Fourth annual survey of Australian attitudes to climate change: Interim report

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Contents

Acknowledgments ............................................................................................................. iv
Executive summary ........................................................................................................ v
Introduction ......................................................................................................................... 1
1 Attitudes to climate change .......................................................................................... 2
   1.1 Climate change and its causes .............................................................................. 2
   1.2 What people think other think .......................................................................... 3
   1.3 Importance of climate change ........................................................................... 5
   1.4 Familiarity with climate change terminology ................................................... 6
2 Climate change relevant behaviour ............................................................................. 7
3 Climate estimates and projections made by the public .............................................. 12
4 Perceived vulnerability, coping appraisals, and policy support ............................... 17
   4.1 Perceived vulnerability and coping .................................................................... 17
   4.2 Support for adaptation and mitigation initiatives ............................................. 19
5 Changes in attitudes and behaviours over time: 2010–2013 .................................... 22
   5.1 Basic attitudes to climate change ...................................................................... 22
   5.2 Trust and responsibility placed in groups and organisations ........................... 23
   5.3 Emotions, cognitions, and behavioural engagement ....................................... 26
Discussion ......................................................................................................................... 29
References ......................................................................................................................... 31
Figures

Figure 1 Percentage of agreement that climate change is happening (N = 5219) ........................................ 2
Figure 2 Typological breakdown of thoughts about the causes of climate change (N = 5219) ............................. 3
Figure 3 Comparison of respondents’ actual level of agreement with each statement with their estimates of the Australian community’s agreement (N = 5219) ........................................................................ 3
Figure 4 Respondents’ estimates of the Australian community’s level of agreement with each statement, broken down by respondents’ own opinion-type (N = 5219) ........................................................................ 4
Figure 5 Levels of familiarity with the terms ‘climate mitigation’ (N = 5291) and ‘climate adaptation’ (N = 3169) ................................................................................................................................. 6
Figure 6 Percentage of respondents engaging in community-based environmental behaviours (N = 5219) .... 7
Figure 7 Percentage of respondents engaging in pro-environmental climate change relevant behaviours (N = 5219) .......................................................................................................................... 8
Figure 8 Commonly stated reasons for engaging in pro-environmental behaviours (N = 3788) .................... 9
Figure 9 Motivations for engaging in pro-environmental behaviours for low engagement respondents (n = 1783) and high engagement respondents (n = 2005) ........................................................................ 10
Figure 10 Expected future increases in intensity and frequency of events in respondents’ region (N = 5219) ................................................................................................................................. 12
Figure 11 Perceived regional changes in temperature levels (N = 5290; N = 5219) ........................................ 13
Figure 12 Perceived regional changes in rainfall levels (N = 4274; N = 5219) ................................................... 14
Figure 13 Respondent definition of ‘their region’ for perceived regional climate change questions (N = 5219) ................................................................................................................................. 16
Figure 14 Mean ratings of perceived levels of coping with the impacts of climate change (N = 5219) .......... 17
Figure 15 Mean injury, loss, or damage occurring to respondent as a result of events, and anticipated coping with future events (N = 5219) ................................................................................................. 18
Figure 16 Perceived vulnerability of different sectors to climate change (N = 5219). ................................. 19
Figure 17 Mean levels of support for adaptation and mitigation initiatives (N = 5219) ................................. 20
Figure 18 Average change in the proportion of respondents endorsing opinions about the nature and causes of climate change: 2010–2013 (N = 2202) ......................................................... 22
Figure 19 Average change of attitudes toward climate change over time: 2010–2013 (N = 2202). Numbers in legend brackets refer to minimum and maximum scores for each question ........................................ 23
Figure 20 Average change in levels of trust in organisations to provide truthful information about climate change: 2010–2013 (N = 2202) ................................................................. 24
Figure 21 Average change in ratings of responsibility for responding to climate change: 2010–2013 (N = 2202) ................................................................................................................................. 25
Figure 22 Average change in ratings of responsibility for causing climate change: 2010–2013 (N = 2202).... 25
Figure 23 Average change in emotion ratings: 2010–2013 (N = 2202) .......................................................... 26
Figure 24 Average change in cognitions about climate change: 2010–2013 (N = 2202) ............................... 27
Figure 25 Average change in behavioural engagement: 2010–2013 (N = 2202) ........................................ 27
Tables

Table 1 Demographics of survey respondents .............................................................1
Table 2 Average importance rankings of general and environmental concerns (N = 5219) ...............5
Table 3 Respondents’ estimates of their own pro-environmental engagement compared to others (N = 3788) ......................................................................................................................10
Table 4 Simultaneous regression analysis of climate change attitudes and pro-environmental behaviour (N = 5219) ........................................................................................................................................11
Table 5 Percentage of respondents falling within combined projection types for anticipated regional climate in 20 years’ time (N = 5219) ................................................................................................................................................14
Table 6 Percentage of respondents falling within each projection type for anticipated regional climate in 20 years’ time (N = 5219). Darker cell colours indicate larger percentages ................................................................................15
Table 7 Correlation matrix of key survey variables (N = 5219) ..................................................................................................................................................21
Acknowledgments

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Executive summary

This report is the fourth in a series of publications examining Australians’ responses to climate change. The report outlines the findings from a survey of 5219 Australians conducted in July and August of 2013. Respondents included a group of 2202 people who had also undertaken at least one of our surveys in 2010, 2011, or 2012. We investigate five topics of climate change responses, the major findings of which are as follows.

