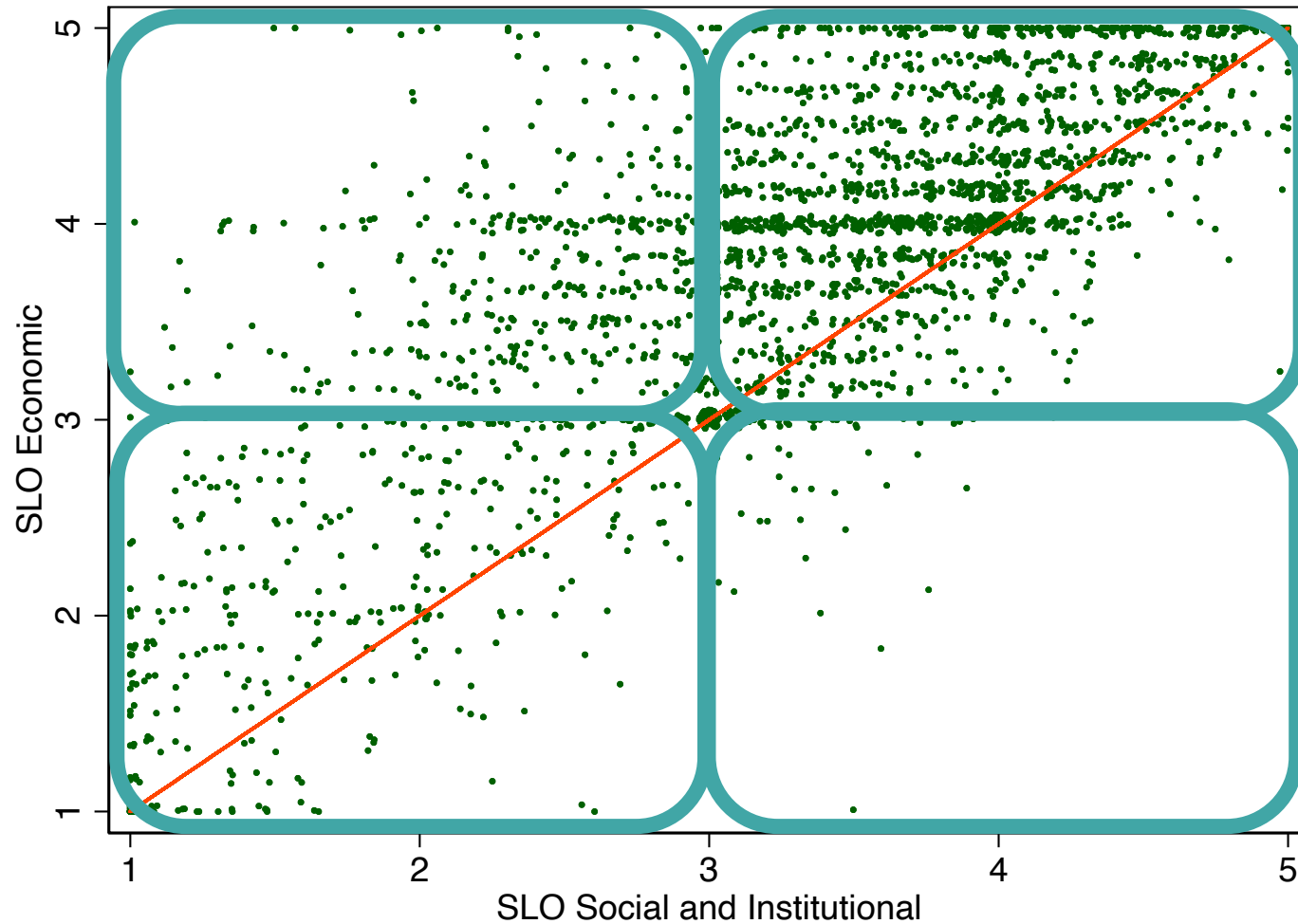
Institutional trust

14. Offshore wind companies will give more support to people they negatively affect
15. The offshore wind sector will share decision-making with the Australian public
16. The offshore wind sector will take into account the interests of the Australian public
17. The offshore wind sector is concerned about the interests of the Australian public
18. The offshore wind sector will openly share information with the Australian public about things that are relevant to them

