

Winds of Change: A Study of the Acceptability of Renewable Energy in Regional Australia

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Introduction and Background

Electricity is predominantly generated from fossil fuels in Australia (Djerf-Pierre et al., 2015), but concerns about climate change are driving a debate on how to bring about a transition to renewable energy (RE) (Nelson, 2016). Widespread public support is needed when developing large-scale energy infrastructures, such as wind farms (Batel & Devine-Wright, 2015), but the drivers of social acceptance have not received adequate attention (Friedl & Reichl, 2016). Renewable energy has become a top priority for the state government in Queensland (Queensland Government, n.d), but a transition away from coal-fired electricity in Australia has been hampered due to obstacles rooted in politics (Cheung & Davies, 2017; Muenstermann, 2012). High levels of localized resistance – particularly to wind power - are predicted to significantly hamper renewable energy targets set by the Australian federal, state and territory governments (Hall et al., 2015). Community opposition to siting decisions, has been somewhat dismissively classified as NIMBYISM ('Not in My Back Yard'), and the term has been used uncritically in both policy and academic

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material (Beben, 2015; Petrova, 2016). Opposition appears to centre on four factors: dislike of their visual impact (Knopper & Ollson, 2011), turbine noise (Botelho et al., 2015; McCunney et al., 2014), potential dangers to wildlife (Marques et al., 2014) and claimed human health impacts. Government inquiries and reviews have been conducted in several countries, including Australia, and they have concluded that there is no medical evidence of a direct link between turbine operation and human health, although the poor quality of the data has been noted (Chapman, Joshi, & Fry, 2014).

Research Objectives and Methodology

This study aims to evaluate consumers' support for renewable energy sources, including wind farms, and examine priorities placed on factors such as human health and climate change mitigation. A quantitative methodology was chosen and a questionnaire was developed, which is the norm in renewable energy studies (Stoutenborough et al., 2015; Dockerty et al., 2012). Data was collected through field sampling and online distribution. A total of 325 usable responses were obtained. Respondents came from a regional city, Townsville, with an even spread of males and females and a variety of ages and income groups. Questions were informed by the literature (Poortinga et al., 2006; Eagle et al., 2016), noting that the various energy technologies have different environmental, economic and social impacts. 5-point Likert-type scales were used (with 1= strongly disagree and 5 = strongly agree), with one question specifically measuring support for wind energy and a second question providing benchmark data on attitudes. A rank order question was used (1= most important, 6= least important) to examine perceived priorities for generation decisions.

Results/Findings

Table 1 shows that respondents were strongly supportive of renewable energy, with wind and solar receiving the highest mean scores. Battery storage enjoyed strong support, along with hydroelectric and marine power. Nuclear energy was, by far, the least favoured technology. Responses re social, ecological and economic indicators of acceptance are shown in Table 2. Respondents agreed that Queensland's renewable energy sources, such as wind, should be fully exploited and that Queensland was rich in renewable resources. Respondents also agreed with statements such as 'it is our responsibility to develop renewable energy for future generations' and 'high levels of energy use will impact future generations'. The majority of respondents believed in human-induced climate change. Respondents disagree with the statement 'there is no link between electricity used in the home and climate change'. Table 3 indicates that climate change is the most important factor for determining electricity generation policy, followed by cost of electricity and effects on the economy.

Table 1: Support for wind power and other energy technologies (5=strongly agree)

Energy	Mean	SD
Solar	4.70	0.53
Wind	4.62	0.71
Marine Power	4.37	0.87
Hydroelectric Power	4.27	0.76
Battery Storage	4.07	0.89
Biomass	4.01	0.81
Geothermal	3.81	0.99
Fuel Cell Technology	3.61	0.92
Natural Gas	2.98	1.21
Oil	2.72	1.19
Coal	2.63	1.07
Nuclear	2.55	1.32

Table 2: Attitudes towards wind energy, sustainability and climate change (5 = strongly agree)

Attitudinal Item	Mean	SD
Queensland's renewable energy sources (solar, wind) should be fully exploited	4.33	0.95
Queensland is rich in renewable energy sources (e.g. solar, wind)	4.10	0.98
It is our responsibility to develop renewable energy for future generations	4.45	0.74
High levels of energy use will impact future generations' standard of living	4.27	0.85
Human-induced climate change is occurring at some level	4.19	0.85
There is no link between electricity used in the home and climate change	2.43	1.19
Investment in renewable energy is a means of stimulating economic growth	3.95	0.92

Table 3: Electricity generation – priorities for policy makers

Factor – ranked first from a list of six factors:	(%)
Helping to prevent climate change	27.8
Cost of electricity to consumers	17.5
Effects on the economy	15.6
Effects on the natural environment	14.2
Effects on human health & safety	13.2
Level of pollution	12.3

Discussion and conclusion

Contrary to expectations from the academic literature (for example, Marques et al., 2014; McCunney et al., 2014), we find no evidence of NIMBYISM. There is strong support for wind energy, underpinned by a belief in human-induced climate change, awareness of the social impacts of energy use for future generations and ability to exploit natural resources. Given the contradiction between public support and federal / state reluctance to support renewable energy development at the expense of coal generation, Social Marketing would appear to have a potential role to play in strengthening social acceptance and also in countering misinformation from the coal lobby (Muenstermann, 2012), potentially via inoculation strategies such as advocated by Cook et al, 2017 at downstream, midstream and upstream levels of society (Gordon; Luca et al, 2016). The role of social marketing goes beyond individual behaviour change (Saunders et al., 2015) and policy makers can help communities achieve positive social outcomes through information-based or rewards-based interventions (see Šćepanović et al., 2017).

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