ATTITUDES TO CLIMATE CHANGE

- A large majority of people think climate change is happening, and are slightly more likely to attribute climate change to humans than to natural fluctuations in Earth’s temperature. More than 80% of respondents thought climate change was happening, similar to previous surveys. On average, respondents estimated that human activity accounted for about 62% of changes to the climate.
- People are inaccurate when predicting the views of other Australians. When asked about the nature of climate change, fewer than 8% of respondents were of the opinion it was not happening at all, yet these respondents estimated that almost 50% of the Australian public would share their view. Further, the prevalence of the view that climate change is not happening was overestimated by people of all opinion-types.
- Climate change ranks low in importance when compared to other concerns. Respondents ranked climate change as the 14th most important concern among 16 general concerns, and 7th out of 8 environmental concerns.
- There is little familiarity with climate change terminology. Roughly one in five respondents had heard of ‘climate mitigation’, while one in four had heard of ‘climate adaptation’.

CLIMATE CHANGE RELEVANT BEHAVIOUR

- People engage in climate-relevant behaviour for a variety of reasons. Environmental motivations figured more prominently for respondents engaging in more behaviours, while financial motivations dominated for respondents engaging in fewer behaviours.
- People tend to overestimate how much they do compared to others. More than 90% of respondents estimated they engaged in the same or more behaviours than other Australians. Less than 7% thought they did less than other Australians. Further, for those respondents engaging in relatively few behaviours, only 10% thought they did less than the average Australian.
- Certain attitudes toward climate change are better predictors of behaviour than opinions on what causes climate change. Tested together, personal relevance, feelings of moral and ethical responsibility, and experience with climate change, were the strongest predictors of pro-environmental behaviour. Levels of surety that climate change was happening and threat perception, however, made no significant additional contribution to predicting behaviour.

CLIMATE ESTIMATES AND PROJECTIONS MADE BY THE PUBLIC

- People think extreme climate and weather events will increase more in intensity than frequency in the future. Respondents thought heatwaves, heavy rains, and storms were most likely to increase in frequency and intensity in their region, although expected increases were low to moderate. Duststorms, cyclones, and snowstorms were expected to increase by the least amount.
- There is more variability in people’s perceptions of regional rainfall changes than temperature changes. The majority of respondents thought their region had become hotter since 1990, and would be hotter
in 20 and 40 years’ time. The majority of respondents thought their region had become wetter since 1990, but would get drier in 20 and 40 years’ time. Roughly 25% to 30% of respondents thought both temperature and rainfall had remained and would remain stable in their region.

PERCEIVED VULNERABILITY, COPING APPRAISALS, AND SUPPORT FOR ADAPTATION AND MITIGATION INITIATIVES

- **People’s anticipated levels of coping with future extreme climate and weather events are linked to their previous experiences.** Respondents anticipated they would cope moderately well (financially, mentally, and physically) with a changing climate, but lower coping was anticipated for events where respondents had little prior experience of loss, damage, or injury.
- **People think key sectors in Australia are at least moderately vulnerable to climate change.** Natural ecosystems and food security were rated by respondents as the most vulnerable sectors, while tourism was rated as the least vulnerable sector.
- **Initiatives to adapt to and mitigate climate change are generally supported.** Most hypothetical policy initiatives received, on average, at least moderate support from respondents. Most support was given to investment in renewable energy resources, while least support was given to investment in nuclear power stations. Moderate support was given for taxing industries that emit high levels of greenhouse gases.

CHANGES OVER TIME: 2010–2013

- **Attitudes to climate change, and climate-relevant behaviours, have remained relatively stable since 2010, with a few minor exceptions.** For our repeat respondents, opinions about the nature and causes of climate change were stable, except for a slight increase in the proportion of respondents who said they didn’t know. Stated levels of behavioural engagement remained static except for a small decrease in the proportion of people reducing their household water use.
- **People are now slightly more trusting of a range of agencies to tell them the truth about climate change, through overall trust levels remain modest.** Repeat respondents increased their ratings of trust in agencies, including environmental group scientists and government scientists, to provide truthful information about climate change. While there were no changes over time, trust in university scientists, and friends and family, remained highest throughout the time period.
- **People are slightly more positive now about the potential outcomes of responding to climate change.** There was a slight increase in repeat respondents endorsing the sentiments that responding to climate change would provide people with a sense of purpose, provide people with an opportunity to be part of something bigger, and foster greater community spirit. Conversely, respondents were less likely to say that responding to climate change would cost too much money and jobs, and that nothing meaningful could be done by Australia about climate change.
Introduction

This report presents the basic findings of a survey undertaken in July and August of 2013 with 5219 Australians. The survey forms part of a longitudinal research program investigating the ways in which Australians think about climate change. These respondents included a cohort of 2202 people who had undertaken two or more of these surveys since 2010 (Leviston & Walker, 2011; Leviston & Walker, 2010; Leviston, Walker & Malkin, 2013). We present a snapshot of current Australian attitudes and behaviours relevant to climate change, and an analysis of changes in attitudes since 2010.