Factor 2 : SLO Social

1 "Strongly disagree" to 5 "Strongly agree"

RESULTS – SLO MEASURE



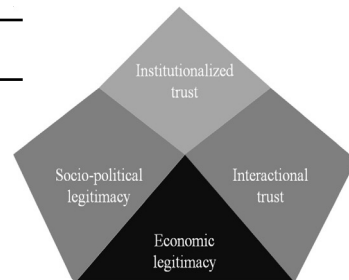
1 "Strongly disagree" 2 "Disagree" 3 "Neutral" 4 "Agree" 5 "Strongly agree"

PRELIMINARY STRUCTURAL EQUATION MODELLING

PARTIAL RESULTS SHOWN – SLO

Direct effects Standardized	L_Climate action & renewable energy	L_SLO Economic	L_SLO Social and Institutional
L_NEP_New Ecological Paradigm	0.78***	-0.35***	-0.34***
L_NEP_Dominant Social Paradigm	ns	0.12***	0.27***
L_Climate action & renewable energy		1.01***	0.97***
L_Impacts_EnviroSocial		0.07***	0.28***
L_Impacts_Economic		0.13***	ns
Political party - 'right'	-0.28***	0.15***	0.12***
Degree		ns	ns
Higher income		ns	ns
Male		0.06***	0.04***
Regional Australia		ns	ns
Age		ns	-0.05***

*Higher pro environmental (NEP)
and higher pro development and technology solutions (DSP)
contribute to increases in both measures of SLO*



KEY OBSERVATIONS - RISKS

Lots of heterogeneity in support level

High support - 14% are below neutral level - 17% neutral (31%)

Impacts to local/regional communities



Build social capacity

Shared-benefits/investment → distributive justice

Perceived negative environmental impacts

~ 30% no impact



Communication: clear, unbiased, and honest information → environmental impacts (monitoring)