The survey was administered online using a representative group of respondents from across metropolitan, regional, and rural Australia. Respondents were drawn from a research-only panel of 300,000 individuals. The panel used for this survey was administered by ORU, an online fieldwork company with QSOAP 'Gold Standard' and Global ISO 26362 accreditation. The demographic profile of all respondents corresponded closely with the population characteristics of Australians, although among repeat respondents, males and older respondents were overrepresented (Table 1) (ABS, 2011).

Table 1 Demographics of survey respondents

<table>
<thead>
<tr>
<th>DEMOGRAPHIC</th>
<th>CATEGORY</th>
<th>2013 (N = 5219)</th>
<th>RETEST RESPONDENTS (N = 2202)</th>
<th>AUSTRALIAN POPULATION IN 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>&lt;24</td>
<td>7.3</td>
<td>1.8</td>
<td>10.7</td>
</tr>
<tr>
<td></td>
<td>25–34</td>
<td>15.7</td>
<td>10.9</td>
<td>18.3</td>
</tr>
<tr>
<td></td>
<td>35–44</td>
<td>16.0</td>
<td>13.1</td>
<td>18.9</td>
</tr>
<tr>
<td></td>
<td>45–54</td>
<td>16.7</td>
<td>19.3</td>
<td>18.2</td>
</tr>
<tr>
<td></td>
<td>55–64</td>
<td>20.3</td>
<td>22.6</td>
<td>15.4</td>
</tr>
<tr>
<td></td>
<td>65–74</td>
<td>19.0</td>
<td>24.0</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>75+</td>
<td>5.0</td>
<td>8.3</td>
<td>8.5</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>48.6</td>
<td>52.5</td>
<td>49.4</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>51.4</td>
<td>47.5</td>
<td>50.6</td>
</tr>
<tr>
<td>Location</td>
<td>Capital city</td>
<td>57.6</td>
<td>57.0</td>
<td>65.2 (capital city)</td>
</tr>
<tr>
<td></td>
<td>Regional town</td>
<td>27.1</td>
<td>29.0</td>
<td>17.4 (significant urban area)</td>
</tr>
<tr>
<td></td>
<td>Rural area</td>
<td>12.4</td>
<td>14.1</td>
<td>17.4 (other)</td>
</tr>
</tbody>
</table>

1 A ‘research-only’ panel means that panel members complete only surveys intended for legitimate research purposes. This strategy reduces the number of ‘professional’ survey respondents and increases the representativeness of respondents across behavioural, attitudinal, and lifestyle
1 Attitudes to climate change

1.1 Climate change and its causes

An initial question asking about the existence of climate change suggests that roughly four in five people (81%) think climate change is happening (Figure 1).

![Figure 1 Percentage of agreement that climate change is happening (N = 5219)](image_url)

Overall, there was little or no difference across socio-demographic characteristics. Women were more likely than men to think that climate change was happening, but the association was very small. Women were more likely than men to think that climate change was happening, but the association was very small. Those who lived in capital cities were more likely to think that climate change was happening than those in rural areas, but again the association was very small. Those who thought climate change was happening were marginally younger and had slightly higher levels of education than those who disagreed, but the association was small in both instances. There was no difference across levels of personal income or household income.

Survey respondents were asked to rate which of a series of statements best described their thoughts about the causes of climate change (Figure 2). The large majority thought climate change was happening (86.1%), but more considered it a result of human activity (47.3%) rather than solely the result of natural temperature variability (38.8%). Only 7.6% thought it was not happening at all.

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2 Women = 83.4% selected ‘yes’; Men = 78.5% selected ‘yes’. χ² (1, n = 5219) = 20.28, p < .001, phi = -.06.
3 η² = .002.
4 ‘Yes’ mean date of birth = 1964 (SD = 16.79). ‘No’ mean date of birth = 1959 (SD = 15.84). t(5217) = 7.79, p < .001, η² = .01.
5 t(5217) = 7.44, p < .001, η² = .001.
6 p = .23.
7 p = .19.

---

2 Fourth annual survey of Australian attitudes to climate change: Interim report
When asked to estimate the percentage that human activity contributed to climate change, the mean score was 61.7% (SD = 27.3).

Respondents were asked, on a scale from ‘0 – not at all confident’ to ‘100 – completely confident’, how sure their opinion was on climate change, the average score was 72.5 (SD = 20.6).

1.2 What people think others think

Respondents were asked to estimate the percentage of Australians they thought would agree with each of the four statements shown in Figure 2. A comparison of these estimates with actual levels of agreement is displayed in Figure 3. On average, respondents overestimated the proportion of people denying climate change was happening, and underestimated the proportion who thought climate change was happening (due to either natural or human processes).
Figure 4 shows these estimated proportions of the Australian community grouped by the respondent’s own opinion. Every group estimated their own opinion to be the most common among the broader community. Those who denied climate change was happening (7.6% of respondents) strongly overestimated the prevalence of their own opinion (47.6%). Those who thought climate change was natural or human-induced moderately underestimated the prevalence of their own opinion. Every group overestimated the percentage of people who denied climate change was happening.

Figure 4 Respondents’ estimates of the Australian community’s level of agreement with each statement, broken down by respondents’ own opinion-type (N = 5219)
1.3 Importance of climate change

Survey respondents were asked to rank a set of general concerns and a set of environmental concerns in order of most important to least important (Table 2).\(^8\) On average, climate change was ranked as the third least important social issue in the series and the second least important environmental issue.

### Table 2 Average importance rankings of general and environmental concerns \(N = 5219\)

<table>
<thead>
<tr>
<th>GENERAL CONCERNS</th>
<th>AVERAGE RANKING</th>
<th>ENVIRONMENTAL CONCERNS</th>
<th>AVERAGE RANKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Health</td>
<td>4.96</td>
<td>1. Water Shortages</td>
<td>3.72</td>
</tr>
<tr>
<td>2. The cost of living</td>
<td>5.09</td>
<td>2. Pollution</td>
<td>3.91</td>
</tr>
<tr>
<td>4. Education</td>
<td>6.92</td>
<td>4. Drought</td>
<td>4.50</td>
</tr>
<tr>
<td>5. The Australian economy</td>
<td>7.04</td>
<td>5. Deforestation</td>
<td>4.52</td>
</tr>
<tr>
<td>7. Electricity prices</td>
<td>8.03</td>
<td>7. Climate change</td>
<td>5.08</td>
</tr>
<tr>
<td>8. Affordable housing</td>
<td>8.31</td>
<td>8. Salinity</td>
<td>5.67</td>
</tr>
<tr>
<td>9. Water</td>
<td>8.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. The natural environment</td>
<td>9.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Government and politics</td>
<td>9.91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Immigration</td>
<td>10.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Drug problems</td>
<td>10.43</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>14. Climate change</strong></td>
<td><strong>10.53</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Population</td>
<td>10.96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Terrorism</td>
<td>11.34</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^8\) These lists were derived from Ashworth et al. (2011), based on the most common responses to an open-ended question about general and environmental concerns in Australian.
1.4 Familiarity with climate change terminology

Respondents were asked whether they had heard of the terms ‘climate mitigation’ and ‘climate adaptation’ (Figure 5). Only one in five respondents stated they were familiar with the term ‘climate mitigation’, while one in four were familiar with ‘climate adaptation’.

Figure 5 Levels of familiarity with the terms ‘climate mitigation’ (N = 5291) and ‘climate adaptation’ (N = 3169)\(^9\)

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\(^9\) As the question on climate adaptation also appeared in the 2012 survey, respondents who participated in the 2012 survey were excluded from the analysis as this exposed them to the terminology.
2 Climate change relevant behaviour

Respondents were asked to indicate whether they had engaged in any of the community-based environmental behaviours listed in Figure 6. In general, there were low levels of engagement in community behaviour, although more than a quarter of respondents stated taking part in an environmental event in the past five years.

![Figure 6 Percentage of respondents engaging in community-based environmental behaviours (N = 5219)](image)

Respondents were also asked about their main motivation for performing these behaviours (Figure 7). Responses revealed large variations in both rates of and reason for engagement, dependent on the particular behaviour.
Figure 7 Percentage of respondents engaging in pro-environmental climate change relevant behaviours (N = 5219)
To further explore the motivations for taking part in pro-environmental behaviours, respondents were asked (where applicable) to state their main motivation for engaging in the behaviours as a whole (Figure 8). By far the most common motivation reported was financial (43%), although a substantial proportion of respondents (21%) described their motivations as mixed. By contrast, only 10% of respondents named the environment as their chief motivation, although possible related concepts (‘sense of responsibility’, ‘every little bit helps’, and ‘for the future’) accounted for a further 15% of responses.

An aggregated score was calculated for each respondent based on how many individual pro-environmental behaviours they performed, regardless of why they did it. Respondents were then split into two groups: one half who engaged in relatively fewer pro-environmental behaviours (termed ‘low behavioural engagement’), and one half who engaged in relatively more pro-environmental behaviours (termed ‘high behavioural engagement’). There was a significant, medium-strength effect between behavioural engagement and stated motivations (Figure 9). Financial motivations were much more prominent for low engagement respondents than for high engagement respondents, while environmental, environmentally related concepts (‘sense of responsibility’, ‘every little bit helps’, and ‘for the future’), and mixed motivations were more prominent for high engagement respondents.

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**Figure 8** Commonly stated reasons for engaging in pro-environmental behaviours (*N* = 3788)\(^{10}\)

\(^{10}\) 1431 respondents selected a ‘not applicable’ option, provided to account for those engaging in none of the listed behaviours.

\(^{11}\) \(\chi^2 (9, n = 3788) = 312.92, p < .001, \text{Cramer’s } V = .29.\)
Respondents were asked to estimate their level of engagement in pro-environmental behaviours relative to other Australians (Table 3). A large majority of respondents (93.7%) thought they did the same or more than the average Australian, although only 8% thought they did much more. Under 7% of respondents thought they performed fewer pro-environmental behaviours than the average Australian. Just over half (55.2%) of high behavioural engagement respondents thought they did more than the average, while a further 40% thought they did about the same. By contrast, only 9.6% of low behavioural engagement respondents thought they did less.