Environmental values → ↑ climate → ↑ support

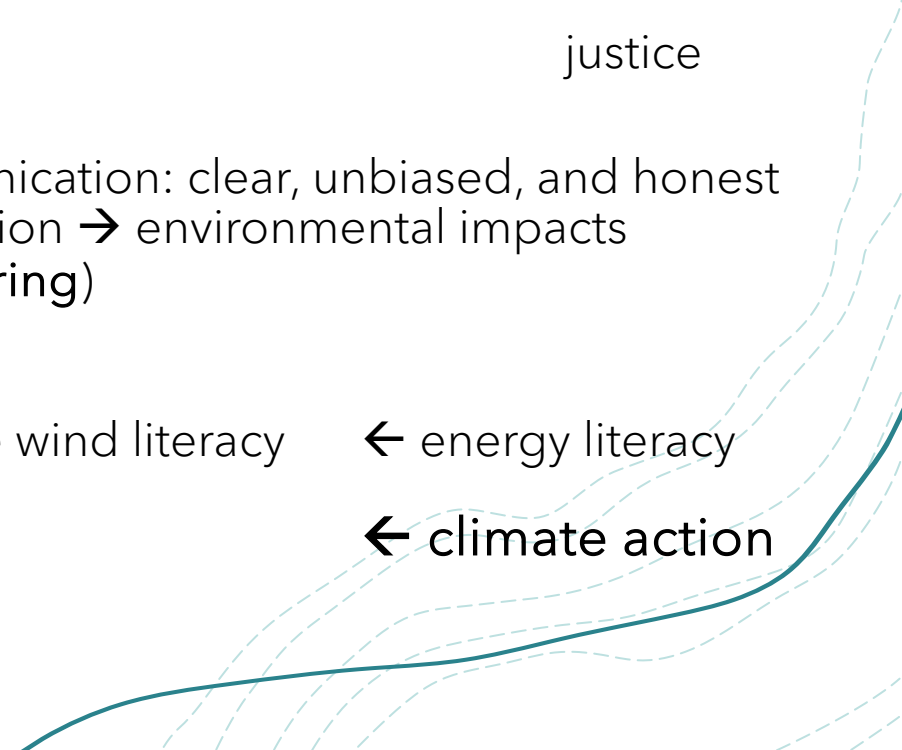
Ocean conservation values → ↓ support



Offshore wind literacy

← energy literacy

← climate action



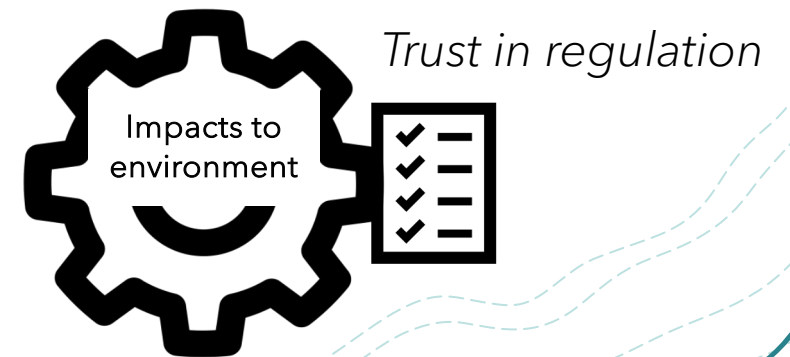
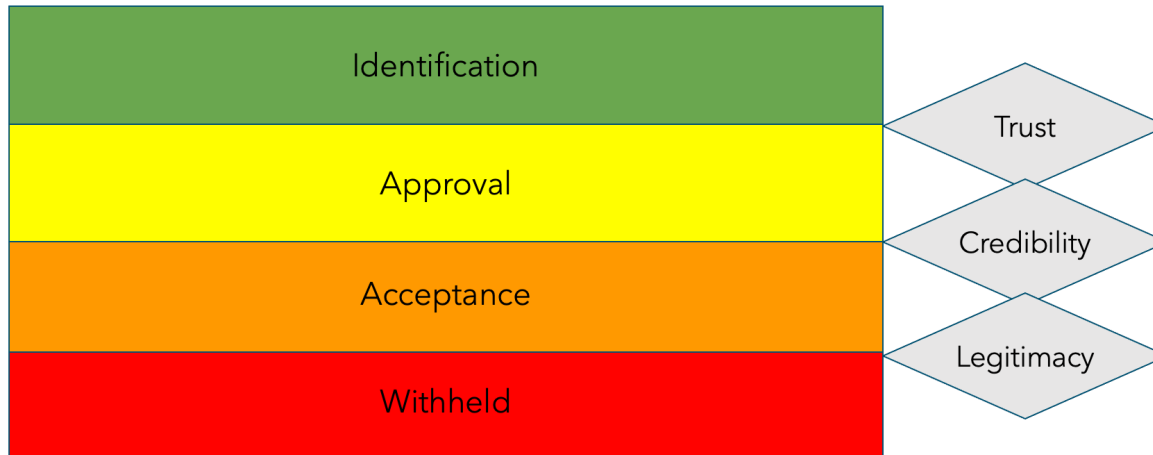
KEY OBSERVATIONS

Economic legitimacy achieved before social and institutional credibility and trust



Community and public participation and engagement processes → procedural justice

Pro environmental AND pro development and technology solutions contribute to increases in both measures of SLO



THANKS!

ALAYA SPENCER-COTTON

ALAYA.SPENCER-COTTON@UWA.EDU.AU



THE UNIVERSITY OF
**WESTERN
AUSTRALIA**

**OCEANS
INSTITUTE**

Centre for Environmental
Economics & Policy





Additional slides

OCEAN BELIEFS

Non-use values

- A place for beauty (scenery)
- A place for recreation
- A place for relaxation
- A place of inspiration (spiritual)
- A home for wildlife
- A place for wildness
- A place for learning (science)
- A place for exploration
- A place of human culture (history, arts)

Use values

- A source of food
- A place of commerce (industry, fishing)
- A source of energy (wind and wave, oil wells)

NEP

New Ecological Paradigm

- *1) We are approaching the limit of the number of people the Earth can support. (NEP)
- *3) When humans interfere with nature it often produces disastrous consequences. (NEP)
- *5) Humans are seriously abusing the environment. (NEP)
- *7) Plants and animals have as much right as humans to exist. (NEP)
- *9) Despite our special abilities, humans are still subject to the laws of nature. (NEP)
- *11) The Earth is like a spaceship with very limited room and resources. (NEP)
- *13) The balance of nature is very delicate and easily upset. (NEP)
- *15) If things continue on their present course, we will soon experience a major ecological catastrophe. (NEP)