Table 3 Respondents’ estimates of their own pro-environmental engagement compared to others (N = 3788)

<table>
<thead>
<tr>
<th>“WHEN THINKING ABOUT THESE BEHAVIOURS, DO YOU…”</th>
<th>LOW BEHAVIOURAL ENGAGEMENT RESPONDENTS (n = 1783)</th>
<th>HIGH BEHAVIOURAL ENGAGEMENT RESPONDENTS (n = 2005)</th>
<th>ALL RESPONDENTS (N = 3788)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do <strong>much more</strong> than the average Australian?</td>
<td>4.0</td>
<td>11.7</td>
<td>8.0</td>
</tr>
<tr>
<td>Do <strong>a bit more</strong> than the average Australian?</td>
<td>22.7</td>
<td>43.5</td>
<td><strong>33.6</strong></td>
</tr>
<tr>
<td>Do <strong>about the same</strong> as the average Australian?</td>
<td>63.7</td>
<td>41.4</td>
<td><strong>52.1</strong></td>
</tr>
<tr>
<td>Do <strong>a bit less</strong> than the average Australian?</td>
<td>7.8</td>
<td>2.5</td>
<td><strong>5.0</strong></td>
</tr>
<tr>
<td>Do <strong>a lot less</strong> than the average Australian?</td>
<td>1.8</td>
<td>0.9</td>
<td><strong>1.3</strong></td>
</tr>
</tbody>
</table>
An index score was calculated for each respondent to capture both the total number of individual and community-based environmental behaviours in which they participated, and why they participated in each. To investigate what sort of attitudes could best account for (or predict) respondents’ pro-environmental behaviour, people’s responses to a set of attitudinal questions about climate change were compared with their behaviour index score. A regression analysis assessed the unique contribution of each attitudinal statement in predicting a person’s overall behaviour index score. Table 4 shows that the extent to which climate change is deemed personally relevant is the best predictor of their behaviour score. The next best predictors are how much ethical and moral responsibility a person feels to act on climate change, how much they report having experienced climate change, and how important climate change is. By contrast, how sure someone thought climate change was happening, and how much they thought it would harm them, did not make significant unique contributions to predicting pro-environmental behaviour.

Table 4 Simultaneous regression analysis of climate change attitudes and pro-environmental behaviour (N = 5219)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>How personally relevant is climate change to you?</td>
<td>.15**</td>
</tr>
<tr>
<td>I feel it is my ethical responsibility to change my individual</td>
<td>.13**</td>
</tr>
<tr>
<td>behaviour to combat climate change</td>
<td></td>
</tr>
<tr>
<td>How much have you experienced climate change?</td>
<td>.13**</td>
</tr>
<tr>
<td>I feel a moral duty to do something about climate change</td>
<td>.12**</td>
</tr>
<tr>
<td>How important is climate change to you?</td>
<td>.11**</td>
</tr>
<tr>
<td>How certain are you that climate change is caused by humans?</td>
<td>.08**</td>
</tr>
<tr>
<td>How worried are you about climate change?</td>
<td>.05*</td>
</tr>
<tr>
<td>How sure are you that climate change is happening?</td>
<td>.01</td>
</tr>
<tr>
<td>How much do you think climate change will harm you?</td>
<td>.01</td>
</tr>
</tbody>
</table>

Total amount of variance in behaviour score explained (R squared): 35%

* p < .05; ** p < .001

12 For each of the individual behaviours, a score of 1 was given for each behaviour engaged in for non-environmental reasons, and a score of 2 was given for each behaviour engaged in for mainly environmental reasons. For community-based behaviours, a score or 2 was given for each behaviour engaged in, as each of these behaviours were deemed explicitly environmental in motivation.
3 Climate estimates and projections made by the public

Respondents were asked to estimate whether a series of events and processes (Figure 10) would increase in intensity and frequency where they live. Overall, people expected that each event and process would increase more in intensity than in frequency. Heatwaves were expected to increase in intensity the most, followed by heavy rain, and storms, while snowstorms were expected to increase in intensity the least. Heavy rain was expected to increase in frequency the most, followed by storms and heatwaves. Cyclones and snowstorms were expected to increase in frequency the least. Overall, the events and processes listed in Figure 10 were not expected to increase greatly.

![Figure 10 Expected future increases in intensity and frequency of events in respondents’ region (N = 5219)](image)

Respondents were asked a series of questions relating to their perceptions of climatic changes in their region since 1990, and expected future changes in their region in both 20 years and 40 years time. Firstly, respondents were asked about perceived changes in temperature (Figure 11). Just over 25% of respondents thought temperatures had stayed the same since 1990 and would continue to remain the same. More than half of respondents (56.5%) thought temperatures had increased since 1990; this rose to 60.1% for the 20 year projection, and 62.4% for the 40 year projection. By contrast, fewer than 14% of respondents thought their regional temperature had cooled, or would cool in the future.

13 The most common interpretations of what constituted a respondents’ region are presented in Figure 13.
Respondents were asked to make the same estimations and projections for changes in rainfall (Figure 12). Roughly 30% of respondents thought rainfall had stayed the same since 1990 and would continue to remain the same. Slightly more respondents thought it was wetter in their region now compared with 1990 (38%) than drier (34%). This pattern was reversed for the 20 year projection, with more respondents expecting it would become drier (35.7%) than wetter (30.9%), and for the 40 year projection, with more respondents expecting it would be drier (41.5%) than wetter (28.5%).

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For the ‘compared to 1990’ question, participants were also able to select a ‘don’t know’ option, to account for respondents new to their region. In total, 17.8% of respondents chose this option and are excluded from this category in the analysis (all respondents are included in the ‘In 20 years time’ and ‘In 40 years time’ categories).
Table 5  Percentage of respondents falling within combined projection types for anticipated regional climate in 20 years’ time ($N = 5219$)

<table>
<thead>
<tr>
<th>Expected Climate Changes</th>
<th>Cooler</th>
<th>The same temperature</th>
<th>Hotter</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetter</td>
<td>9.0%</td>
<td>1.0%</td>
<td>20.7%</td>
<td>30.7%</td>
</tr>
<tr>
<td>The same rainfall</td>
<td>1.6%</td>
<td>25.2%</td>
<td>6.7%</td>
<td>33.5%</td>
</tr>
<tr>
<td>Drier</td>
<td>2.4%</td>
<td>0.8%</td>
<td>32.6%</td>
<td>35.8%</td>
</tr>
<tr>
<td>Total</td>
<td>13.0%</td>
<td>27.0%</td>
<td>60.0%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Again, participants were also able to select a ‘don’t know’ option for the ‘compared to 1990’ category. In total, 18.1% of respondents chose this option and are excluded from this category in the analysis.
Table 6 Percentage of respondents falling within each projection type for anticipated regional climate in 20 years’ time ($N = 5219$). Darker cell colours indicate larger percentages

<table>
<thead>
<tr>
<th>COLDER</th>
<th>TEMPERATURE IN 20 YEARS</th>
<th>HOTTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rainfall in 20 years</td>
<td>−3° or colder</td>
<td>−1.5° to −3.0°</td>
</tr>
<tr>
<td>&gt;15% more rainfall</td>
<td>2.1%</td>
<td>0.5%</td>
</tr>
<tr>
<td>5% - 15% more</td>
<td>0.3%</td>
<td>1.4%</td>
</tr>
<tr>
<td>0% - 5% more</td>
<td>0.1%</td>
<td>0.3%</td>
</tr>
<tr>
<td>The same</td>
<td>0.2%</td>
<td>0.2%</td>
</tr>
<tr>
<td>0% - 5% less</td>
<td>0.1%</td>
<td>0.2%</td>
</tr>
<tr>
<td>5% - 15% less</td>
<td>0.3%</td>
<td>0.4%</td>
</tr>
<tr>
<td>&gt;15% less rainfall</td>
<td>0.4%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Total</td>
<td>3.5%</td>
<td>3.1%</td>
</tr>
</tbody>
</table>
The final question in this section asked respondents to select the category that best described what they had in mind as their ‘region’ when answering the previous questions on estimations and projections (Figure 13). Almost half of respondents (44.3%) selected ‘city/town’ as the best descriptor, with a further quarter selecting ‘state/territory’.

Figure 13 Respondent definition of ‘their region’ for perceived regional climate change questions (N = 5219)
4 Perceived vulnerability, coping appraisals, and policy support

4.1 Perceived vulnerability and coping

We asked respondents a series of questions about their experience with a range of climatic and weather events, their perceived levels of vulnerability and coping, and their support for a range of adaptation policy responses. Respondents were initially asked a general question about how well they thought they would be able to cope with the impacts of climate change (Figure 14). On average, people thought they would cope moderately well with the impacts. Financial coping was rated lowest, while mental coping was rated highest, although the differences between categories were small.

![Mean ratings of perceived levels of coping with the impacts of climate change (N = 5219)](image)

Respondents were asked whether they had suffered any injury, loss, or damage as a result of a series of climate and weather events and processes, and how well they thought they would respond should these events happen in the future (Figure 15). Anticipated future coping roughly aligned with injury, loss, and damage already sustained, with the exception of relatively lower levels of anticipated coping for future frost events. The pattern of injury, loss, and damage was also similar to expected increases in frequency and intensity (see Figure 10).
Participants were asked the extent to which they thought a number of key sectors in Australia were vulnerable, should Australia’s climate change (Figure 16). Ratings of vulnerability were similar for each sector, with a majority of respondents rating every sector as at least moderately vulnerable. Natural ecosystems were rated most vulnerable of all, followed by food ecosystems, and agriculture and forestry. Major infrastructure and tourism were rated as the least vulnerable sectors in a changing climate.

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16 These sectors were based on the Intergovernmental Panel on Climate Change’s Fourth Assessment Report, Working Group II investigation Hennessy et al. (2007).
4.2 Support for adaptation and mitigation initiatives

In a series of questions, respondents were asked to indicate their level of support for a range of adaptation initiatives (Figure 17). All initiatives but one (nuclear power) were rated favourably on average, including a policy to tax industries that emit high levels of greenhouse gases. Increased investment in renewable energy and public transport were the most popular initiatives, while government investment in nuclear power stations was the least supported initiative.
Support for adaptation and mitigation initiatives

Increased government investment in renewable energy sources
Increased government investment in public transport
Banning future development in vulnerable areas such as floodplain areas and coastal areas
Government subsidies on food that is produced locally
Increased government investment in emergency services
Taxing industries that emit high levels of greenhouse gases
Government regulation to protect public assets from the impacts of climate change
Government investment for managed retreat of residential housing in vulnerable areas
Government regulation to protect private assets from the impacts of climate change
Further use of desalination for drinking water purposes
Using wastewater for drinking water purposes
Government investment in the development of nuclear power stations

Figure 17 Mean levels of support for adaptation and mitigation initiatives (N = 5219)
The following table provides a breakdown of correlations between the major variables in the survey.