Dominant Social Paradigm

- *2) Humans have the right to modify the natural environment to suit their needs.(DSP)
- *4) Human ingenuity will insure that we do not make the Earth unlivable. (DSP)
- *6) The Earth has plenty of natural resources if we just learn how to develop them. (DSP)
- *8) The balance of nature is strong enough to cope with the impacts of modern industrial nations. (DSP)
- *10) The so-called "ecological crisis" facing humankind has been greatly exaggerated. (DSP)
- *12) Humans were meant to rule over the rest of nature. (DSP)
- *14) Humans will eventually learn enough about how nature works to be able to control it. (DSP)

Results

- Factors analysis supports the 2 constructs.

RESULTS – CHOICE EXPERIMENT

16% never chose an offshore wind option

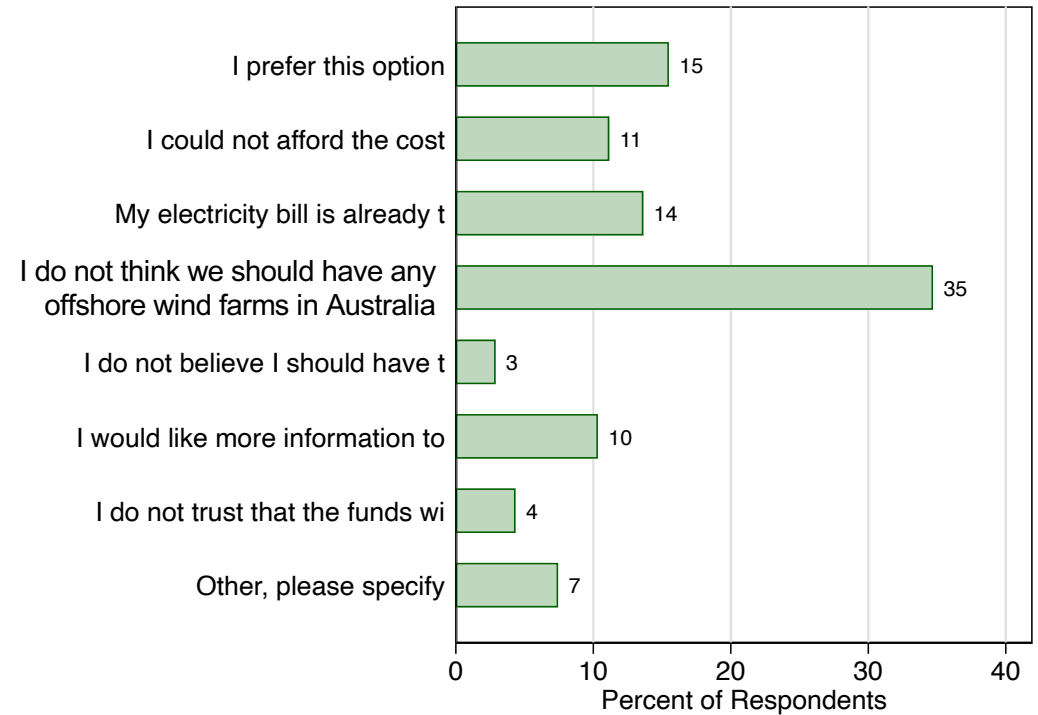


14% oppose offshore wind











This group are more likely to be

Older

Live in regional Australia *Male, Degree, High income, Party_right*



CHOICE EXPERIMENT

	OFFSHORE WIND OPTION A 	OFFSHORE WIND OPTION B 	OPTION C
Distance from shore	20 km ; turbines seen on the horizon	10 km ; turbines clearly seen	SOLAR & ONSHORE WIND
Investment	 Compensation  Local jobs; training  Regional investment	 Compensation	
Impacts to Birds 	Mitigate	Avoid and mitigate	
Impacts to Marine Mammals 	Avoid and mitigate	Mitigate	
Cost of offshore wind to your annual household electricity bill	 Increase \$60/year	 Increase \$240/year	\$0/year









OPTION A
\$60/year

OPTION B
\$240/year

OPTION C
\$0/year

I prefer this option:

PRELIMINARY RESULTS – LATENT CLASSES

	Class 1 – 28%	Class 2 – 15%	Class 3 – 35%	Class 4 – 22%
Offshore Wind Proposal	--	++	-	+
Distance from shore			20km + 40km ++	20km +++++++ 40km +++++++ +++++
Investment		<ul style="list-style-type: none">  Compensation +  Local jobs; training +  Regional investment + 		<ul style="list-style-type: none">  Compensation ++  Local jobs; training +++++  Regional investment ++++++
Impacts to Birds 			Avoid and mitigate +	Avoid and mitigate +++++
Impacts to Marine Mammals 			Avoid and mitigate +	Avoid and mitigate ++++++
			Higher SLO-economic Lower SLO-social and institutional Higher income ~ male	Higher SLO-economic Lower SLO-social and institutional Female

REFERENCES

Stephens, Siân, and Bryan Michael Kenneth Robinson. 2021. "The Social License to Operate in the Onshore Wind Energy Industry: A Comparative Case Study of Scotland and South Africa." *Energy Policy* 148 (January): 111981.

Dumbrell, Nikki P., David Adamson, and Sarah Ann Wheeler. 2020. "Is Social Licence a Response to Government and Market Failures? Evidence from the Literature." *Resources Policy* 69 (December): 101827.

Boutilier, Robert G., and Ian Thomson. 2011. "Modelling and Measuring the Social License to Operate: Fruits of a Dialogue between Theory and Practice." Accessed May 24, 2023. <https://www.sociallicense.com/publications/Modelling%20and%20Measuring%20the%20SLO.pdf>.

Enevoldsen, Peter, and Benjamin K. Sovacool. 2016. "Examining the Social Acceptance of Wind Energy: Practical Guidelines for Onshore Wind Project Development in France." *Renewable and Sustainable Energy Reviews* 53 (January): 178-84.

Richert, C., A. Rogers, and M. Burton. 2015. "Measuring the Extent of a Social License to Operate: The Influence of Marine Biodiversity Offsets in the Oil and Gas Sector in Western Australia." *Resources Policy* 43: 121-29.

Lutzeyer, S., D. J. Phaneuf, and L. O. Taylor. 2018. "The Amenity Costs of Offshore Wind Farms: Evidence from a Choice Experiment." *Energy Economics* 72: 621-39. <https://doi.org/10.1016/j.eneco.2018.03.020>.

Cullen-Knox, Coco, Marcus Haward, Julia Jabour, Emily Ogier, and Sean R. Tracey. 2017. "The Social Licence to Operate and Its Role in Marine Governance: Insights from Australia." *Marine Policy* 79 (May): 70-77. <https://doi.org/10.1016/j.marpol.2017.02.013>.

Read, Darryl L., R. Brown, E. Thorsteinsson, Methuen I. Morgan, and I. Price. 2013. "The Theory of Planned Behaviour as a Model for Predicting Public Opposition to Wind Farm Developments." *Journal of Environmental Psychology* 36: 70-76. <https://doi.org/10.1016/J.JENVP.2013.07.001>.

Hall, N., P. Ashworth, and P. Devine-Wright. 2013. "Societal Acceptance of Wind Farms: Analysis of Four Common Themes across Australian Case Studies." *Energy Policy* 58 (July): 200-208. <https://doi.org/10.1016/j.enpol.2013.03.009>.

Liobikienė, Genovaitė, Renata Dagiliūtė, and Romualdas Juknys. 2021. "The Determinants of Renewable Energy Usage Intentions Using Theory of Planned Behaviour Approach." *Renewable Energy* 170 (June): 587-94.

<https://doi.org/10.1016/j.renene.2021.01.152>.

Boutilier, Robert G., and Ian Thomson. 2011. "Modelling and Measuring the Social License to Operate: Fruits of a Dialogue between Theory and Practice." *Social License*.

<https://www.sociallicense.com/publications/Modelling%20and%20Measuring%20the%20SLO.pdf>.

Beyond Zero Emissions quote https://bze.org.au/media_release/offshore-wind-can-reindustrialise-regional-australia/?gclid=CjwKCAjw44mlBhAQEiwAqP3eViF4pz0lftUfsbTi8uPGAWZ0AG2OGEBKmWI7uiZ2vL1IMtWqTu1YRoC5JQQAuD_BwE