Table 7 Correlation matrix of key survey variables ($N = 5219$)

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected future climate</td>
<td></td>
<td></td>
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<tr>
<td>Extreme weather</td>
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<tr>
<td>Damage experienced</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>Expected frequency</td>
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<td>-0.03</td>
<td>0.70**</td>
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<td></td>
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<td>Expected intensity</td>
<td>0.18**</td>
<td>0.05**</td>
<td>0.72**</td>
<td>0.62**</td>
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<tr>
<td>Expected coping</td>
<td>0.18**</td>
<td>0.06**</td>
<td>0.71**</td>
<td>0.63**</td>
<td>-0.91**</td>
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<td></td>
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<tr>
<td>Certainty happening</td>
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<td>0.05**</td>
<td>0.25**</td>
<td>0.16**</td>
<td>0.39**</td>
<td>0.40**</td>
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<tr>
<td>Certainty anthropogenic</td>
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<td>0.01</td>
<td>0.09**</td>
<td>0.02</td>
<td>0.14**</td>
<td>0.14**</td>
<td>0.16**</td>
<td>0.36**</td>
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<tr>
<td>% humans contribute</td>
<td>0.29**</td>
<td>0.12**</td>
<td>0.26**</td>
<td>0.18**</td>
<td>0.41**</td>
<td>0.41**</td>
<td>0.44**</td>
<td>0.07**</td>
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<tr>
<td>Support for initiatives</td>
<td>0.20**</td>
<td>0.08**</td>
<td>0.19**</td>
<td>0.01</td>
<td>0.23**</td>
<td>0.23**</td>
<td>-0.28**</td>
<td>0.19**</td>
<td>0.32**</td>
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<tr>
<td>Demographics</td>
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</tr>
<tr>
<td>Political views (L-R)</td>
<td>-0.17**</td>
<td>-0.06**</td>
<td>0.01</td>
<td>0.11**</td>
<td>-0.09**</td>
<td>-0.08**</td>
<td>-0.18**</td>
<td>-0.01</td>
<td>-0.19**</td>
<td>-0.10**</td>
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<td></td>
</tr>
<tr>
<td>Education</td>
<td>0.05**</td>
<td>0.02</td>
<td>0.05**</td>
<td>0.07**</td>
<td>0.08**</td>
<td>0.09**</td>
<td>0.16**</td>
<td>0.07**</td>
<td>0.05</td>
<td>0.07**</td>
<td>-0.08**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.08**</td>
<td>-0.01</td>
<td>-0.15**</td>
<td>-0.21**</td>
<td>-0.17**</td>
<td>-0.18**</td>
<td>-0.12**</td>
<td>0.13**</td>
<td>-0.22**</td>
<td>0.14**</td>
<td>0.10**</td>
<td>-0.12**</td>
<td></td>
</tr>
<tr>
<td>Behaviour</td>
<td>0.14**</td>
<td>0.07**</td>
<td>0.38**</td>
<td>0.27**</td>
<td>0.42**</td>
<td>0.42**</td>
<td>-0.37**</td>
<td>0.18**</td>
<td>0.41**</td>
<td>0.30**</td>
<td>-0.11**</td>
<td>0.14**</td>
<td>-0.02**</td>
</tr>
</tbody>
</table>
5 Changes in attitudes and behaviours over time: 2010–2013

In this section, we investigate changes in Australian attitudes to climate change over the four years the national surveys have been running: 2010 to 2013. Of the 5219 respondents surveyed in 2013, 2202 answered two or more of these surveys over four years. Longitudinal modelling was used to estimate the average changes in attitudes and behaviours over time, to make any trends easy to interpret (as shown in the following figures). Lines with asterisks indicate a statistically significant change occurred over time.

5.1 Basic attitudes to climate change

There was little change in respondents’ opinions about the nature and causes of climate change over the period 2010 to 2013 (Figure 18). The only statistically significant change was a small increase in the proportion of respondents selecting the ‘don’t know’ response option.

A series of attitudinal questions about climate change were similarly stable (Figure 19), except for a small but statistically significant decrease in estimated levels of the harm caused by climate change.
5.2 Trust and responsibility placed in groups and organisations

In all four surveys, respondents were asked to indicate their levels of trust in a range of groups to tell them truthful information about climate change (Figure 20). There were small but statistically significant increases in trust over time for the following groups: Environmental group scientists, Government scientists, Community members, Consumer organisations, Local authorities, Government, Car companies and Oil companies. Ratings of trust for other agencies remained steady. Trust in University scientists, and Friends and family, remained highest throughout, though they were not exceptionally high.
Responsibility ratings assigned to different agencies to respond to climate change were stable for all groups and agencies, except for responsibility assigned to normal individuals to respond, where responsibility ratings increased significantly, though ratings remained relatively low (Figure 21). For responsibility assigned to agencies for causing climate change, ratings for normal individuals and global organisations increased a small, but statistically significant amount (Figure 22). Ratings for all other agencies remained stable.
Figure 21 Average change in ratings of responsibility for responding to climate change: 2010–2013 (N = 2202)

Figure 22 Average change in ratings of responsibility for causing climate change: 2010–2013 (N = 2202)
5.3 Emotions, cognitions, and behavioural engagement

Respondents were asked the extent to which they felt a range of emotions when thinking about climate change, from ‘1 – not at all’ to ‘5 – a great deal’ (Figure 23). On average, respondents reported feeling less angry, hopeful, powerless, and excited, but more ashamed and guilty, over time. All other emotion ratings were stable.

![Emotions associated with climate change](image)

**Figure 23** Average change in emotion ratings: 2010–2013 ($N = 2202$)

Figure 24 displays changes in cognitions (thoughts) about the various potential impacts of responding to climate change. There were increases in the sentiment that responding to climate change would provide people with a sense of purpose, provide people with an opportunity to be part of something bigger, and foster greater community spirit. Conversely, there were significant reductions in the sentiment that responding to climate change would cost too much money and jobs, and that nothing meaningful could be done by Australia about climate change.
Finally, engagement in pro-environmental behaviours was stable for all activities, with the exception of water use around the home, where there was a small but statistically significant drop-off in engagement (Figure 25).

![Cognitions about climate change](image)

**Figure 24 Average change in cognitions about climate change: 2010–2013 (N = 2202)**

![Behavioural Engagement](image)

**Figure 25 Average change in behavioural engagement: 2010–2013 (N = 2202)**
Overall, attitudes and behaviours were relatively stable over time. There was some increase in trust around climate change information; feelings of individual responsibility, guilt and shame; and positive cognitions about responding to climate change. However, there were no corresponding changes in pro-environmental behaviours over time.
Discussion

This latest survey of over 5000 Australians once again revealed that a strong majority of Australians think the climate is changing, supporting findings from other large-scale national surveys (Reser et al., 2012). It remains a point of some contention whether human activity or natural fluctuation is the most significant cause. The results here and in previous surveys, however, suggest that the contestation over the existence of climate change is magnified in the minds of our respondents, with people typically overestimating the proportion of the Australian population who think that climate change is not happening at all (see also Leviston, Walker & Morwinski, 2013).

Misperception of what others think about climate change appears to extend to a misperception of what others are actually doing about climate change. More than 90% of respondents thought they did at least as much as other Australians (and 40% thought they did more). Only 7% thought they did less. This held even for low behavioural engagement respondents, where only 10% thought they did less than the average Australian. This ‘false uniqueness’ bias, particularly evident for our low engagement respondents, is commonplace when people are asked to estimate the prevalence of desirable behaviours (Goethals, Messick, Allison, 1991).

Regarding extreme weather and climate events and processes, anticipating how one will cope in the future roughly aligned with injury, loss, and damage already experienced, perhaps suggesting that familiarity and/or learning from direct experience enhances adaptive responses, in turn bolstering anticipated coping. However, a corollary of the bond between previous experience and anticipated coping may well be that, as different types of extreme weather events and processes shift to new regions, residents with little previous experience may feel underprepared. Further analysis is required to investigate how experiences of particular climate events are related to the geographical regions in which people reside, and anticipated warming and drying patterns. The relationship between direct experience of extreme weather events and psychological adaptation has been highlighted as complex and non-linear (Reser et al., 2012) and is the subject of ongoing research.

Rankings of sectoral climate vulnerability were largely in keeping with expert information regarding the aggregated relative vulnerability of key sectors in Australia and New Zealand (as presented in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, see Hennessy et al., 2007). Respondents tended to underestimate the vulnerability of tourism to climate change and overestimate the vulnerability of food ecosystems relative to scientific assessments, however. Respondents were also less likely to differentiate between sectors in terms of climate vulnerability.

Moderate support was given to a range of policy initiatives to adapt to climate change, including managed retreat options and government regulation to protect both public and private assets. However, one of the more significant results in the current survey is the low importance of climate change relative to other concerns that people have, such as the cost of living, employment and education, and water shortages and pollution. The relatively low ranking accorded to climate change is particularly important given the finding that personal relevance was the strongest predictor of behavioural engagement. As many of the concerns (especially environmental concerns) are in large part contingent on addressing climate change effectively, it appears there is work still to be done to effectively link the mitigation of climate change with everyday ‘on the ground’ activities (see also Lowe, 2006). There is also the challenge of finding the right language: ‘mitigation’ and ‘adaptation’, terms frequently used in scientific arenas, are terms that most Australians are unfamiliar with. Although our longitudinal analysis of repeat respondents suggests that the responsibility placed on normal individuals to respond to climate change is on the increase, this has not yet translated into increases in pro-environmental behaviours, and these responsibility ratings are low relative to the responsibility placed on other agencies.

Engagement in climate relevant behaviours remained basically unchanged over time. While this is perhaps not the result many would wish for, our cross-sectional results from the current 2013 survey revealed key
motivational differences between high behavioural engagement respondents and low behavioural engagement respondents. These differences might assist communicators in promoting further uptake of pro-environmental behaviours. For instance, appealing to a combination of motivations might be more effective than appealing solely to environmental or solely to financial imperatives. Communicating how much individuals are actually doing already to combat climate change (an amount that seems to be commonly underestimated), might also encourage people to stay behaviourally engaged.

Finally, over the period 2010–2013 there was a slight increase in repeat respondents endorsing the sentiments that responding to climate change would provide people with a sense of purpose, provide people with an opportunity to be part of something bigger, and foster greater community spirit. Conversely, they were less likely to endorse sentiments that responding to climate change would cost too much money and jobs, and that nothing meaningful could be done by Australia about climate change. If these trends continue, we might reasonably expect that behaviours will follow, in time.
References


